



**XXXIV ANNUAL CONGRESS OF
INDIAN SOCIETY FOR VETERINARY SURGERY
AND INTERNATIONAL SYMPOSIUM ON**



**“Newer Concepts in Surgical Techniques
for Farm and Companion Animal Practice”**

8-10 DECEMBER 2010

SOUVENIR AND ABSTRACTS



**Department of Veterinary Surgery & Radiology,
Rajiv Gandhi College of Veterinary and Animal Sciences,
Teaching Hospital, Mettupalayam Campus, Puducherry -605 009.**

Wetly
3-12-10



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INDIAN SOCIETY FOR VETERINARY SURGERY
AND INTERNATIONAL SYMPOSIUM ON**

*"Newer Concepts in Surgical Techniques
for Farm and Companion Animal Practice"*

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Souvenir and Abstracts

Department of Veterinary Surgery & Radiology,
Rajiv Gandhi College of Veterinary and Animal Sciences,
Teaching Hospital, Mettupalayam Campus,
Puducherry -605 009.

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November 29, 2010

MESSAGE

I am happy to know that the Department of Veterinary Surgery and Radiology, Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry is organizing the 34th Annual Congress of Indian Society for Veterinary Surgery (ISVS) and International Symposium on "Newer Concepts in Surgical Techniques for Farm and Companion animal Practice" from 8th to 10th December, 2010.

I extend my warm greetings to the organizers and participants and wish the event all success.

(Dr. IQBAL SINGH)
LT. GOVERNOR



MESSAGE

I am glad to note that the Department of Veterinary Surgery and Radiology, Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry is organizing the XXXIV Annual Congress of Indian Society for Veterinary Surgery (ISVS) and International Symposium on "Newer Concepts in Surgical Techniques for Farm and Companion Animal Practice" from 8th to 10th December, 2010.

I hope that the Academicians, Scientists and Veterinary Practitioners from this field will deliberate widely on various aspects of Veterinary Surgery and Radiology and come out with practical suggestion to adopt the Newer Concepts in Surgical Techniques for Farm and Companion Animal Practice.

I wish the convention all success.


(V. VAITHILINGAM)

A. NAMASSIVAYAM
PUBLIC HEALTH MINISTER



PUDUCHERRY

Date: 25.11.2010



MESSAGE

As the Chief Patron of the organizing committee, it is pleasure to welcome the delegates from various parts of the country to the XXXIV Annual Congress of Indian Society for Veterinary Surgery (ISVS) and International Symposium on "Newer Concepts in Surgical Techniques for Farm and companion Animal Practice", being organized at the Department of Veterinary Surgery and Radiology, Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry, during 8th – 10th December, 2010.

Farm animals play an important role in the rural livelihood, and employment generation. Pet animal practice is gaining momentum in urban areas. I hope the deliberations in this symposium shall be useful to the advancement of Veterinary Surgery in general and overall prosperity of the farming community in particular.

I wish the Symposium a grand Success.


(A. NAMASSIVAYAM)



Rajiv Gandhi College of Veterinary and Animal Sciences

Kurumbapet, Puducherry - 605 009

(A Government of Puducherry Institution formed under Pondicherry Veterinary College Society)

Dr. M. Dominic Savio Jegam, MVSc

Dean

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Date : 30-11-2010

MESSAGE

I am glad to know the Department of Veterinary Surgery & Radiology, Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry is organising the 34th Annual Congress of Indian Society for Veterinary Surgery and International Symposium on "Newer Concepts in Surgical Techniques for Farm and Companion Animal Practice" between 8th and 10th December, 2010 under the auspices of Indian Society for Veterinary Surgery.

The theme for the symposium is very appropriate and pertinent to the present context. I am sure the deliberations in this three day symposium will benefit the Academicians, Scientists, Students of veterinary surgery, Field Veterinarians and Farm and Companion animal owners as well.

The Department of Veterinary Surgery and Radiology is making all efforts to keep the deliberation interesting and purposeful in the branch of veterinary surgery.

I thank executive committee of Indian Society for Veterinary Surgery for giving us the opportunity to host this International Symposium in Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry.

I wish the Annual Congress and International Symposium a grand success.

M. Dominic Savio Jegam
(Dr. M. DOMINIC SAVIO JEGAM)
DEAN

**Rajiv Gandhi College of Veterinary
and Animal Sciences**

INDIAN SOCIETY FOR VETERINARY SURGERY



Dr.S.THILAGAR, M.V.Sc., PhD., FISVS
Executive Secretary and
Controller of Examinations - TANUVAS
Madhavaram Milk Colony, Chennai - 51
INDIA

FOREWORD

I am indeed happy to know that Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry is organizing XXXIV Annual Congress of Indian Society for Veterinary Surgery and International Symposium on Newer Concepts in Surgical Techniques for Farm and Companion Animal.

The theme of the symposium is relevant and required at this juncture in the field of Veterinary Surgery in-order to compete global competition. Newer concepts are absolutely necessary to improve our clinical services in the area of animal health in this country, since the revenue contribution to this great country from the Animal Husbandry Sector is increasing in the recent years. We, the Veterinary professional should be proud and supportive to sustain our Indian economy and also to maintain sustainable food security for our citizens.

I congratulate Dr.M.Doprinic Savio Jegam, the Convenor, the Dean and Dr. B.Rameshkumar organizing Secretary cum Professor and Head, Department of Surgery & Radiology Rajiv Gandhi College of Veterinary and Animal Sciences and his Team for organizing this great event for the benefit of fellow surgeons, scientist students from other institution.

1.12.2010

S.THILAGAR

S/D
(Executive Secretary)

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FROM THE DESK OF ORGANISING SECRETARY



I am preveliged to thank the executive committee of Indian Society for Veterinary Surgery for providing an opportunity to organize 34th Annual Congress of Indian Society for Veterinary Surgery and International Symposium on

"Newer Concepts in the Surgical Techniques for Farm and Companion Animal Practice" between 8th and 10th December, 2010 under the auspices of Indian Society for Veterinary Surgery.

The promotion of farm and companion animal health care are important key factors to improve the economy of our country and taking care the needs of pet animal owners. The surgical intervention and recent development in surgical techniques will pave way to improve the skills of practising veterinary surgeons in the field of veterinary surgery.

Being an academican and practitioner in veterinary surgery I look forward to this symposium as yet another opportunity for many of us to serve the cause of Veterinary Surgery. The experts in various disciplines of veterinary surgery as well as stalwarts of veterinary surgery from India and abroad will be brought on one platform for an interaction with the academicians, scientists, students, veterinary professionals and field veterinarians from the branch of veterinary surgery.

During the deliberations of the symposium we hope that the experts will try to look forward adopting newer surgical techniques for solving the problems coming in the way of development of veterinary surgery.

The organizing committee is highly indebted to The Chairman, Pondicherry Veterinary College Society, Hon'ble minister for Animal Husbandry & Animal Welfare Thiru.A.Namassivayam, for his best wishes and all the support rendered to host the International symposium in this college. We thank our Vice Chairman, Pondicherry Veterinary College Society Thiru.Belatee Pertin, IAS, Secretary, Animal Husbandry and Animal Welfare, Puducherry for all the support for holding the symposium.

I am extremely grateful to our beloved Dean of the College Dr.Dominic Savio Jegam for the constant encouragement and unforgettable support rendered in all aspects for the successful conduct of this symposium.

I also extend my gratitude to all over sponsorers and those who have directly and indirectly helped in organizing the symposium.

I also thank all the faculty and staff members from all the departments in Rajiv Gandhi College of Veterinary and Animal Sciences for having contributed in many ways in the organizational efforts of the various committees. My special appreciation and thanks to all my colleagues in my department for their constant support and encouragement throughout the course of this programme.

Last but not the least, I sincerely thank all the delegates for the overwhelming responses to our invitation.

I extend a warm welcome to all and wish them a pleasant stay at Pondicherry.

B. Ramesh Kumar
(B.RAMESH KUMAR)

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RAJIV GANDHI COLLEGE OF VETERINARY AND ANIMAL SCIENCES, PUDUCHERRY

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Dr. R.M.D. Alphonse
Associate Professor



Dr. T.P. Balagopalan
Associate Professor



Dr. (Mrs) N. Aruljothi
Associate Professor

ABOUT OUR DEPARTMENT

The Rajiv Gandhi College of Veterinary and Animal Sciences was established by the Pondicherry Veterinary College Society in October, 1994 and is fully funded by the Government of Pondicherry. This College is affiliated to the Pondicherry Central University. The Department came into existence along with college and over the years has developed into one of the best component of the college, by virtue of its excellent teaching, Research, Extension and specially its clinical services. This department caters the needs of the farmers and pet owners of the union Territory and neighboring states through reference cases.

The Department has the facilities of modern 500 mA X-Ray machine, Fully equipped Air conditioned Small animal Operation theatre with close circuit Television, Large Animal Theatre and Physiotherapy unit. In addition to the undergraduate teaching the faculty members are supporting the Ambulatory clinic and actively engaged in clinical and inter disciplinary research work. We expertised in teat surgery, soft tissue and orthopaedic surgery, physiotherapy applications and wild life surgery. Indian Society of Veterinary Surgery appreciated our efforts in clinical surgery by many citations in the past years and honoured us by permitting to host the 34th Annual Congress, 2010.

Supporting Staff

1. Mr. K. Thandapani
2. Mr. D. Vinoth
3. Mr. N. Kumaran
4. Mr. S. Suresh

PROGRAMME

Time	Session	Venue	Chairman	Rapporteur
08.12.2010				
8.00 am to 9.30 am	Registration & Breakfast	Conference Hall		
9.30 am to 11.30 am	Inaugural Function	Gymnasium Hall		
<i>11.30 am to 11.45 am Tea Break</i>				
12.00 Noon to 1.00 pm	P.E. Kulkarni Oration Lecture	Conference Hall		
<i>1.00 pm to 2.00 pm Lunch</i>				
2.00 pm to 3.00 pm	Theme Session	Conference Hall	Dr. R.N. Kohli	Dr. Narinder Singh Saini
3.00 pm to 4.30 pm	Anaesthesiology Session	Conference Hall	Dr. Amresh Kumar	Dr. Amarpal
3.00 pm to 4.30 pm	Radiology and Imaging techniques Session	Committee Room	Dr. S. Thilagar	Dr. Vishwesrao
<i>4.30 pm to 4.45 pm Tea Break</i>				
4.45 pm to 6.00 pm	Equine Surgery	Committee Room	Dr. S.M. Jeyadevappa	Dr. Dhanalakshmi
7.00 pm to 9.00 pm	Cultural Programme	Gymnasium Hall		
09.12.2010				
8.00 am to 9.00 am	Breakfast			
9.00 am to 11.00 am	Small Animal Surgery Session	Conference Hall	Dr. S.S. Singh	Dr. L. Nagarajan
10.00 am to 12.00 Noon	Large Animal Poster Session	Corridor		
<i>11.00 am to 11.15 am Tea Break</i>				
11.15 am to 1.15 pm	Orthopaedic Session	Conference Hall	Dr. S.S. Rathore	Dr. S. Ayyappan
<i>1.15 pm to 2.00 pm Lunch</i>				
2.00 pm to 4.00 pm	Ruminant Surgery Session	Conference Hall	Dr. P.E. Kulkarni	Dr. C.B. Devanand
2.00 pm to 4.00 pm	Wild & Zoo Animal Surgery Session	Committee Room	Dr. M.S. Vasanth	Dr. Aithal
2.00 pm to 5.00 pm	Small Animal Poster Session	Corridor		
<i>4.00 pm to 4.15 pm Tea Break</i>				
5.00 pm to 6.00 pm	Round Table on Surgical Affections in Field Conditions Courtesy - Intas Pharmaceuticals	Conference Hall		
10.12.2010				
8.00 am to 9.00 am	Breakfast			
9.00 am to 10.00 am	Avian Surgery Session	Committee Room	Dr. Deepak Patil	Dr. Dilip Kumar
<i>10.00 am to 10.15 am Tea Break</i>				
10.15 am to 12.00 Noon	Awards Session	Conference Hall	I.S. Chandra	R.V. Suresh Kumar
12.00 Noon to 1.00 pm	Interactive Session with Scientists field veterinarians and farmers	Conference Hall		
<i>1.15 pm to 2.00 pm Lunch</i>				
2.00 am to 3.00 pm	Plenary Session General body meeting	Conference Hall		

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1. P.E.KULKARNI ORATION LECTURE
2. THEME SESSION
3. ANAESTHESIOLOGY SESSION
4. RADIOLOGY AND IMAGING TECHNIQUES SESSION
5. EQUINE SURGERY SESSION
6. SMALL ANIMAL SURGERY SESSION
7. ORTHOPAEDIC SESSION
8. RUMINANT SURGERY SESSION
9. WILD & ZOO ANIMAL SURGERY SESSION
10. AVIAN SURGERY SESSION
11. LARGE ANIMAL POSTER SESSION
12. SMALL ANIMAL POSTER SESSION
13. AWARDS SESSION
14. ROUND TABLE

P.E.KULKARNI ORATION LECTURE

Date : 08.12.2010 Time : 12 Noon

Venue : Conference Hall

P.E.Kulkarni oration Lecture

History of Horse Racing In India

Prof. S. M. JAYADEVAPPA

President Karnataka Veterinary Council, Honble Member, Board Member KVAFSU, Bidar, Steward, Bangalore Turf club, Bangalore

It is my honour and privilege to stand before this August body to present oral citation on the above subject upon receiving Dr P. E. Kulkarni award for the year 2010 from the Indian Society for Veterinary Surgery.

India has history and cultural that dates back to centuries and there have always been a remarkable bond existed between man and the horse. The exact date of origin of horse racing in India is not known and horse racing is one of the most ancient sports with the nomadic tribes racing horses since early domestication and racing is an organized sport on many countries including India throughout the history. Tales of great courage and a number of them are part of Indian legend and folklore. It can be safely told that the recognized form of the sport owes it to the British Colonial administrators. The growth of East India Company saw the emergence of this sport in the country without foreign participation, the racing in India is the largest and most popular sport with a following of over 10,000 to 25,000 people participating per raceday conducted at any center with a turnover of crores of rupees per day.

Britishers saw the emergence of 3 centers in our country that is Madras in South, Calcutta in East and Bombay in the west. These cities witnessed modest beginning of horse racing in various forms from individual sports to match race and finally to spectator sport into a game of betting. Race courses were identified, stands were put up, and paddocks, tracks and enclosures for betting were built with rules of racing.

The Calcutta and Bombay race courses began functioning in the country. The R.C.T.C. controlled racing in the East besides controlling centers like Madras, Ooty, Bangalore, Mysore, Hyderabad, Lucknow, Meerut and Lahore, While R.W.I.T.C. controlled in the west with Bombay, Pune and Delhi.

The Indian kings devoted to part time of horse riding extended their patronage and benevolence to racing activities. Horses were imported from Arabia, England, Ireland and Australia by princely states like Baroda, Kashmir, Patiala, Gwallior, Darbhanga, Bhopal, Coochbehar, Idar, Morvi, Kolhapur, Mysore, and Burdwan etc to contribute to the stock of racing. Industries like textile tycoon Mathradas Goculdas and others joined hands of kings to extend support for horse racing.

Racing in India received further boost when two pillars of British Turf, the Agha Khan and Sir Victor Sassoon extended their patronage to this country. Thoroughbred began to be imported on a larger scale. The army too set up its remount and breeding stations using imported stallions for stud and thoroughbred breeding in India began. From just 40 Thoroughbred foals of Indigenous nature in 1938, the number rose to about 200 to 1940. The racing season of 1942-43 marked a watershed in Indian racing and breeding heralded the present era. During this season for the first time Indian classics were run. To begin with Indian 1000 Guineas, 2000 Guineas and Indian Derby were all run at Bombay. In the inaugural year "Princess Beautiful" owned by Maharaja of Baroda won all the 3 Classics. By late 1940 with involvement of British in India was on the wane, racing concentrated in metropolitan cities of newly independent India. Race courses in towns like Baroda, Meerut, Lucknow, Coimbatore etc disappeared though there are Race course roads still which exist.

Thoroughbred horse are so bred that the pedigree of every horse can be traced to one of the 3 stallions namely Byerley Turk (1680-1996) Darely Arabian (1700-1733) and these are known as foundation sires.

In 1750 horses racing's elite met at new market to form the Jockey Club to oversee and control English horse racing. The Jockey Club wrote comprehensive set of rules for horse racing and sanctioned



racecourses to conduct racing and in 1814 five races for 3 years olds were designated as classics. The 2000 guineas, The Epsom Derby and the St. Leger open to colts and fillies and 1000 guineas and Epsom Oaks open to fillies only. The Jockey Club continues to regulate horse racing but the British horse racing board became the governing authority for horse racing in Great Britain during 1933 and similarly Indian Turf Authority came into existence during 1963 to regulate horse racing in India.

After independence, gambling was sought to be banned in 1949 leading to grave situation. However better counsel prevailed and the role of Pandit Jawaharlal Nehru, in accepting the recommendations of National Horse Breeding Society of India was noteworthy.

The R.W.I.T.C was responsible for Bombay, Pune and Delhi, R.C.T.C for Calcutta and the South Indian Turf Club for Madras and Ooty, B.T.C. for Bangalore and Mysore and H.R.C. for Hyderabad. In the late 1970 the five clubs namely R.C.T.C., R.W.I.T.C., M.R.C., B.T.C. and H.R.C., formed a federation called as Turf Authority of India. These exist as a joint consultative forum while retaining independent jurisdiction of its constituents. This led to regional classics in each center and in 1963 Indian Turf Invitation Cup (2400 Mtrs) was instituted to bring together the top representatives of the Classic crop and being run at each center on rotation. In 1980 the Sprinters Cup (1200 Mtrs) and in 1981 Stayers Cup (3000 Mtrs) was introduced. Racing in India received a grave set back in 1986 when Tamilnadu Government abolished racing and the issue went to Supreme Court and in 1990 Apex court struck down the order and observed that horse racing is a game of skill. The five clubs namely RCTC, RWITC, MRC, BTC and HRC were established during 1809, 1883, 1777, 1920 and 1968 respectively.

In India racing is held on the Turf, racing confined to flat and race tracks are right handed. Horse racing in India has grown tremendously and has today recognized as an industry when you take into account the vast number of people employed either directly or indirectly. The breeding establishments and stud farms in India can now compare with similar set ups any where in the world and Indian thoroughbred is being exported abroad to compete globally with success. Horses like own opinion, Astonish, Adler, Mystical, Polar Falcon and many other have participated in racing Countries like Hong Kong, Singapore, Malaysia, Dubai, Japan, USA etc.,

The race clubs have club members who in turn elect Stewards Committee Members and also the respective Government nominees who in turn elect one person as Chairman and Senior Steward. This body of Chairmen, Stewards and Committee members are responsible to appoint Secretary/Administrator, staff and racing officials like Stipendiary Stewards, Handicapper, Veterinary Officer, Starter, Track consultant, judges and host of other staff connected with racing.

Horse racing is a highly complicated and skill game involving participation of Club, Officials, Owners, Trainers, Jockeys, Bookies, Public and the Government completing the circle of racing.

To conclude, racing is being carried out purely by the Clubs without any financial involvement by the Government except for granting licence, but the Clubs in turn pay crores of rupees per year to the respective state Governments by way of betting Tax.



Theme Paper

Newer concepts on the diagnosis and management of surgical disorders of Equine foot

Ramanathan

Equus stud farm, Pune

Foot of the domestic Equids is an extraordinary organ that has gone through great many evolutionary adaptations. Horses are solipedes and unguligrades. As the hoof evolved itself the changes that it has undergone has a direct impact on its present day athletic usage. The Horse's foot is the dominant organ of origin of lameness involving a plethora of condition that are of clinical value. The form and function of the foot has been dealt in detail for the effective appreciation of the conditions. The latest development in the understanding of the hoof anatomy has been covered. This paper has covered the various nerve block techniques and the anatomical differences between fore and hind limb neural distribution. The surgical anatomy and the radiographic anatomy in respect to the modern day digital radiography has been covered. The Ultrasound anatomy of the soft tissue to the hoof has been dealt with. The therapeutic shoeing options involving various newer technologies are also covered. This lead paper deals with the most common surgical conditions of the feet of the horse. More importantly the modern trends in its diagnostics have been dealt with.

For the ease of understanding and presentation the following division have been made.

1. Hoof injuries and hoof wall repair
2. Surgical affections of the Os pedis
3. Foot punctures, abscesses and soft tissues injuries

1) Hoof wall injuries: Physical injuries and hoof wall defects. Hoof repair with the latest acrylic techniques have been covered. Bio mechanics of the hoof wall in relationship to its repair and healing are covered. The various therapeutic and glue on shoe options have been explained. Conditions that are common and are covered are the following : White line disease, hoof wall distortions, injuries and keratoma.

2) Surgical affections of the Os pedis have been covered. Examples are the fracture of Os pedis, pedal osteitis and laminitis foot management. A therapeutic shoe option for the various conditions for Os Pedis has been covered.

3) Foot abscess the most common reason for acute lameness has been covered in depth. The external injury to the weight bearing surface is also dealt with in this heading. Other conditions that will be covered are the following, Quittar, Thrush and the canker.

All the conditions have been presented in the following format:

- Application of clinical anatomy in defining the condition
- Clinical signs
- Diagnostic techniques
- Corrective procedures
- Therapeutic shoes and its applications
- Case management and prognosis.

Post lecture; interested participants can attend a dry lab involving real horse foot and bones if time permits.

Key words: Equine / Foot / Laminitis / Canker / Thrush / Abscess / Fracture



THEME SESSION

Date : 08.12.2010 Time : 2.00 pm

Venue : Conference Hall

Chairman : Dr. R.N. Kholi

Rapporteur : Dr. Narinder Singh Saini

ANAESTHESIOLOGY SESSION

Date : 08.12.2010 Time : 3.00 pm

Venue : Conference Hall

Chairman : Dr. Amresh Kumar

Rapporteur : Dr. Amarpal

LEAD PAPER

Recent advances in regional anesthetic techniques for veterinary practice

D B Patil, P V Parikh, D K Tiwari and Mehraj Udin Dar

College of Veterinary Science and AN H, AAU, Anand

Many surgical procedures can be performed safely and humanely in ruminants using a combination of physical restraint, mild sedation and regional anesthesia. With the advent of general anesthesia, local anesthetic techniques in dogs and cats are not employed regularly. Recently local anesthesia techniques are again being popularized this time in combination with general anesthesia. Recent research concerning pain, analgesia and pre-emptive analgesia documented long term changes within peripheral and central nervous system following noxious inputs which contribute to post injury pain hypersensitivity state post operatively. These changes have been termed 'peripheral sensitization' and 'central sensitization'. In patients, this manifests as an increase in the response to noxious stimuli and a decrease in the pain threshold, both at the site of injury and in the surrounding uninjured tissues. Recent evidence suggests that preoperative regional administration of local anesthetics can preempt post operative pain by preventing the establishment of central sensitization. Local and regional anesthetic techniques are often used in combination with opioids, alpha-2 receptor agonists, dissociatives, and anti-inflammatory drugs as part of multimodal strategy to manage pain.

Successful regional anesthesia requires a thorough knowledge of the anatomy of the nerve(s) in question, including the structure they innervate, their location and relationship to other structures, such as arteries, veins and facial layers. Use of dedicated material decreases the side effects and complications during regional anesthesia. Regional techniques can also lead to early mobilization, early oral intake and early discharge from practice.

In this, an overview of drugs used for regional anesthesia and anesthetic techniques were discussed. The techniques are easy to perform and require simple material and drugs available in veterinary practice. Peripheral nerve blocks like brachial plexus block are increasingly used in veterinary practice. Of late ultrasound guided technique in combination with electro stimulation are becoming increasingly popular for peripheral nerve localization.



ANS-1/

An Alternative Approach to Determine The Inspired Concentration of Inhalant Anesthetic using Time Constant

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In inhalational anesthesia the concentration of inhalant anesthetic delivered from the anesthetic machine does not equilibrate the vaporizer setting at the start and it may take several minutes to achieve equilibrium. The time taken for achieving this equilibrium depends on the time constant of the machine and the fresh gas flow employed. Monitors measuring end tidal inhalant anesthetic concentration gives the precise alveolar concentration of the inhalant anesthetic. The draw back with this is the cost of instrumentation. Alternatively, the concentration of inhalant anesthetic delivered from the anesthetic machine can be calculated by the following formula,

$$\text{Concentration of Inhalant Inspired} = \text{Vaporizer setting} \times (1 - e^{-t/k})$$

Where,

t = Time in minutes from the start

k = Time constant of the anesthetic machine in minutes.



The time constant calculation of the large animal anesthetic machine with ventilator (Model 2800C of Mallard Medical Inc., USA) using the ascending bellows of the ventilator will be discussed.

ANS-2

Clinicophysiological changes following epidural analgesia by Bupivacaine, Ropivacaine and Ropivacaine - Xylazine combination in Goats

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Anesthetic effect of Bupivacaine, Ropivacaine and Ropivacaine – Xylazine combination was evaluated by clinicophysiological parameters in 6 goats after their administration in lumbosacral epidural space. Each animal was subjected to three treatments at an interval of 8 days. The epidural catheter was placed at the lumbo-sacral space for the delivery of Bupivacaine, Ropivacaine and Ropivacaine – Xylazine combination. In treatment I bupivacaine was used @ 1.7mg/kg b.wt. In treatment II ropivacaine was used @ 0.6 mg/kg b.wt and in treatment III ropivacaine – xylazine was used @ 0.6 mg/kg – 0.5mg/kg was used. The physiological parameters (pulse rate , respiratory rate and rectal temperature) were recorded at 0,20, 40,60,80,120,180,240,300,360,480 minutes. The "0" hrs values from each animal was recorded immediately before the start of the treatment, as the control value. The onset and duration of analgesia and recovery was determined by the pin prick method. The onset of analgesia was faster in animals in which ropivacaine-xylazine combination was used. Duration of analgesia was again longer in animals in which ropivacaine –xylazine combination was used but recovery was quick in which ropivacaine was used. The physiological parameters did not show any significant change in animals in which ropivacaine was used however there was significant decrease in these parameters in which bupivacaine and ropivacaine – xylazine was used. This shows that ropivacaine can be used in patients having impaired cardiopulmonary functions.

ANS-3

Haematobiochemical changes following epidural analgesia by Bupivacaine, Ropivacaine and Ropivacaine - Xylazine combination in Goats

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Anesthetic effect of bupivacaine, ropivacaine and ropivacaine – xylazine combination was evaluated by clinicophysiological parameters in 6 goats after their administration in lumbosacral epidural space. Each animal was subjected to three treatments at an interval of 8 days. The epidural catheter was placed at the lumbo-sacral space for the delivery of bupivacaine, ropivacaine and ropivacaine – xylazine combination. In treatment I bupivacaine was used @ 1.7mg/kg b.wt. In treatment II ropivacaine was used @ 0.6 mg/kg b.wt and in treatment III ropivacaine – xylazine was used @ 0.6 mg/kg – 0.5mg/kg was used. 5 ml of blood was collected from each animal from jugular vein. About 2ml of blood was poured in a sterile vial containing anticoagulant (EDTA) @ 2mg/ml of blood for hematological studies. Remaining blood was collected in a centrifuge tube and was allowed for clotting. After clotting it was centrifuged @ 2500 rpm for 10 minutes and the serum was collected in sterile vials and kept at -20° C till biochemical estimation. Eight blood samples from each animal for each treatment was collected at 0 hrs., 15 min., 3 hrs., 6hrs., 12 hrs., 24hrs., 36hrs. and 72 hours for haemato-biochemical studies. For hematological studies, hemoglobin (Hb), packed cell volume (PCV), total erythrocyte counts (TEC), total leukocyte count (TLC) and differential leukocyte were calculated by standard methods. Among biochemical parameters, Blood glucose (GOD – POD method), total protein (Biuret method), ALT (IFCC method), ALP (Tris – Carb method), total bilirubin (Jendrassic and Grof method), BUN (Young's method) and Serum Creatinine (GLDH –Urease method) were also estimated at same intervals. The data obtained during study was analyzed by employing completely Randomized Design (CRD) as described by Snedecor and Cochran (1994). The hematological parameters like Hb and PCV showed significant decrease in treatment III, but there was no alteration of Hb and PCV along with other parameters such as TEC and DLC in other treatment groups. Regarding biochemical parameters glucose showed significant increase in all the three treatment groups. ALT and BUN showed significant increase only in treatment I and III. Total protein, creatinine and ALP only showed significant increase in treatment III only while as bilirubin does not showed any kind of alteration in all the three treatment groups. Most importantly, unlike other local anesthetics, Ropivacaine has no clinically relevant effects on renal and hepatic



parameters. So, it is useful in patients including elderly and obese patients with impaired renal and hepatic function.

ANS-4

Diazepam-ketamine anesthesia for caesarian section in sow

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The study was conducted on 10 sows of different breeds undergoing caesarian section. All the animals received diazepam @2mg per kg body weight followed by ketamine @ 5mg/kg body weight, intravenously. Local infiltration was done with 2% lignocaine HCl in the incision site. After removal of the piglets, additional ketamine @ 5mg/kg body weight was administered intravenously. Heart rate, respiratory rate and rectal temperature were recorded at 0 (pre-induction), 5, 15, 30, 60 and 90 minutes post induction. The heart rate increased non-significantly up to 30 minutes and the respiratory rate decreased significantly at 5 minutes. There was non-significant fall in rectal temperature throughout the period of observation. Analgesia and muscle relaxation were sufficient for the procedure. Live piglet recovered was 92.86 percent at the time of operation and survival rate of the piglets was 82.14 percent after 24 hour. Diazepam-ketamine anesthesia may be used for caesarian section in sow with high live piglet delivery rate.

ANS-5

Diazepam and fentanyl as premedicant to propofol anesthesia in pig

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Twelve female pigs of different breeds undergoing Oophorectomy were divided into two groups (A and B) consisting six animals in each group. Group A received diazepam @ 1mg/kg body weight and Group B received diazepam 1mg/kg body weight and fentanyl 5µg/kg body weight intravenously as premedicant. Induction and maintenance was done with propofol. Induction dose of propofol reduced non-significantly in group B. The duration of anesthesia and recovery time were significantly increased in group B. Muscle relaxation was good in both the groups where as analgesia was better in group B. Heart rate increased significantly at 5 minutes in both the group but there was significant decrease in respiration rate and SpO₂ level at 5 minute in group B. Diazepam alone and with fentanyl can be used as premedication to propofol anesthesia. Addition of fentanyl reduces induction of propofol but leads to more respiratory depression.

ANS-6

Comparison of thiopental and propofol as induction agents for halothane maintenance anesthesia in butorphanol-medetomidine premedicated buffaloes

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The study was conducted to compare the sedative, analgesic, haemato-biochemical and hemodynamic effects of thiopental and propofol as induction agents in buffaloes premedicated with butorphanol or/and medetomidine during halothane maintenance anesthesia. Four male buffalo calves of 1-2.5 yr of age and weighing 200-300 kg were used. Each animal received four different treatments, randomly at an interval of 10 days; and based on the treatment, the animals were grouped as A1, A2, A3 and A4. Group A1 and B1 received butorphanol (0.05 mg/kg IV) alone, and group A2 and B2 received butorphanol (0.05 mg/kg IV) and medetomidine (2.5 µg/kg, IV) as preanaesthetics. In groups A1 and A2, 5% thiopental sodium and in groups B1 and B2, 1% propofol were given to effect to induce anesthesia. In all the animals, anesthesia was maintained using halothane in 100% oxygen. Different clinical, biochemical and hemodynamic parameters were measured for at least up to 60 min. The results showed that preanesthetic administration of a combination of butorphanol and medetomidine produced better sedation, analgesia and muscle relaxation in animals anaesthetized either with thiopental or propofol, though it produced slightly more cardiopulmonary side effects than that produced by butorphanol alone. Addition of medetomidine with butorphanol significantly reduced the dose of thiopental or propofol required for anesthetic induction. Per cent halothane concentration required for maintenance of anesthesia also



reduced significantly with the use of medetomidine, however, no difference was seen between the animals induced with thiopental and propofol. Propofol, which is costlier than thiopental, has almost similar analgesic, sedative and cardiopulmonary effects as thiopental, and does not appear to have any advantage over thiopental for induction of general anesthesia in buffaloes.

ANS-7

Evaluation of dexmedetomidine and its combinations with midazolam, fentanyl and ketamine for sedation, analgesia and total intramuscular anaesthesia in dogs

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The study was conducted to evaluate dexmedetomidine and its combinations with midazolam-fentanyl or midazolam-fentanyl-ketamine for sedation, analgesia and total intramuscular anaesthesia in dogs. Twelve dogs, with mean weight of 17.44 ± 0.84 kg and mean age of 24.44 ± 1.53 months were divided into three groups received dexmedetomidine 20 $\mu\text{g}/\text{kg}$ (group I), 20 $\mu\text{g}/\text{kg}$ dexmedetomidine + 0.2 mg/kg midazolam + 4 $\mu\text{g}/\text{kg}$ fentanyl (group II) or 20 $\mu\text{g}/\text{kg}$ dexmedetomidine + 0.2 mg/kg midazolam + 4 $\mu\text{g}/\text{kg}$ fentanyl + 10 mg/kg ketamine (group III) by intramuscular route. Various reflexes, heart rate (HR), respiratory rate (RR), rectal temperature (RT), mean arterial pressure (MAP), SpO_2 , weak time, down time, time to return of righting reflex, standing recovery time and complete recovery time were recorded. Moderate muscle relaxation and mild to moderate sedation and analgesia were recorded in group I, which increased further in group II. Excellent muscle relaxation and general anesthesia were observed in group III. Weak time and down time were significantly ($p < 0.05$) decreased in group III as compared to groups I. HR decreased significantly ($p < 0.05$) in groups I and II, but a significant increase was followed by a decrease in group III. RR decreased significantly ($p < 0.05$) in all the groups. RT and SpO_2 did not change significantly. MAP increased significantly ($p < 0.01$) and then decreased gradually in groups I and III, but decreased throughout the study period in group II. Recovery time did not differ significantly between the groups. It was concluded that dexmedetomidine provides a reliable moderate sedation and analgesia, which can be enhanced by addition of midazolam-fentanyl. Combination of ketamine-dexmedetomidine-midazolam-fentanyl produced complete anesthesia with lesser cardiopulmonary depression. Dexmedetomidine-midazolam-fentanyl-ketamine combination may be used to produce safe total intramuscular anesthesia for short surgical procedures in dogs.

ANS-8

Isoflurane and Sevoflurane anesthesia in management of surgical disorders of genital organs in dogs

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The study was conducted on 24 female dogs with the objective to develop a safe anesthetic protocol inhalation anesthetic (isoflurane and sevoflurane). The animals were divided in to two groups Viz. A and B. Clinical cases under groups-A had problems of dystocia and underwent caesarean section. The female dogs under groups-B had problems of pyometra-complex or they had huge tumors related to their genital organs. All the dogs were premedicated with atropine at the rate of 0.04mg/kg and diazepam at the rate of 2mg/kg and anesthesia was induced through mask to facilitate intubation and maintained with equipotent concentration (2.5 per cent) of isoflurane and sevoflurane. Pregnancy, physometra, emphysematous/macerated fetus, large utero-vaginal fibroid and large mass of leiomyoma in uterus and recto-vaginal space and cystic endometrial hyperplasia were evident on radiological and ultrasonographic diagnosis. Clinical parameters had no adverse effect during induction and maintenance anesthesia either with isoflurane or sevoflurane in patients under this study. The extent of muscle relaxation was similar in patients. Corneal, palpebral and pedal reflexes were completely depressed during the surgical anesthesia. The time for induction of anesthesia to facilitate intubation with isoflurane and sevoflurane were 4.5 and 5.0 minutes, respectively. The complete recovery was observed within five to eight minutes in all patients under this study after the termination of anesthesia. The patients with cystic endometrial hyperplasia- pyometra complex had higher values of the serum urea nitrogen and serum creatinine level and a low hemoglobin concentration. Out of twelve dystocic cases, all dams and their live fetuses in womb presented during admission survived after caesarean section. One patient



that had a far-reaching uterine tumor recovered from uneventful anesthesia but died during convalescence (30 hrs). It is concluded that both isoflurane and sevoflurane produced almost similar in response in anesthetic management of these patients. However, sevoflurane anesthesia, as compared with isoflurane, is associated with possible advantageous effects on clinical parameters. Sevoflurane appears to be a unique volatile anesthetic agent suitable for management of surgical disorders of genital organs in dogs.

ANS-9 **Medetomidine Anesthesia in Rabbit (*Oryctolagus Cuniculus*) and its Reversal with Atipamezole**

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The anesthetic efficacy, cardiopulmonary effects, effect on biliary system of Medetomidine and the reversal efficacy of Atipamezole was studied by experimenting on twelve New Zealand white rabbits (*Oryctolagus cuniculus*). Adult animals of over 6 months of age and of 1.5 to 2 kg weight were selected randomly irrespective of sex and divided into two groups comprising of six animals in each group. In the first group of animals (Group - I) Medetomidine was administered @ 0.35 mg/ kg intramuscularly whereas in the second group Medetomidine was administered @ 0.35 mg/ kg intramuscularly followed at 40th minute by administration of Atipamezole @ 0.15 mg/ kg intravenously as reversal agent. Data on reflex (Palpebral, Corneal, Ear pinch, Toe pinch), rectal temperature and respiratory rate were recorded on 0, 10, 20, 30, 40, 50, 60, 70, 80 and 90 minutes. Data on SPO₂, MAP, Heart Rate, Pulse rate, Alkaline phosphatase activity, Glucose level, Blood picture (TLC, TEC, PCV, ESR, Hb) were recorded on 0, 30, 60 and 90 minutes for Medetomidine. The animals were anaesthetized within 10 minutes of administration and maximum depth of anesthesia was observed during 25-40 minutes. The animals showed signs of bradycardia, with low mean arterial pressure during the period of anesthesia. However, not much deviation was seen in the SPO₂ levels from that of normal. There was an increase in the blood glucose level during the depth of anesthesia as well as during the recovery phase but the values remained within the normal range. The alkaline phosphatase activity remained within normal range throughout the experimental period showing no adverse effect on the biliary system. The recovery period from anesthesia was between 90 to 110 minutes. In the second group (Group II) where Atipamezole was administered, the parameters were recorded until recovery as the experimental animals receiving the reversal recovered from anesthesia within an average of 12 seconds post administration of the reversal. It could be concluded from the experimentation that Medetomidine proved to be a good anesthetic agent producing ideal depth within 25-40 minutes and having no significant adverse effects on the cardio-respiratory (except bradycardia) and biliary system and its effect can be very suitably be reversed by use of Atipamezole for quick recovery.

ANS-10 **Effects of BAG-Propofol-isoflurane anesthesia on clinicophysiological, hematobiochemical, blood gas and electrolyte parameters of healthy and orthopaedic dog patients**

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BAG-Propofol – isoflurane combination general anesthesia was evaluated for its efficacy and safety in orthopedic (group A, n=6) and soft tissue surgeries (group B, n=6) of dogs. The combination was evaluated in terms of clinicophysiological, hematobiochemical, and blood gas and electrolyte parameters. There was mild sedation, significant depression of palpebral reflexes and jaw tone with significant eye ball rotation in both the groups. The heart rate showed a significant increases and respiration rate showed significant decrease in both the groups; however, rectal temperature did not show any significant changes. Hemoglobin and PCV decreased non significantly whereas decrease in Total leukocyte count was significant in both the groups. A significant increase in neutrophil count and glucose was observed in both the groups. Changes observed for BUN, creatinine and total protein were insignificant in both the groups. The blood electrolytes (Na⁺, Ca⁺, K⁺ and Cl⁻) and blood gases (PCO₂, PO₂ and SO₂) did not show any significant changes in both groups. The effects produced by the combination on different systems were transient and values returned to normal as the effect of the drugs wore off. The results



suggest that combination when used for orthopedic and soft tissue surgeries in dogs produced effective and safe general anesthesia.

ANS-11 Studies on Acepromazine-ketamine, Xylazine-ketamine induced clinicophysiological changes in dogs

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A total of 15 mongrel dogs of either sex weighing between 15 to 20 kg b.wt. Were subjected to the following 3 treatments after dividing into three groups comprising of 5 animals in each group. Atropine sulphate @0.04 mg/kg b.wt. I/M were injected 10mts prior to the start of treatment in all the animals of each group. In group I, ketamine alone was given @ 5mg/kg b.wt. intravenously. In group II, xylazine was given @ 1 mg/kg b.wt I/M which was followed 15 mts later by ketamine @ 5 mg/kg b.wt. I/V. The animals of group III received acepromazine @ 0.2mg/kg b.wt I/M plus ketamine @5mg/kg b.wt. intravenously. The induction of anesthesia was very smooth in group II and III animals. The duration of anesthesia was significantly ($P<0.01$) longer in group II ($42.50\pm 3.13\text{min}$) in comparison to group I ($12.00\pm 1.55\text{min}$) and group III ($24.45\pm 1.92\text{min}$). The heart rate showed a significant ($P<0.05$) increase in all the group of animals. A significant decrease ($P<0.05$) in respiration rate was observed in group II and III. Whereas a significant ($P<0.05$) increase in respiration rate was observed in group I where ketamine was used alone. Rectal temperature showed a significant ($P<0.05$) decrease in group II and III whereas it was no significantly increased in group I. However, these transient changes were compensated within 6 hrs. Thus, it can be concluded that ketamine in combination with acepromazine, or Xylazine can safely be used for inducing general anesthesia in canines.

ANS 12 Clinico-physiological effects of Detomidine and Buprenorphine as premedicants to propofol anesthesia in dogs

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The present study was undertaken in 15 mongrel dogs weighing between 15 to 20kg which was equally divided into 3 groups to evaluate the efficacy of propofol alone and in combination with detomidine or buprenorphine. In all the groups, Atropine sulphate @0.04 mg/kg b.wt. were administered I/M 15 minutes before administration of tranquilizers. In group I, Atropine sulphate was followed by injection of Propofol @ 5mg/kg b.wt. I/V. In group II, in addition to atropine sulphate, detomidine @ 40 μg /kg b.wt was given I/M which was followed 15mins later by Propofol @ 5mg/kg b.wt I/V. The animal of group III, received atropine sulphate, buprenorphine @ 0.01mg/kg b.wt. I/M followed by propofol @ 5mg/kg b.wt. intravenously. The onset of sedation was quicker in group II followed by group III and group I. The duration of anesthesia in group II was significantly ($P<0.01$) longer ($29.60\pm 4.13\text{min}$) than in group I ($9.60\pm 0.75\text{min}$) and group III ($13.45\pm 7.32\text{min}$). The complete recovery was significantly longer in group II ($74.60\pm 8.09\text{min}$). as compare to group I ($27.30\pm 2.14\text{min}$). and group III ($39.60\pm 2.17\text{min}$). The degree of analgesia and extent of muscle relaxation was excellent in group II and poor in group I. There was a significant ($P<0.05$). decrease in heart rate, rectal temperature and respiration rate between 20 to 40 min post anesthesia in all the three groups. However, the values were compensated and returned towards preadministration level by 24 hrs. Thus, it was concluded that detomidine, or buprenorphine can be safely used as premedicants to propofol anesthesia in dogs. -

ANS-13 Diazepam-propofol-isoflurane Anesthesia in Acepromazine-tramadol Premedicated Dogs Undergoing Surgery for Coexistent Cataract and Ocular Hypertension

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The study was conducted in 12 dogs selected for surgical management of co-existent cataract and ocular hypertension. All the dogs were premedicated with atropine sulphate, followed 10 minutes later



by intramuscular injections of acepromazine and tramadol. Twenty minutes after premedication, induction of general anesthesia was done by intravenous injection of diazepam, immediately followed by intravenous injection of 1% propofol "to effect". The animals were maintained with 1.5% isoflurane in 100% oxygen, and ventilated using an anesthetic delivery system-cum-ventilator. The efficacy of the anesthetic regime was evaluated by observing the quality of induction and recovery, the relaxation of the eye-ball muscles and the variation in the intraocular pressure of the dogs under study. The ECG was also observed for any arrhythmias or tachycardia occurring due to intracameral adrenaline, when the animal is under this regime. The anesthetic regime was found effective for the intraocular surgical procedures as judged by way of good induction, good relaxation of eyeball muscles, significant reduction in the IOP and a smooth recovery.

ANS-14 Diazepam-Ketamine and Midazolam-Ketamine anesthesia in Pigs.

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A comparative evaluation between diazepam-ketamine (DK) and midazolam-ketamine (MK) anesthesia were studied in 12 pigs presented for hernia and spaying were divided into 2 groups, comprising six animals in each group for assessment of the clinical, physiological, hematological and biochemical parameters. The pigs in DK group received diazepam @ 2mg/kg and ketamine @ 15mg/kg and the MK group received midazolam @ 0.5mg/kg and ketamine @ 15mg/kg intravenously respectively. The physiological, hematological and biochemical parameters were monitored at 0, 5, 15, 30, 45 and 60 minutes of anesthesia. Results revealed significant ($P < 0.05$) different between the groups for down time, duration of analgesia, recovery time, sternal recumbency time and standing time. Muscle relaxation and analgesia were adequate, eyelid remains closed and no salivations were recorded in both the groups. Insignificant decrease of respiratory rate and rectal temperature were observed in both the groups and the heart rate increased insignificantly up to 30 minutes and then decreased significantly ($P < 0.05$) in DK group, but significant ($P < 0.05$) decrease was observed in MK group. Non significant decrease of hemoglobin, PCV, DLC, TEC and significant ($P < 0.05$) decrease of TLC were recorded in both the groups. Blood glucose, sodium, alkaline phosphatase, aspartate amino transferase and serum glutamate pyruvate transaminase showed non significant variations and significant ($P < 0.05$) decrease of potassium was recorded in both the groups. On comparative basis diazepam-ketamine produced superior quality of anesthesia than midazolam-ketamine in pigs.

ANS-15 Clinico- Haematological Studies on Dose Dependant Midazolam- Ketamine Anaesthesia In Dogs

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The onset of analgesia, duration of anesthesia and recovery time was determined in 6 healthy dogs of either sex in respect of dose dependency. In addition changes in rectal temperature, pulse, respiration rate were determined before and during induction and after recovery of anesthesia. The hematological parameters viz; TEC, TLC, Hb, PCV, and DLC were also estimated. The atropine sulphate (.05mg/kg) I/M, ten minutes prior to midazolam and ketamine hydrochloride (20mg/kg) were given. midazolam was administered as in treatment Group-I @ 0.2 mg/kg I/V, in treatment Group-II @ 0.3 mg/kg I/V and in treatment Group-III @ 0.4 mg/kg I/V. The onset of anesthesia (OAN) were 54.66 ± 4.31 , 34.16 ± 4.37 and 26.66 ± 1.31 in treatment I, II, III where as the duration of anesthesia (DAN) were 34.58 ± 1.79 , 44.24 ± 3.76 and 47.99 ± 2.99 and recovery time were 146.83 ± 5.32 , 158.16 ± 7.25 and 189.33 ± 5.27 respectively. The rectal temperature deferred significantly between all three treatments however it was non significant at various intervals of observation. Increase in pulse and respiration were highly significant at intervals but of transient nature. The changes in hematological parameters were non significant and transient, however, a highly significant increase was observed in neutrophil count at 12 to 24 hours and decrease in lymphocyte count from 3 to 96 hours in all the treatment.



ANS 16 A Comparison of Epidural Anaesthesia with Lignocaine and Bupivacaine in Dogs

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Two percent lignocaine (LIG) at dose rate of 0.2ml/kg was compared to 0.5% bupivacaine (BUP) at dose rate of 0.2ml/kg for lumbosacral epidural anesthesia in twelve dogs. Associated changes in heart rate (HR), mean arterial pressure (MAP), respiratory frequency (RF) and rectal temperature were also measured. Time to recumbency with LIG (1.8+0.4 min) was shorter than with BUP (3.0+0.5 min). The onset of analgesia was shorter with LIG (5.0+0.2 min) than with BUP (6.0+0.5 min). Duration of analgesia was shorter with LIG (88.0+10.2 min) than with BUP (106.0+20.5 min). Time to standing with BUP (187+2.5 min) was longer than with LIG (48.6+5.0 min). There was no significant alteration in HR, MAP, RF and rectal temperature. The result indicated that the lignocaine is the best choice for use in dogs undergoing routine surgical procedure.

ANS-17 Trimming of Overgrown Claws in a Captive Tiger (*Panthera tigris*) Under Xylazine-ketamine Anaesthesia

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A captive tiger in Pilikula Zoological Garden, Mangalore, was reported to have overgrown claws in both forepaws. After anaesthetizing the cat with xylazine at the rate of 1 mg/kg b.wt. and ketamine at the rate of 10 mg/kg b.wt. intramuscularly using a blowpipe, the paws were examined and it was observed that the overgrown claws had grown inwards and cut into the toe pads. All ingrown claws were trimmed with bone cutting forceps and the wounds on the toe pads dressed with povidone iodine ointment after cleaning with tincture iodine. Yohimbine was administered at the rate of 0.1 mg/kg b.wt. intravenously to revive the animal. The animal had an uneventful recovery.

ANS-18 A Comparative Study on Isoflurane and Sevoflurane Anaesthesia in Dogs

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A comparative evaluation of isoflurane and sevoflurane inhalant anesthesia for ovariohysterectomy in female dogs was studied. During the present study the following parameters were assessed: (i) Rectal temperature, Respiratory rate, Pulse rate and Heart rate (ii) Hematological and Biochemical parameters viz., Total Erythrocyte Count (TEC), Hemoglobin concentration (Hb), Packed Cell Volume (PCV), Total Leukocyte Count (TLC), Differential Leukocyte Count (DLC), Blood pH, Alanine aminotransferase (ALT), Plasma proteins, Blood glucose and Serum creatinine and quantitative parameters such as average time for return of swallowing reflex, pedal reflex, head righting reflex, time taken for voluntary leg movement, time taken for sternal recumbency and time taken for animal to ambulate after cessation of anesthesia during recovery period and also qualitative parameters including: start position, position change, end position, head position, ear position, eye position, tail position, vocal and others (arched back, stretching, rigid back, lip licking, leg up position) were assessed based on video recordings obtained during the recovery phase of anesthesia. (iii) Blood gas analysis and electrocardiographic studies were also done. Results revealed, in both the groups, there were non-significant minor changes in clinical, hematological and biochemical parameters. In conclusion, though induction and recovery characteristics of sevoflurane anesthesia is faster than isoflurane, both isoflurane and sevoflurane are advantageous inhalant anesthetics in terms of ease of administration, maintenance and recovery with minimal adverse effects on body parameters of young female dogs subjected for ovariohysterectomy.

ANS-19 Effect of the Isoflurane and Sevoflurane in Propofol induced Anesthesia in dogs

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Sixteen mongrel dogs used in this study were divided into two groups viz. A and B. The animals of group A were subjected to the intramuscular administration of atropine sulphate @ 0.045mg/kg body



weight followed by the intravenous administration of propofol @ 5.20 ± 0.80 mg/kg body weight and isoflurane at the concentration of $4.5 \pm 0.5\%$ initially for 2-3 minutes and later on at the concentration of 2-3%. The animals of group B were subjected to the intramuscular administration of atropine sulphate @ 0.045 mg/kg body weight followed by the intravenous administration of propofol @ 5.20 ± 0.80 mg/kg body weight and sevoflurane at the concentration of $5 \pm 1\%$ initially for 2-3 minutes and later on at the concentration of 1-2%. The efficacy of anesthetic combination was evaluated by determining the clinical parameters (onset and duration of anesthesia, recovery time, and various other reflexes), physiological parameters (heart rate, respiration rate, rectal temperature and ECG) and the hematobiochemical parameters (Hb, PCV, TEC, TLC, DLC, BUN, creatinine, glucose and ALT). On the basis of above mentioned parameters it was revealed that combination of propofol and sevoflurane is better than the combination of propofol and isoflurane as it has comparatively less deleterious effects on different body systems.

ANS-20

Studies on Effect of Thiopental Sodium in Normal and Induced Anemic Goats

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The study was conducted on 18 normal and induced anemic goats of either sex, to compare clinicophysiological and cardiopulmonary parameters of thiopental anesthesia. All the animals were subjected to IM administration of atropine @ 0.5 mg/kg body weight. The animals were equally divided into 3 groups viz. A, B and C. The animals of group A were kept as control without the induction of anemia and subjected to the intravenous administration of thiopental sodium till the effect. The animals of groups B and C were subjected to induced anemia by withdrawing 5% and 10% of total blood respectively, followed by intravenous administration of thiopental sodium till the effect. On the basis of clinicophysiological and cardiopulmonary observations made in this study, it was revealed that there was a significant decrease in dose rate of thiopental sodium, which was directly proportional to the extent of anemia. The effective dose of thiopental sodium was 15.20 ± 2.1 , 10.40 ± 1.7 and 8.20 ± 1.2 mg/kg body weight in the animals of group A, B and C respectively. The duration of anesthesia was significantly greater in the animals of group C (57 ± 7 min.) as compare to the animals of group B (43 ± 5 min.) and group A (25 ± 5 min.). The recovery time was significantly higher in the animals of group C (194 ± 3 min.) as compare to the animals of group B (123 ± 6 min.) and group A (55 ± 4 min.).

ANS-21

Clinical, Haemodynamic and Anaesthetic Evaluation of Ketamine Alone and In Combination of Buprenorphine After Epidural Analgesia in Dogs

A.K.Sharma, R.P.Ram, L.L.Dass

Department of Veterinary Surgery and Radiology, College of Veterinary Sciences and Animal Husbandry, Birsa Agricultural University, Kanke, Ranchi-6

Ten clinically healthy mongrel dogs of either sex of about one year of age were randomly divided into two groups containing five dogs in each group. Epidural analgesia was induced by administration of the ketamine @ 3 mg/kg (group I) and Ketamine @ 3 mg/kg and buprenorphine @ 0.005 mg/kg (group II) into the lumbosacral epidural space. Clinical, hemodynamic changes and anesthetic indices were evaluated before and at the time intervals of 5, 15, 30, 60 and 120 minutes after administration. Rectal temperature and respiration rate showed a significant increase in ketamine group whereas, these parameters showed an insignificant decrease in the animals administered with buprenorphine in combination with ketamine. HR, SAP DAP and MAP showed a significant increase ($P < 0.05$) in the initial intervals and returned toward normalcy at 120 min in both groups. Duration of analgesia and time of recovery were longer in buprenorphine group as compared to ketamine.

ANS-22

Clinico - Anaesthetic Evaluation of Propofol Following Premedication with Buprinorphine and Meperidine in Atropinized Dog

A. K. Amanda, A.K.Shama, L.L.Dass, Shivendra Kumar

Department of Surgery and Radiology, College of Veterinary Sciences and Animal Husbandry, Birsa Agricultural University, Kanke, Ranchi-834006

Fifteen clinically healthy mongrel dogs of either sex of about one year of age were randomly divided into three groups containing five dogs in each group. Group I animals received propofol alone "to effect"



whereas buprinorphine@0.015 mg/kgbw intramuscular 45 min prior to propofol "to effect" and meperidine @2mg/kgbw intramuscular 15 min prior to propofol "to effect" was given in group II and III. Atropine sulphate was given @0.04 mg/kgbw 20 min prior to each treatment. RT, HR, RR, SAP, DAP, MAP and anesthetic indices were recorded before and at 5, 10, 20, 30 and 60 min following induction. RT, RR, HR, SAP, DAP and MAP showed significant decrease ($P < 0.05$) at initial intervals in the animals of group II and III as compared to group I. Duration of recumbency, time of standing, time of recovery as well as duration of analgesia were longer in buprinorphine followed by meperidine as compared to propofol alone. Meperidine treated dogs showed defecation and muscle twitching during anesthesia.

ANS-23 **Problems Encountered During Translocation of an Elephant and their Successful Management**

Indramani Nath, Subharaj Samantara

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An aggressive 24yr old male, captive tusker named "Nandan" of the Nandankanan Zoological Park with a history of killing its mahout was planned to be used as "Kunki" elephant and so decided to shift from the zoo to the Chandaka Elephant Sanctuary for training. Previous attempts of sedating the elephant by the zoo veterinarian with 300mg of xylazine hydrochloride and 500mg of ketamine hydrochloride had been failed. Thus, shifting the elephant under standing sedation, lifting it with a crane using thick jute ropes, thick iron chains, and conveyor belt and loading it in an iron bodied truck with special arrangement of hooks under the guidance of experienced mahouts from Assam were planned. The problems encountered in anaesthetizing, lifting and translocation of such type of aggressive elephant and their successful management is the matter of discussion of this presentation imparting special importance to anaesthetic risks.

ANS-24 **Application of Boyle's Law to Derive Fudge Factor and to Estimate Oxygen Content of Different Oxygen Cylinders in Veterinary Practice**

S.Senthil Kumar, V.Meenalotchani, S.Kathirvel, S.Dharmaceelan, K.Jayakumar, L.Nagarajan and N.Rajendran

Department of Veterinary Surgery and Radiology, Veterinary College and Research Institute, Namakkal – 637 002.

Estimate of oxygen availability is required before any anaesthetic protocol to ensure adequacy for continuous oxygen administration to patients during anaesthesia. The estimate is mandatory for mechanical ventilation with the use of oxygen driven ventilators. The quantity of oxygen in the routinely used standard E and G type cylinders are estimated using the cylinder pressure and the available fudge factors for the cylinders. The increasing use of different sized oxygen cylinders in veterinary anaesthesia warrants the derivation of cylinder specific fudge factor and it is derived using Boyle's law as mentioned below, Fudge factor = Volume of the cylinder in litre / 14.69. The quantity of oxygen in litre in an oxygen cylinder is estimated by, Cylinder pressure in psi X Fudge factor.

ANS-25 **Caesarian Section by Epidural and Local Infiltration Anaesthesia - A Report of 15 Cases**

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Lyka Pet Clinic and Surgical Centre, Dindigul - 624001 (TN)

Fifteen bitches of different breeds including Bull Dog, Pug, Labrador retriever, Rottweiler, Boxer, Dachshund, Doberman Pincher, Miniature Spitz and Non-Descript were presented with the indication for caesarian section. Caesarian section was performed on these animals on right flank by lumbosacral analgesia and local infiltration with 0.25% Bupivacaine. Of these animals, one bull dog and a pug went for elective caesarian section. All the puppies were alive from the bitches that underwent caesarian section at the earlier stage. Success rate for live puppies was reduced in the bitches that were presented late. All the bitches co-operated well, although there was no relaxation of muscle in the initial stage of operation. Immediately after the operation, all dams were appeared to be relaxed and able to walk. Dressing of the wound was done daily with parental antibiotics for 6 days. Animal was placed under limited activity for 10 days and the recovery was uneventful. Sutures were removed on 12th postoperative day.



ANS-26 Electrocardiographic changes in propofol-sevoflurane anaesthesia with glycopyrrolate and xylazine premedication in dogs

K.S.Raghavan, M.K.Narayanan, T. Sarada Amma, K.Rajankutty and S Ajithkumar
College of Veterinary and Animal Sciences, Mannuthy

The clinical study was conducted in dogs to evaluate the electrocardiographic changes under propofol sevoflurane anaesthesia with glycopyrrolate xylazine premedication. Twelve dogs were of either sex, different age, breed and body weight brought for various surgical procedures were utilized for the study and were divided in to two groups. Six apparently healthy animals presented for surgical procedures were included in Group I and those six animals presented with compromised condition for surgical procedures were included in Group II. Glycopyrrolate at the rate of 0.011 mg/kg body weight, followed by, 15 minutes later, xylazine at the rate of 1 mg/kg body weight were administered intramuscularly for premedication to all the animals of both the groups. Fifteen minutes after premedication, propofol 1% emulsion at the rate of 4 mg per kg body weight was administered by intravenous bolus injection for induction of anaesthesia. Anaesthesia was maintained with sevoflurane in pure oxygen by Bain's circuit system utilising sevoflurane vaporiser. The electrocardiography was performed in Lead II using a multipara monitor. The ECG observations were recorded before and after premedication, during maintenance of anaesthesia, recovery and after 24 hours. ECG changes noticed following premedication in both the groups were tachycardia and first degree heart block. The changes during anaesthesia were reduced R wave amplitude, Reduced T wave amplitude, first degree heart block, S-T segment depression, and peaked T wave. Arterial fibrillation observed in one healthy animal at 24 hours post operatively. The decrease in R wave amplitude in two healthy and two compromised animals might be indicative of decreased cardiac output in the increased anaesthetic depth. But all these changes were not persisted and corrected spontaneously during recovery period. The present study suggests that propofol-sevoflurane anaesthesia with glycopyrrolate xylazine premedication is a safe protocol in healthy and compromised dogs.

ANS-27 Cardio pulmonary changes associated with atropine-xylazine-diazepam-buprenorphine- ketamine anaesthesia for ovariohysterectomy in dogs

S.Senthil Kumar, S.Kathirvel, K.Jayakumar, S.Dharmaceelan, A.Kumaresan, L.Nagarajan and N.Rajendran

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The present study was conducted in six apparently healthy one to four years old female dogs weighing 18.00 ± 1.71 kg that underwent elective ovariohysterectomy at Veterinary College and Research Institute Hospital, Namakkal. All the animals were premedicated with atropine at the dose rate of 0.04 mg/kg B.wt s/c and 10 minutes later xylazine was administered at the dose rate of 1 mg/kg B.wt i/m. Diazepam and Buprenorphine were administered at the dose rate of 0.3 mg and 6 mcg per kg B.wt i/v respectively. Anaesthesia was induced with ketamine at the dose rate of 10 mg/kg B.wt slow i/v. The cardiopulmonary parameters end tidal CO_2 (ET CO_2), saturation of peripheral oxygen (SPO $_2$), mean arterial pressure, heart rate and respiratory rate were recorded at 5 minutes interval during surgical procedure using Welch Allyn vital sign monitor and were 42.33 ± 2.17 mm Hg, 96.66 ± 0.61 %, 106.66 ± 4.77 mmHg, 110.50 ± 2.06 per min and 15.83 ± 1.01 per min respectively. The duration of anaesthesia was 21.83 ± 1.88 minutes. Ovariohysterectomy was performed employing right flank oblique incision technique. It is concluded that the anaesthetic protocol described did not depress the cardiovascular and respiratory system significantly, provided adequate duration of anaesthesia to perform ovariohysterectomy and hence can be employed under field conditions for ovariohysterectomy in dogs.

ANS-28 Transabdominal Diaphragmatic Hernial Repair Under General Anaesthesia in Bovine – A Review of Six Cases

K.Jayakumar, S.Dharmaceelan, S.Kathirvel, S.Senthilkumar, L.Nagarajan and N.Rajendran
Veterinary College and Research Institute, Namakkal, Tamilnadu

Six bovine were reported to the Veterinary College and Research Institute Teaching Hospital, Namakkal with the history of recurrent tympany/Persistent tympany, scanty pasty faeces, loss of appetite,



suspended rumination were taken up for the study. Exploratory laparo-rumentomy was performed in all the animals for conformation of diaphragmatic hernia. After 48 hours of fasting, the animals were premedicated with guaifenesin at the dose rate of 50 mg/kg b.wt as 5% solution in 5% dextrose. The anaesthesia was induced with ketamine hydrochloride at the dose rate of 4 mg/kg b.wt. and maintained with 2% isoflurane. Transabdominal diaphragmatic herniorrhaphy was performed through post xiphoid incision and diaphragmatic rent was closed with continuous ford interlocking suture pattern by using black braided silk size No.3. Post xiphoid celiotomy was closed as per the standard surgical technique. All the animals were recovered uneventfully without any complication. Guaifenesin-Ketamine-Isoflurane protocol was ideal for the transabdominal diaphragmatic herniorrhaphy in bovine.

ANS-29

Cardiopulmonary Changes Associated with Glyceryl Guaiacolate - Ketamine - Isoflurane Anaesthesia in Bovine - A Review of Six Cases

R.Thangadurai S.Senthilkumar S.Dharmaceelan, S.Kathirvel, A.Kumaresan, K.Jayakumar, and N.Rajendran

Veterinary College and Research Institute, Namakkal, Tamilnadu- 637 002

The present study was conducted in six cattle admitted to VCRI Hospital for various surgical interventions. All the animals were premedicated with intravenous glyceryl guaiacolate @ 50 mg/kg body weight and anaesthesia was induced with ketamine @ 4 mg/kg body weight i/v and maintained with isoflurane (2%). Respiratory rate, heart rate, mean arterial pressure, Et CO₂ and SPO₂ were recorded at five minutes interval after induction of anaesthesia using Vital sign monitor and were 15.30 ± 2.17 per minute, 74.38 ± 5.54 per minute, 106.72 ± 8.65 mm Hg, 38.33 ± 3.34 mm Hg and 97.94 ± 05 per cent respectively. The anaesthetic protocol provided adequate plane of surgical anaesthesia and had no detrimental effect on the vital system and can be safely employed to bovine undergoing surgical interventions.



RADIOLOGY AND IMAGING TECHNIQUES SESSION

Date : 08.12.2010 Time : 3.00 pm

Venue : Committee Room

Chairman : Dr. S. Thilagar

Rapporteur : Dr. Vishwesrao

Recent Advances in Veterinary Clinical Radiography and Imaging Techniques

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Since the discovery of X-Rays clinicians recognized the area of specialization with X-Rays / radiation as RADIOLOGY. Advancement in Physics, electronics, and computer sciences, has revolutionized the diagnosis, changed the scenario and replaced RADIOLOGY with IMAGING SCIENCES. As the awareness among the pet owners and farmers is increasing day by day thereby it has become mandatory for veterinarians to follow the latest technology to meet the demands. Extrapolation of techniques, and information from human medicine is essential however this imaging science requires support from subjects like physics, electronics, anatomy, physiology, pathology etc. Globalization, increased concern about farm and pet animal health, affordability of the people inspired the veterinarians to resort to modern diagnostic procedures for effective practice. The following are few important techniques used in human and extrapolated in veterinary practice.

1) RADIOGRAPHY

Radiography is one of the most commonly used diagnostic techniques in veterinary practice. It is a noninvasive procedure and affordable to common people... x-ray beam will penetrate into different types of tissues with different densities such as bone, soft tissue, and fat. Commonly diagnosed conditions include fractures, dislocations, foreign bodies, obstructions, etc. Almost all the institutions are provided with X-Ray machines and considerable work has been carried out in the field radiology by veterinarians on plain and contrast radiographic techniques...

2) FLUOROSCOPY

Fluoroscopy is an imaging technique commonly used by clinicians to obtain real-time moving images of the internal structures of a patient through the use of a fluoroscope. a fluoroscope consists of an X-ray source and fluorescent screen between which a patient is placed. Modern fluoroscopes use X-ray image intensifier and CCD video camera allowing the images to be recorded and viewed on a monitor. Recent advances include the digitization of the images captured and flat-panel detector systems which reduce the radiation dose to the patient still further. Draw backs include technical expertise, potential radiation exposure, and the specialized equipment necessary. Radiation safety is a concern with the use of fluoroscopic imaging. Indications include Investigations of the gastrointestinal tract, Orthopedic surgery, Angiography of the limbs, heart and cerebral vessels, Retrograde pyelography, Implantation of cardiac rhythm management devices (pacemakers, implantable cardioverter defibrillators and cardiac resynchronization devices) Discography, an invasive diagnostic procedure for evaluation for intervertebral disc pathology.

3) ULTRA SONOGRAPHY

Ultrasound scanning has revolutionized veterinary field encompassing the radiography and fluoroscopy with or no hazardous effects on patients as well as personnel. It is non invasive, quick and accurate diagnostic modality providing superior to other methods in different disease conditions. Ultrasound waves are sound waves of the higher frequencies greater than audible to human ear (greater than 20,000 Hz) frequencies is the range of 1 - 10 MHz one generally used in diagnostic ultrasound procedures. Pulse echo principle forms the basis for Diagnostic ultra sound. It is a New and accurate diagnostic modality, Non invasive, free from radiation hazards, Provides dynamic visualization different organs, Shape, size, and textural details can be obtained ,Repetitive examination can be done for comparison and evaluation of treatment. and Documentation and preservation of clinical data is possible.

ECHO CARDIOGRAPHY

It is also known as cardiac ultra sound. It is a non invasive method which provides information regarding cardiac structure and function, and non-ionizing visualization of the inside of heart including aorta, the



ventricles and atria, the auricular appendages and all the cardiac valves. Dynamic images of the contracting heart are created with two-dimensional and M-mode images while blood flow through the heart can be seen and measured with Doppler ultrasound. Echocardiography is used for diagnosing congenital or acquired anatomic lesions, monitoring myocardial function for Estimating hemodynamic burden through quantification of cardiac chamber size (dilatation and hypertrophy). for evaluating ventricular systolic and diastolic function, valvular function etc.

INTERVENTIONAL ULTRASONOGRAPHY

Use of ultrasound for fine needle aspiration, biopsy collection, cyst and abscess drainage, catheter placement in situ injection of pharmaceutical preparations and centesis procedures for different clinical conditions. The transducer should be covered with sterile glove and gel is applied over the probe. Spinal needle or 18 G true-cut needle can be used for this procedure. A sector linear probe can be used for ultrasound guided biopsy. For superficial lesion linear probe is preferred which will have a groove, a slot or central hole for guidance of needle. Sector scanners require an externally attached biopsy guide... Biopsy needle can be visualized on video monitor.

ENDO SONOGRAPHY

This is unique technique of using small ultra sound transducers incorporated into the tip of an endoscope and directed into a body cavity using per oral, trans rectal, or vaginal approach. Endoscopic ultra sound utilizes high frequency transducer with excellent penetration and resolution... During the procedure, a small ultrasound transducer which is fixed at the tip of an flexible fiber optic endoscope with camera will be inserted into the upper or the lower digestive tract, and the images can be obtained with high-quality ultrasound images of organs. Because the EUS transducer can get close to the organ(s) being examined, the images obtained with EUS are often more accurate and detailed than images provided by traditional ultrasound. endoscopic ultrasound may be used for 1 evaluation of different stages of cancer. 2 Evaluation of chronic pancreatitis or other disorders of the pancreas. 3. Studying abnormalities or tumors in organs, including the gallbladder and liver. 4. Studying the lesions of the lower intestinal tract affections particularly rectum and anal canal to determine reasons for fecal incontinence.

DUPLEX AND DOPPLER ULTRA SOUND

Duplex and Doppler refers to the combination of two imaging modalities. Real time and spectral representation of region of interest. It is a non invasive diagnostic modality which provide information about anatomical and functional status of blood vessels, vessel patency, and blood flow, direction and velocity. Doppler ultrasound is based on the Doppler frequency shift produced by moving targets such as red blood cells which is directly proportional to the velocity of the moving objects.

TRANS OESOPHAGEAL ECHOCARDIOGRAPHY

It is nothing but gastroscopy with modified, with fibreoptic elements replaced by electronic components ultrasound transducer. The major advantage of TOE over the less invasive and less expensive trans thoracic echo (TTE) is that much clearer visualization of the heart is almost always possible with TOE. **indicated in Determination** of Left ventricle preload intra-operatively for diagnosing intra-operative myocardial ischemia, for Assessment of a valve repair while the patient is still on the cardiothoracic 'table'. Assessment of severity of aortic atherosclerosis (atheroma) Investigation of a possible cardiac embolic source Assessment of valvular heart disease, Investigation of intra- and para-cardiac masses.

INTRA OPERATIVE ULTRA SONOGRAPHY

It is mainly used to locate foreign body or bony fragments in soft tissue near to vital organs, blood vessels joint capsules, and tendons. It is also useful in locating and characterizing spinal and intra cranial lesions. It is also used to plan the Radiation therapy about the size, depth, volume, and extent



of lesion to be irradiated. This technique requires high resolution small, linear array, water proof transducer. Warm sterile saline or coupling gel is used as coupling agent. This technique has multiple applications like guidance for brain and Spinal surgery, detection and location of renal or billiard calculi, identification of common bile duct, characterization of parenchymal lesions, and determination of extent of tumoral vascular invasion.

LAPAROSCOPIC ULTRA SOUND SCANNING

Laparoscopic ultrasound (LUS) is another utility of ultra sound scanning in which high frequency ultra sound transducers are introduced through laparoscopic ports to diagnose the different abdominal diseases. The images obtained will be sharp and well defined. It is advantageous over intra operative ultra sound scanning since it is minimally invasive. Normally diseases pertaining to liver, pancreas, bile ducts, gall bladder, intestines and bladder etc will be diagnosed.

4. COMPUTED TOMOGRAPHY

Computed tomography, commonly referred to as a 'CT' or 'CAT' scan, and was first used in 1971 in human medicine in England. The image produced is reconstructed from many radiographic images taken of the animal. Very fine x-ray beams are sent through the body to detectors, which then send the signals to a computer which processes the image. This helps to identify tissues that are normal or abnormal, such as brain tumor. The computer typically images the height and width of the tissue, while newer machines can give a 3-D look. A contrast media (dye) can also be injected into the patient's bloodstream to further increase the differentiation of tissue. The CT scan also does not superimpose the bone over the soft tissue, as it is only looking at a slice of the body at a time. An x-ray tube rotates 360° around the patient to record the x-rays from many angles. The number of images taken depends on the area and size of the suspected problem. The image can be saved for further review and to compare to later scans to determine the effectiveness of treatment.

5) MAGNETIC RESONANCE IMAGING

Magnetic Resonance Imaging is a medical diagnostic technique that creates images of the body using the principle of nuclear magnetic resonance. It can generate thin-section images of any part of the body - from any angle and direction. All MRI machines are calibrated in "Tesla Units" and strength of a magnetic field is measured in Tesla or Gauss Units. MR imaging uses a powerful magnetic field, radio frequency pulses and a computer to produce detailed pictures of organs, soft tissues, bone and virtually all other internal body structures. The images can then be examined on a computer monitor, transmitted electronically, printed or copied to a CD. MRI examination is used to diagnose or monitor and evaluate treatment for conditions such as tumors of the Thorax, abdomen or pelvis. Different types of heart problems, occlusions or enlargements of blood vessels, diseases of the liver, bile ducts, gallbladder, and pancreatic ducts small intestine, colon, and rectum, cysts and solid tumors in the kidneys and other parts of the urinary tract tumors and other abnormalities of the reproductive organs (e.g., uterus, ovaries, testicles, prostate). for diagnosis of diseases of spinal column, and diseases of the central nervous system.

6) POSITRON EMISSION TOMOGRAPHY

Positron Emission Tomography (PET) is a non invasive diagnostic imaging modality and the images are used to demonstrate the metabolism of organs and other tissues such as tumors based on emission of positrons. A radiopharmaceutical(short lived), such as FDG (fluorodeoxyglucose), which includes both sugar (glucose) and a radionuclide (a radioactive element) that gives off signals, will be injected into the patient, and its emissions are measured by a PET scanner. The system detects pairs of gamma rays emitted indirectly by positron emitting radionuclide introduced into the body on a biologically active molecule. It is used in oncology for differentiation of benign and malignant tumors, for detection,



staging, checking, recurrence, assessing efficacy of cancer chemotherapy, and also in psychiatry, cardiology, in neurology, in pharmacology, and in orthopedics. Limitations include high cost of establishment, large space requirement, more specialization is required, Poor paying capacity of owners, and support from organizations questionable.

CONCLUSION

For all the old and modern diagnostic procedures veterinary clinician should have adequate knowledge about anatomy, pathology, and more over detailed information about clinical examination to avoid wrong interpretation of results. We hope in future at least few institutes will have these facilities for serving the animal kind. Monitoring the health status of animals by evaluating the information sent from a different place duly examining Radiographs, investigation reports, i.e. recorded EEG, ECG, scan reports and advising the concern patient owners/ veterinarians will be practical in few years. Advances in electronics, digital imaging technology, and computerization and transmission facilities made this approach easy for providing better health coverage in human medicine and we do expect the same in veterinary practice in coming years. This facility is mostly required in rural and remote areas of the country where patients can not be moved to distant places for help.



RIT-1

Gray-Scale, Colour and Power Doppler Sonography of Scrotal Disorders in Dogs

A.K. Srivastava, Vineet Kumar Yadav, Sangeeta Srivastava, Saurabh Chaturvedi and Ashish Srivastava

Pet Aid Center, Indiranagar, Lucknow, U.P., India.

This study was aimed at the practical use of findings obtained from Gray-scale ultrasonography, Colour Doppler ultrasonography and Power Doppler ultrasonography in dogs referred to our center with complaints of scrotal swelling during last three years. Thirty two dogs of various breed and age, displaying scrotal swelling, constituted study material. Subsequent to anamnesis of the cases, ultrasonography, Colour Doppler ultrasonography and Power Doppler ultrasonography of the extra testicular and the intra testicular structures were performed in accordance with relevant techniques. This study demonstrated the presence bilateral orchitis in 15, unilateral orchitis in 5, intra testicular cysts in 2, hernia scrotalis in 1, extra testicular scrotal oedema due to trauma and bite wounds in 4, congenital cryptorchidism in 1, tumour in 2 and epididymitis in 2 cases. In conclusion, ultrasonographical examination performed with a high resolution probe was considered to contribute to differential diagnosis, where as Colour Doppler ultrasonography was non-invasive imaging method and Power Doppler ultrasonography were to determine/ to yield the exact diagnosis based on the evaluation of vascularization and blood flow in the periphery of the lesion; in the diagnosis of scrotal disorders in dogs.

RIT-2

Normal Ultrasonographic Imaging of Rabbit

Dedmari FH, Parrah JD, Athar H, Moulvi BA, Kaleem MO, Singh M

Division of Veterinary surgery and Radiology, Fisheries & Veterinary Science & AH, SKUAST-K

The study was conducted in order to find out the normal ultrasonographic presentation of the major abdominal organs of an adult rabbit. Ten adult male rabbits of age above 1 year and having an average weight of 2 kgs were used for this purpose. During the ultrasound scans, the non sedated rabbits were put in supine position over a table. A 7.5 MHz microconvex probe and a 6.5 MHz linear transducer were used for this purpose. The major organs observed were the kidneys, liver, gallbladder, spleen and urinary bladder. The average size of the observed organs was determined and was found to be; Kidney = 26.0-28.5mm x 13.4-15.3mm; Urinary Bladder = 20.6-26.1mm x 11.1-18.8mm; Spleen = 14.5-17.3 x 18.4-22.4mm. However the liver size could not be measured by ultrasonography.; GallBladder = 7.5-10.4 mm x 3.0-5.5 mm. Due to the shape and high resolution, the 7.5 MHz sector probe proved to be very suitable for abdominal ultrasonography in rabbits.



RIT-3

Teat Ultrasonography in Goats

Mehraj u din Dar D. K. Tiwari, Nisha Joy, Aarti Pitroda, B. G. Prajapati, Ashwini Alase, S. K. Jhala, D. B. Patil and P. V. Parikh

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The present study involved 30 goats (wt: 15 - 20 kgs). Goats from one herd and free from clinical mastitis or any other teat abnormality were selected. Teats were examined by ultrasonography using direct and water bath technique. 5MHz linear rectal probe and 10 MHz linear transducer were used. Both the techniques and probes were compared for the image quality. Sonographically parenchyma, lobes, major duct, gland cistern, teat cistern, teat/streak canal were visualized. Measurement of the structures i.e. teat end width (TEW), teat canal length (TCL), teat cistern width (TCW), and teat wall thickness (TWT) were measured with an in build caliper of USG machine. Average measurements of TEW, TCL, TCW and TWT were 1.27, 1.77, 0.39, and 0.58 cms, respectively.

RIT-4

Ultrasonographic Studies of Fore-stomach in Goats

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The present study was conducted to establish ultrasonographic features using two dimensional B-mode and real-time scanner on six slaughter house specimens (*in vitro*) of goat forestomach and twelve healthy (*in vivo*) Surti goats forestomach, with convex (2.5-7.5 MHz) and linear (7.5-18 MHz) probes. The *in vitro* study was done by placing a water filled balloon over the slaughter house forestomach specimens to study the contents, texture and internal mucosa. During *in vivo* study, the rumen, reticulum and omasum was scanned in non sedated goats in standing position. Rumen papillae were typically echogenic and gave a turkish towel appearance, while reticulum appeared as a half moon shaped structure with even contour. Reticular movements were detected through real time scanning in the form of biphasic contractions within nine minutes. The omasum appeared as a crescent shaped structure with thick echogenic wall and leaves. Based on observations of the present study, it is concluded that for ultrasonographic imaging in goats, left paramedian region is suitable for rumen, reticulum and rumeno-reticular groove, while right paramedian region for omasum, liver and occasionally reticulum using 7.5 MHz convex and 18 MHz linear probes.

RIT-5

Endoscopic Evaluation of External Ear Canal In Canine Otitis

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Endoscopic evaluation of twelve dogs affected with clinical signs of otitis was performed for detailed examination of changes within the ear canal and tympanic membrane. The endoscopic examination was conducted using a video otoscope after placing the anaesthetized animal in lateral recumbency with the affected ear above. Erythema, ulceration of the lining of the ear canal and stenosis of the lumen of the ear canal were observed in majority of the cases. Tympanic membrane was visible otoscopically in eight cases where it appeared as a pale, translucent structure. In one dog presence of ear mite within the ear canal, and presence of a nodular growth near the orifice of the ear canal in another identified as the primary cause of otitis in these cases.

RIT-6

Radiographic Study of Chronic Canine Otitis

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Radiographic evaluation of eight dogs suffering from otitis was carried out to determine the changes in the ear canal and tympanic bulla and to assess the chronicity of infection. The dogs were restrained



after effecting anaesthesia and radiographs of the ear canal were taken in either dorso-ventral, oblique-lateral or rostro-caudal open mouth view. Radiographic images suggestive of chronic ear affections indicating calcification of the ear canal, narrowing of the lumen of the ear canal and thickening of the wall of the tympanic bulla was observed in majority of dogs. Clearly outlined walls of the tympanic bulla with air filled tympanic cavity were noted in radiograph of ear canal in other dogs

RIT-7 Value of Computerized Radiography in Evaluation of Bovine Reticular Radiographs

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The present study was conducted on bovine reticular radiographs taken from 140 adult animals (27 cows and 113 buffaloes). The radiographic images were acquired on a CR image plate using an 800 mA X-Ray machine with a kVp of 95-105 and mAs of 50-63. The original radiographs acquired and the radiographs altered after making brightness, contrast and other graphic changes on the CR system were compared on the basis of eight parameters viz visibility of sternbrae, cardiac silhouette, foreign bodies, abscess/gas pockets around reticulum, reticular wall, posterior vena cava, cardio-phrenic adhesions and clarity of diaphragm. The exposure index used for each radiograph was recorded. The range of exposure index were identified which can be used to give diagnostic quality radiographs of the reticular area in adult cows and buffaloes on the computerized radiography system.

RIT-8 Ultrasonography of Intestinal Obstruction in Cows

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Eleven animals suspected for intestinal obstruction were examined ultrasonographically. Obstructed mass were observed in 4 cases and dilated caecum closest to the abdominal wall was visible in 2 cases. In all cases 4-5 dilated intestinal loops were noticed by hyper echoic structure filled with gas and increased diameter of intestinal loops were noticed.

RIT-9 Radiographic Diagnosis and Management of Panosteitis in Dogs

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Two dogs were referred with a history of acute onset of lameness in the limb persisting since last two weeks with no history of trauma. The degree of lameness was more during the first few days of attack, but there was spontaneous regression of signs within 3 to 4 days with symptomatic therapy. Physical examination was non-remarkable; however, slight pain upon firm palpation of the diaphysis of affected bone, but no crepitus was felt. Lateral radiograph revealed increased multifocal, intramedullary densities and irregular endosteal surfaces along long bones. Additional radiographic findings presented with or without the medullary density included an endosteal bone thickening and a periosteal reaction. The periosteal new bone was usually smooth or laminar. Rest, exercise restriction and NSAIDs were advised and the animal recovered uneventfully within a month.

RIT-10 Ultrasonic Biometry of Senile Cataractous Eyes in Dogs

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Ultrasonic biometry was performed in 58 dogs. In total 89 eyes were scanned using B-mode ultrasound as a pre ECCE screening procedure, of which 23 were normal and 66 were with senile immature, mature, and hypermature cataracts. The measurements were taken in sagittal and dorsal planes using



7.5MHz, 10MHz and 18MHz linear probes with acoustic gel. Measurements made included mid-cornea to anterior lens surface, lens thickness, vitreous body (posterior lens surface to retina), and axial globe length. The axial globe length of male and female dogs and right and left eyes were not different. Axial globe length, anterior chamber depth and posterior chamber depth in eyes with hypermature cataract were increased as compared to those in normal eyes and eyes with immature and mature cataract. Lenses with hypermature cataracts were decreased in thickness as compared to lenses in other eyes, although lenses with mature cataracts showed a trend towards increased thickness and immature cataracts demonstrated a trend towards reduced thickness. Lenses with immature cataract were smaller in dimension than those with mature and hypermature cataracts.

RIT-11

Diagnostic and Therapeutic Studies on Ear Affections In Dogs: Radiographic & Ultrasonographic Observations

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The present study was under taken on 18 dogs brought to the TVCC for the treatment of otitis and were selected irrespective of their age, breed and sex. These dogs were randomly divided into three groups, each group consisting of 6 dogs. The dogs of group I were treated with cleaning of ear canal with clean cotton swab + normal saline + painting of ear canal with Povidone iodine+ waxolve + Candibiotic ear drops + Inj. Cefotaxim + Inj. Nimusulide, group II : treatment as in group I except candibiotic ear drops + low level laser therapy and group III: treatment as in group I + low level laser therapy. The radiographs were taken in rostro-caudal open mouth view and tympanic bullae could be visualized. Only slight change in the radiolucency and radio-density of the tympanic bullae was noticed in all the three groups of dogs. Changes in the ear canal due to otitis could not be visualized on the radiographic examination. The convex and linear array transducer probes were used to examine the ear canal from external acoustic meatus up to tympanic membrane. For examination of ear canal, 8 MHz linear transducer was found suitable, whereas 3.7 MHz convex transducer was found suitable for the examination of the tympanic bulla. In most of the dogs of all the three groups the diameter of the ear canal was found narrowed at 0 day interval but after start of the treatment gradual increase in the diameter was observed. The lumen of the ear canal was visualized hypoechoic to hyperechoic before the start of the treatment but in the later stages after treatment, it became homogenous hypoechoic in appearance.

RIT-12

Ultrasonographic Evaluation of Various Urogenital Disorders in Canine: Pre and Post Therapeutic Studies

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Twenty-five clinical cases were evaluated in the present study suffering from different urogenital disorders and referred for ultrasonography. In all the animals, haemato-biochemical examination and ultrasonography was performed at day zero, followed by at day 5, 10 and 15 post treatment. Haemato-biochemical parameters included total erythrocyte count, total leukocyte count, differential leukocyte count, haemoglobin, packed cell volume, glucose, total protein, albumin, alkaline phosphatase, alanine aminotransferase, aspartate aminotransferase, total bilirubin, blood urea nitrogen and creatinine. In the present study, maximum incidence of uterine diseases (13.6%) was recorded followed by peritoneal cavity diseases (11.6%), which included ascites and tumorous growths. The incidence of liver, gastrointestinal tract and urinary bladder diseases was 10.7, 9.71 and 7.77 percent respectively; however the incidence of kidney, ovary, spleen and prostate gland diseases was very low. During the course of the study pancreatic diseases, lymph node enlargement and diseases of adrenal glands were not observed.



Ultrasonographically, pyometra, ovarian tumour, prostatitis, perineal hernia, cystitis, nephrolith, cystoliths, splenic, uterine and peritoneal cavity tumours were diagnosed preoperatively. It was concluded that most of the abdominal disorders could be diagnosed ultrasonographically. Further, haemato-biochemical and ultrasonographic evaluation is helpful to determine the improvement or deterioration in the condition in response to treatment undertaken.

RIT-13 Ultrasonographic Evaluation of Various Gastrointestinal Disorders in Canine: Pre and Post Therapeutic Studies

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Total eleven clinical cases were evaluated in the present study suffering from different gastrointestinal disorders and referred for ultrasonography. In all the animals haemato-biochemical examination and ultrasonography was performed at day zero, followed by at day 5, 10 and 15 post treatment. Haemato-biochemical parameters included total erythrocyte count, total leukocyte count, differential leukocyte count, haemoglobin, packed cell volume, glucose, total protein, albumin, alkaline phosphatase, alanine aminotransferase, aspartate aminotransferase, total bilirubin, blood urea nitrogen and creatinine. In all the three cases of ascites, haemato-biochemical parameters fluctuated within the normal range except total leukocyte count, which showed marked increase (36.57 ± 10.51 thousand/ μ l). Ultrasonographically, anechoic area was visualized in the peritoneal cavity, extending from the apex of bladder to the liver. Intestinal loops and mesentery were observed floating above this anechoic fluid. Treatment continued for 15 days to 1 month and all the animals started to recover. In post treatment period, all the haemato-biochemical parameters fluctuated within the normal limits. Gastric foreign bodies were visualized as hyperechoic material, without any change in haemato-biochemical parameters in all the three cases. In two cases gastrotomy was performed and large number of bone pieces along with undigested meat and polythene were removed, whereas in third case the animal responded to medicinal treatment and foreign body passed in the stool on 3rd day. Post treatment haemato-biochemical parameters as well as ultrasonographic findings were recovered normal. In case of hepatic abscess, anechoic areas with central cavitation were visualized sonographically in both the animals, whereas in three cases of hepatic mass/nodular hyperplasia solid anechoic to hypoechoic lesions were visualized. Out of these five cases two animal died during the treatment and the rest recovered completely. On the basis of above study, it was concluded that post treatment haemato-biochemical examination and ultrasonography are useful to evaluate the improvement in the condition in response to treatment undertaken.

RIT-14 Ultrasonographic features of liver in healthy cows and buffaloes

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The present study was conducted on 10 adult female apparently healthy cow ($n=5$) and buffaloes ($n=5$). Ultrasonographic examination was performed with microconvex or convex multifrequency 3.5 to 5 MHz transducer in standing position by moving transducer dorso-ventrally at each intercostal space starting from right flank to 6th intercostal space. Liver in healthy cows and buffaloes was scanned from 12th to 6th intercostal spaces and hepatic parenchyma appeared uniformly weakly echogenic. Caudal vena cava was always visible dorsal and medial to the portal vein. Caudal vena cava appeared triangular shaped structure on cross section with a maximum mean diameter 3.01 ± 0.1 cm. Portal vein was observed as a round structure on cross section with thick echogenic wall and having a mean diameter of 2.82 ± 0.1 cm. Portal vein appeared to give off multiple branches into hepatic parenchyma. Gall bladder appeared as a pear shaped structure with anechoic contents at 9th to 11th intercostal space. Gall bladder wall appeared thin, smooth and of uniform echotexture with a mean thickness of 3.66 ± 0.44 mm.



RIT-15

Ultrasonographic features of pericarditis in cows and buffaloes

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The present study was conducted on 55 adult female bovine (29 cows and 26 buffaloes) suffering from pericarditis. For ultrasonographic examination, the right and left side of the animal from 7th to 4th intercostal space was prepared by shaving / hair clipping. Ultrasonographic examination was performed with convex or microconvex multifrequency (3.5 or 5.0 MHz) transducer in standing position. Ultrasonographically, pericardial effusions were seen from both right and left sides of the heart in real time B-mode. Pericardial effusions were anechoic to hypoechoic with or without fibrin deposition in the pericardial sac in 74.6% animals or were of uniform echogenic texture in 25.4% animals suggestive of pus. The presence of pericardial effusions appeared to compressing cardiac chambers resulting in tachycardia and markedly reduced amplitude of cardiac contractions. The diagnosis was confirmed from needle aspiration of the pericardial sac under ultrasound guidance which yielded serosanguinous fluid to off smelling pus. Cytological examination of the pericardial fluid revealed presence of bacteria and degenerated neutrophils. Concurrent presence of excessive peritoneal fluid with fibrin and pleural fluid were also observed in animals suffering from pericarditis. In conclusion, ultrasonography of heart helps to diagnose pericarditis in relation to severity and nature of pericardial effusions which may have implications of selecting patients having early and less severe disease for surgical/medical treatment.

RIT-16

Ultrasonographic and histopathological alterations in liver of bovine suffering from pericarditis

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The present study was conducted on 55 adult female bovine (29 cows and 26 buffaloes) suffering from pericarditis which were confirmed, ultrasonographically. Ultrasonographic examination was performed with convex or microconvex multifrequency 3.5 or 5.0 MHz transducer in standing position by moving transducer dorso-ventrally at each intercostal space starting from right flank to 6th intercostal space. Hepatic ultrasonography revealed congestion and marked hepatomegaly characterized by round liver margins and scanning of hepatic parenchyma at right mid flank and extending ventrally along with ventral displacement of the gall bladder. Caudal vena cava appeared round and dilated with a mean diameter of 4.82 ± 0.23 cm. Dilatation of portal vein with a mean diameter of 4.20 ± 0.23 cm was seen in animals having pericarditis. Histological examination of ultrasound guided biopsy (n=7) and ultrasound guided fine needle aspiration biopsy (n=3) samples confirmed sinusoidal dilatation in all the animals along with chronic cholangiohepatitis (n=3), amyloidosis or chronic sepsis (n=2), purulent hepatitis (n=2), chronic active hepatitis (n=2) and fatty liver (n=1).

RIT-17

Comparison of "C-Arm Guided" and "Aiming Device" Interlocking Nailing of Femoral Fracture Repair in Dogs

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Comparison of "C-arm guided" and "aiming device" interlocking nailing of femoral fracture repair in dogs was undertaken. Femoral fracture was more common in Nondescriptive, male and young dogs lesser than 1 year of age. There were no significant variations observed in physiological (Rectal temperature, Respiratory rate and Heart rate), hematological (Hb, TLC, TEC, DLC) and biochemical parameters (Calcium, phosphorus, ALP, AST, ALT). There was a gradual decrease in the pain score from the preoperative day to fourteenth postoperative day, group A dogs showed early weight bearing compared to group B. The immediate post operative radiograph showed excellent reduction and perfect alignment in both the groups. Surgical procedure of C-arm guided interlocking nailing technique took



less time, was minimally invasive and reduced the time of closure of surgical site. But in learning period this procedure requires more time compared to aiming device (Jig) guided interlocking nailing technique. However aiming device (Jig) guided interlocking nailing technique reduced time of exposure to fluoroscopy.

RIT-18

Ultrasonography : A Diagnostic Aid in Canine Clinical Practice

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Advances in imaging technology have created a dilemma for progressive small animal practitioners. In recent years, ultrasonography has been employed in the small animal practice, particularly in dogs for diagnosis of various disorders affecting vital systemic organs viz. Spleen, Liver, Gall bladder, Kidneys, Uterus, Urinary bladder etc. The present article describes the various abnormal conditions in canines which were diagnosed during day to day practice at a field hospital. Affections of gall bladder (cholangio-cystitis, gall stone, sludge, mucocele and cholecystitis), foreign bodies in stomach, liver disorders (hepatitis/hepatosis, cirrhosis/fibrosis, intrahepatic portosystemic shunts, hepatic cysts and neoplasia), splenic affections (splenomegaly, tumours, hematoma, torsion), abdominal affections (ascites) urogenital affections (pyometra, macerated foetus, uterine tumors, cystitis, uroliths, bladder rupture, bladder neoplasia, renal tumours, hydronephrosis, prostatitis, prostate hyperplasia, prostate cyst/abscess/haematoma, prostatic tumors) etc were diagnosed ultrasonographically. Ultrasonography was found to be the only technique for the differentiation of gall bladder affections which could not be diagnosed by any other means. Ultrasound technique has been proved to be effective diagnostic tool for clinical practitioners.

RIT-19

Myelography in Two Dogs for Diagnosis of Spinal Cord Injury

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Myelography was done in two non-descript male dogs, to diagnose the spinal cord injury, presented to clinic with the history of hind quarter paralysis. The first dog had a vehicle accident whereas second one fell down from roof. The plain radiograph of first dog in lateral view showed complete second lumbar (L_2) vertebral body fracture while in second dog no abnormality detected. In first dog, 10 ml Iohexol (350mg/ml) was injected from cisterna magna after aspiration of equal amount of cerebrospinal fluid under diazepam-thiopental sodium 5% anaesthesia. In second dog, 5 ml Iohexol of same concentration was injected from lumbar region between L_2 and L_3 intervertebral space. The dog hind quarter was tilted downward for easy flow of contrast media except at exposure. A serial radiograph was taken at different interval. In first dog, contrast media reached up to fractured level (L_2) at 5 minute where narrowing was noticed, L_2 vertebrae at 30 minute and lumbosacral space at 60 minute. In second dog, although plain radiograph was apparently normal but myelographic study revealed compression of spinal cord, due to protrusion of intervertebral disc, at four places between L_2-L_{11} , L_1-T_{13} , T_{13-12} and $T_{12}-T_{11}$.

RIT-20

Ultrasonographic Examination of Eye in Bovine

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The eye is the perfect organ for the sonographic evaluation. It is made of several tissues delineated by distinct interfaces and fluid filled cavities. Keeping in view scant availability of literature on bovine ocular sonography, the present study was planned and performed over neonatal calves and young and adult buffaloes. Eyes were scanned in both horizontal and vertical planes for trans-palpebral and trans-corneal scanning with curvilinear transducer of 6.5 to 8.0 MHz with sterile gel. Trans-corneal study revealed good results in B-mode. Identification of echotexture and measurement of various structures of eye and its adnexa could be done. Aqueous and vitreous humor gave anechoic appearance. Choroid, sclera and retina were clearly distinct with an optic disc from which an optic nerve was emerging out in a triangular cone. Ophthalmic artery could also be identified by rhythmic pulsation. The present study may pave way for further sonographic study of ophthalmopathies in clinical cases.



RIT-21

Utility of C - Arm Guided Evaluation in Small Animal Orthopaedic Surgery - A Review of 81 Cases.

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Eighty one cases of canine orthopaedic surgical cases were evaluated under C –Arm guidance. The cases include External fixator application, Inter Locking Nailing, Plating, Intramedullary pinning, evaluation of implant failure, closed reduction of luxated hip, Bone marrow aspiration, synovial fluid aspiration of joint and location of hemilaminectomy site. The technique of positioning, accuracy of diagnosis and interpretation of results are discussed.

RIT-22

B - Scan Ocular Ultrasonography in Dogs: Review of 182 Cases

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Ultrasonography (USG) is the only practical method for obtaining images of the posterior segment of the eye when the light-conducting media are opaque. In this study 182 dogs with ocular abnormalities presented to the department from Dec 2008- August 2010 were included. All the animals were subjected to detailed ophthalmic examination and B-scan USG of the eyes with 7.5 - 15 MHz linear probe. B-scan in 40 cases revealed thin hyperechoic lines of lens indicating early cataract changes, while 10 cases showed thin hyperechoic rim around the lens suggestive of cortical cataract. In 82 cases the entire lens was echogenic consistent with complete cataract (nuclear cataract). The lens capsule appeared wrinkled suggestive of Morgagnian cataract in 3 cases. For obtaining images of the posterior segment of the eye, 7.5 and 12 MHz linear probe was used. In 11 cases there was sub-luxation of lens, while retinal detachments in 04 and complicated retinal detachments in 02. Vitreal retraction/ degeneration were seen in 15 cases. Two cases revealed hypopion, 8 asteroid hyalosis one case each of vitreal hemorrhage, aphakia and optic nerve avulsion.

RIT-23

Ultrasonographic Study and Management of Perineal Swellings in Dogs

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Two dogs were brought to the TVCC, HAU, Hisar with the history of perineal swelling. The first dog was male having problem of perineal swelling for the last 14 days and the second dog was female having problem for the last several months. The dogs were showing signs of difficulty in urination and defecation. Initially the swelling was small in size but it gradually increased in size. On palpation, the swelling was soft and reducible in male dog but it was hard and irreducible in the bitch. The blood examination revealed mild anemia and increased total leukocyte count with neutrophilia in both cases. There was increase in BUN and creatinine level in male dog. The radiograph of the perineal region showed soft tissue swelling in male dog but in bitch, the swelling showed the presence of radiodense material toward the center and soft tissue density around the periphery. The ultrasonography in male dog showed anechoic fluid filled cavity and echogenic image of loops of the intestine. Ultrasonography in female dog showed hyperechoic image of the swelling in the centre and hypoechoic image toward periphery. Both the cases were prepared for surgery. Xylazine and ketamine combination was used to anaesthetize the animal. In male dog, after incising the swelling, the intestine & urinary bladder were separated and placed into the abdominal cavity. Hernial ring was closed using silk number 1 after taking bite inbetween the ruptured muscles of pelvic diaphragm and levator ani muscles. In bitch, the mass was separated surgically and excised. A portion of it was sent for histopathological examination. The skin was sutured in a routine manner. The postoperative care included fluid therapy, a course of antibiotics, anti-inflammatory drugs, B-complex and daily antiseptic dressing till removal of the skin



sutures on fourteenth day. The histopathological examination showed it to be a case of lipoma. Both the animals made an uneventful recovery. The radiography and ultrasonography proved to be very useful in differentiating perineal lipoma from perineal hernia.

RIT-24 **A Comparative Study on Diagnosis of Surgical Disorders using IITV and Conventional Radiography in Animals and Birds.**

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The radiological diagnosis of diverse surgical affections was done in 8 species of animals and birds. An analysis of cases recorded revealed that out of 62 cases the ratio of male and female was 50%, each. The diagnosis of soft tissue (5 cases) and hard tissue (57 cases) was done by the fluoroscopy (IITV) and plain radiography. Fluoroscopy does not allow visualization of complete bone or thorax or abdomen in a single scan. However, the demerits of fluoroscopy eventually are merits of radiography where entire bone or thorax or abdomen can be viewed in a single radiograph. Radiography involves cost of x-ray film and processing solution and the procedure is time consuming. Contrarily, the fluoroscopy is less time consuming but has an additional demerit of radiation exposure. It is therefore concluded that fluoroscopy should be used in those cases where considerations for taking a radiograph are minimum.

RIT-25 **Endoscopic Retrieval of Esophago-Gastric foreign bodies in 9 Dogs - case study**

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The present study was undertaken in 42 cases out of the 120 clinical cases of dogs presented with diseases of esophagus and stomach with the history of persistent vomiting or regurgitation to the Department of Veterinary Surgery and Radiology, College of Veterinary Science, Rajendranagar, Hyderabad and Teaching Veterinary Clinical Complex, Bhoiguda, Secunderabad, from March-2008 to May-2010. Out of 42 cases, five dogs (11.90%) were reported with history of sudden onset of regurgitation, dysphagia, anorexia, odonyphagia, and retching, gagging, excessive salivation, cough reflexes and uneasiness after a meal. Plain lateral radiographs of the neck and thorax revealed the presence of osseous foreign bodies in the esophagus of four dogs. In one dog, the osseous foreign body was located just caudal to the pharynx and in the other three, in the mid thoracic region. In another dog, the lateral cervical radiograph revealed the presence of a radiolucent foreign body, which later turned out to be socks. Treatment of these five dogs with esophageal obstruction due to foreign bodies was treated by various means. The dog with socks in the cervical esophagus vomited the socks out and was relieved of obstruction due to the emetic effect of xylazine even before the dog could be anaesthetized. In the dog where the osseous foreign body was located just caudal to the pharynx, the same was retrieved orally using a long cheek forceps passed along the endoscope and was removed under endoscopic illumination. In the three dogs where the osseous foreign bodies were located in the thoracic region, by endoscopy, the bone pieces could be pushed back into the stomach by the endoscope itself. Remaining four dogs were diagnosed to be affected with gastric foreign bodies. Out of four cases, two dogs that underwent plain radiographic examination revealed presence of sewing needle in the stomach of one dog and a pair of metal caps of cool drink bottle and a safety pin in another dog. Hence plain radiography in the present study for diagnosis of gastric foreign bodies becomes excellent and confirmative tool. Removal of these foreign bodies was considered to be too risky by endoscopy due to the possibility of esophageal tearing. Therefore gastrotomy was considered as a safer mean of removal of these foreign bodies in two out of four cases in present study. In the remaining two dogs that swallowed dog nylon belt, plain radiograph did not confirm their presence. Endoscopic examination in these dogs revealed presence of dog collar made up of nylon in the stomach. Endoscopic retrieval of the nylon belt in the stomach was done in one dog under surgical anaesthesia. In the second case of



radiolucent foreign body (another nylon belt), it turned out later on to be a linear foreign body. This was found to be attached to a long piece of nylon thread traversed in to the small intestine loops. Hence, the linear foreign body was removed by standard gastrotomy and enterotomy operation. All nine the dogs recovered uneventfully.

RIT-26

Radiographic and Endoscopic Study of Gastro-Esophagitis Reflux Disease (GERD)-2 Case Studies

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In present report, two clinical cases of dogs were presented to the Department of Veterinary Surgery and Radiology, College of Veterinary Science, Rajendranagar, Hyderabad with history of anorexia, dysphagia and hypersalivation since one month. Physical examination did not point to any tentative diagnosis. However, loss of body weight was reported in both the cases. Clinically, intermittent regurgitation, anorexia, frothy and rosy blood tinged salivation was noticed in both the dogs. The haematological and biochemical parameters were within normal limits. Plain and contrast radiography in these dogs did not reveal any abnormality. Endoscopic examination showed the evidence of reflux esophagitis in these two dogs. Endoscopic examination was characterized by mucosal erythema, haemorrhage, mucosal irregularity, erosion with thickened mucosal folds especially at the lower esophageal area (video). In the present clinical cases, esophagitis may be due to esophageal foreign bodies, gastroesophageal reflux secondary to general anaesthesia, persisting vomiting of any cause, hiatal hernia, gastric emptying disorders, ingestion of caustic irritants and thermal injury from micro waved food. They also reported that, gastroesophageal reflux means the movement of gastro-esophageal contents into the esophageal region unassociated with eructation or vomiting. Esophageal damage caused by gastro-esophageal reflux is primarily attributed to the duration of the mucosal contact with refluxed gastric acid, bile salts and trypsin. They also reported that factors contributing for GES relaxation include anaesthetic agents (Anticholinergic / tranquilizers), impaired swallowing and secondary peristalsis, increased abdominal pressure during surgical manipulation, gravitational effects of a tilted surgery table and impaired function of LES due to hiatal hernia.

Both the dogs recovered uneventfully following with sucralfate suspension¹ at the rate of 1 gm/kg body weight orally three times a day, Metoclopramide (0.2 mg/ kg orally) three times a day and Ranitidine² at the rate of 0.5mg/kg body weight, orally twice a day were used and treatment were continued for one week. Endoscopic examination after two weeks showed resolution of all the esophageal changes with the esophagus appearing normal on endoscopy.

RIT-27

Preoperative Evaluation of Cutaneous Thickness in Canines - An Ultrasonographic Study

Laiju Philip, M., Devanand, C. B., John Martin, K. D. and Sarada Amma, T

College of Veterinary and Animal Sciences, Mannuthy, Thrissur, Kerala Agricultural University

The study was carried out in twelve clinically healthy nondescript bitches presented for panhysterectomy to the clinics of College of Veterinary and Animal Sciences, Mannuthy. The purpose of this study was to assess the feasibility of diagnostic ultrasonography for evaluation and accurate measurement of the skin thickness of clinically normal dogs. The ultrasonographic evaluation of cutaneous thickness at midventral and thigh region was assessed prior to the anaesthetic procedures. A 7.5-MHz linear-array transducer was used to obtain the ultrasonographic images of the skin. Images were analyzed and skin thickness was measured by using imaging software. The ultrasonographic pattern of canine skin was characterized by 3 distinct echogenic layers corresponding echogenicity, epidermis and dermis and subcutaneous tissues. The distance between the first hyperechoic line and the acoustic interface was found to be 5 ± 1 mm in the midventral region and 3 ± 1 mm in the thigh region. It could be concluded that



diagnostic ultrasonography is a simple, noninvasive, and accurate method for the preoperative measurement of skin thickness in canines. This preoperative protocol will have high prognostic value in predicting the progress of postoperative wound healing.

Ultrasound scanning for intraluminal affections of teat in cows

N. Arul jothi, Kantharaj.S, Balagopalan, T.P., Alphonse, R.M.D and B. Ramesh Kumar

Department of Veterinary Surgery and Radiology, Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry

Cows presented at teaching hospital RAGACOVAS, Pondicherry with the history of intraluminal teat obstructions were subjected for the present study. Normal teats of six cows and six affected teats were scanned for teat wall thickness and other space occupying lesions. After restraining the animal, teat was dipped fully into a thin, transparent cup filled with water and scanned using diagnostic ultrasound scanner with 5 MHZ probe with coupling medium. Normal teat thickness measurement ranged from 5.7 mm to 9.5 mm. Luminal lesions were found to be 8.5 mm to 17 mm in length and 4.7 mm to 16.5 mm in width. Ultrasound scanning was found to be a useful noninvasive diagnostic tool for assessing the extent of intraluminal obstruction in cattle.

EQUINE SURGERY SESSION

Date : 08.12.2010 Time : 4.45 pm

Venue : Committee Room

Chairman : Dr. S.M. Jeyadevappa

Rapporteur : Dr. Dhanalakshmi

LEAD PAPER

Isolation, characterization and proliferation of equine adipose tissue and umbilical cord blood derived mesenchymal stem cell (hrs-AT-MSc and hrs-UCB-MSc) in different types of serum and oxygen tension environment

S. K. Maiti¹ and Dimitry Spitzkovsky

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Mesenchymal stem cells (MSC) are now utilized in a wide variety of surgical applications. However, there is very scanty report on isolation, characterization and proliferation of equine MSC. In this regard, we tried to isolate and characterized equine MSC derived from adipose tissue and umbilical cord blood. Adipose tissue was harvested from the region above the dorsal gluteal muscle, at the base of the tail under xylazine sedation followed by local anaesthesia infiltration. Approximately 5-gm of adipose tissue was collected and stored in a chronic tube containing RPMI-1640 medium. Collecting materials were successive washes with DPBS (-Ca & Mg) and the extracellular matrix mechanically separated by using a scalpel (no-15) blade. Small pieces of adipose tissues were incubated for 12 hr in HEPES-buffered medium supplemented with type I collagenase for digestion followed by neutralization of this enzyme with Knockout DMEM containing 10% FBS. The solution was centrifuged and the supernatant was aspirated and washed with DPBS (+ Ca & Mg) and homogenized for future centrifugation. The number of cells was quantified in an electronic counting machine. The cells were culture in a humidified heater at 37°C, under 5% CO₂ and 21% O₂ environment. The medium was changed every 3 days and up to the confluence of 80-90%.

Umbilical cord blood was collected immediately after foaling using a standard commercially available blood transfusion bag. The mononuclear cell fraction was isolated by Ficoll-density centrifugation and was cultured in a DMEM-LG at 38.5°C in a humidified atmosphere containing 5% CO₂ and 21% O₂. Primary colonies were observed in both cases (AT & UCB) as early as 3 days post seeding and the first subculture was done at 7 days after initial seeding. MSC was characterized by crystal violet staining and microscopically morphological features. Viability of MSC was conducted by Flow Cytometry using FACS and PI stain.

Umbilical cord blood and adipose tissue-derived mesenchymal stem cells have demonstrated potential for regenerative surgical strategies. Knowledge of the way these cells respond to their environment in *in vitro* culture and after implantation *in vivo* is essential for successful therapy. Oxygen tension plays a pivotal role in both situations. In this study, we analyzed the effect of oxygen tension on hrs-UCB-MSc and hrs-AT-MSc and assessed proliferation, morphology, plasticity, viability, cell count, cell size and cell confluence in two oxygen tension (21% and 5%) culture environment.

In general, cell population was higher in hrs-AT-MSc than hrs-UCB-MSc (though cell diameter was slightly higher in the hrs-UCB-MSc than hrs-AT-MSc). Cell growth pattern, cell plasticity and cell population was better in normoxia (21%) condition than hypoxia (5%). Cell death was more in 5% O₂ condition than 21% O₂. In hypoxia, MSC exhibited a significantly different morphology with shorter extension and broader cell bodies. MSC did not proliferate as rapidly as under 21% oxygen and accumulated in G1 phase.

Equine multipotent mesenchymal stromal cells (hrs-MSc) derived from adipose tissues are characterized by a multilineage differentiation potential and a high proliferative capacity without losing their genetic stability. Today, several clinical trials showed that the application of *ex-vivo* expanded hrs-MSc is safe and feasible in bone, cartilage and nerve repair. In this study, different types of serum were used on culture and growth of horse adipose tissue derived mesenchymal stem cells (hrs-AT-MSc). The hrs-AT-MSc was cultured in 20% FCS (Fetal Calf-Serum); 20% horse serum supplied by Sigma Company and 20% horse allogenic serum obtained from a Belgium company.



In general, hrs-AT-MSc growth and proliferation was better in cultural conditions where 20% FCS and 20% horse serum (Sigma) were used. Stem cell count was higher in the condition where horse serum (Sigma) was used than both FCS and horse allogenic serum. The viability in where allogenic serum (Belgium company) was used than both FCS and horse serum (Sigma).

In conclusion, horse adipose tissue and umbilical cord blood derived mesenchymal stem cell was successfully isolated, proliferated and characterized. Physiologic oxygen tensions (5%) during in vitro culture of equine MSC slow down cell cycle progression and proliferation. Horse serum (Sigma Company) and horse allogenic serum can be used as alternate to fetal calf serum, which is most costly, in equine stem cell culture and research.

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EQS-1 Myxoma in a mule

R N Chaudhary, Kuldeep Singh, Deepika Lather and Satbir Sharma
COVS, CCS HAU, Hisar

An eight year old mule was presented to the clinical complex with two soft tissue growths underlying the skin. One was on the right lateral thoracic wall at the level of elbow while other was on the right jugular furrow just cranial to the brisket. The animal was kept off-feed overnight. Both sites were prepared for aseptic surgery and under xylazine (1.1 mg/kg)-ketamine (2.2 mg/kg) general anesthesia, masses were surgically removed. Grossly, masses were elliptical to spherical in shape and pinkish white in color. On histopathological examination, both masses were myxoma. The mule recovered uneventfully.

EQS-2 Surgical Management of Bilateral Upward Fixation of Patella in a Colt - Case report

S W Monsang, A M Pawde, Irawati Sarode, D N Madhu, Surbhi
Indian Veterinary Research Institute (IVRI), Izatnagar, Bareilly - 243122 (UP)

A colt aged 11 months was referred to the Referral Veterinary Polyclinics, IVRI, with the complaint of bilateral locking of both hind limb. The condition was observed for the past 5 weeks with typical signs of locking of the affected hind limbs for several hours. Surgery was planned under xylazine-ketamine anesthesia under aseptic measures. Prophylactic dose of Tetanus toxoid was administered. The animal was restrained in lateral recumbency with the affected limb downward and the other three limbs tied together. The same procedure was repeated for contra lateral limb. Closed method of medial patellar desmotomy was done by a stab incision made 1.5" above the insertion of medial patellar ligament on the medial tuberosity and 1.5" medial to middle patellar ligament. Post-operatively, analgesics and antibiotics were given intramuscularly for 5 days along with antiseptic dressing. The animal recovered soon after the surgery.

EQS-3 Surgical Management of Squamous Cell Carcinoma of Vulval Lip in a Mare - A Case Report

S.B. Akhare, B.M. Gahlod, B.P. Dandge, V.S. Panchbhai, S.V. Upadhye, M.S. Dhakate & M.G. Thorat

Department of Veterinary Surgery & Radiology, Nagpur Veterinary College, Nagpur (M.S.)

A twelve year old mare was reported to the Teaching Veterinary Clinical Complex, Nagpur Veterinary College, Nagpur with a history of huge mass on right vulval lip and it was gradually increasing in size since 3 months. On clinical examination, the base of the growth was attached to the right vulval lip encroaching genital canal. The growth was excised under dissociative anesthesia; however the blunt dissection and bleeding points were cauterized with the help of electrocautery. Histopathology of the tumor revealed a squamous cell carcinoma of vulval lip.



EQS-4 ✓ **A Rare Case of Pervious Urachus associated with Peritonitis in a Filly**

J. Mohindroo, P. Verma, Tarunbir Singh, M. Raghunath and N. Singh
Department of Veterinary Surgery & Radiology, GADVASU, Ludhiana

A 5 day old filly was presented with a history of dribbling of urine from the umbilicus since birth. Urination from the natural urethral orifice was also present. Clinical examination revealed congested mucus membranes with normal temperature and heart rate. The blood workup revealed neutrophilic leucocytosis and regenerative anemia with a left shift. The filly was anesthetized with a combination of xylazine-ketamine and positioned in dorsal recumbency. Celiotomy was performed at the umbilicus and the urachus was isolated, double ligated and reposed into the abdomen. The umbilical attachment of the urachus was resected before closure of the abdomen. Culture of abdominal swabs revealed gram negative rods which were sensitive to cephotaxime, ceftriaxone and ciprofloxacin. The animal was administered with suitable antibiotics with analgesics and showed good recovery.

EQS-5 ✗ **An Unusual Case of Colostrum Feeding Resulting Paralytic Ileus in A Pregnant Mare**

R. M. Patel, T. P. Patel, J. B. Patel, J. N. Mistry, S. R. Chaudhary and J. S. Patel
Department of Veterinary Surgery and Radiology, College of Veterinary Science & Animal Husbandry, S.D. Agricultural University, Sardarkrushinagar-385 506, Gujarat

A 3 years old and 5 months pregnant mare presented in clinic with the history of colic since previous day and treated by local veterinarian. On inquiry, owner reported that colic was seen after feeding of 3 kg buffalo colostrums. Animal was showing signs of mild colic with regurgitation of small amount of feed material through nostrils. Therapeutic treatment was adopted for two days then also animal could not pass the feces and abdomen distention was increasing, hence it was subjected for surgical intervention. Animal had passed about 1 kg feces after 24 hours in postoperative time; however it was found dead after 36 hours of postoperative period.

EQS-6 ✓ **Surgical repair of third degree perineal laceration in mares**

N.S. Saini, J. Mohindroo, S.K. Mahajan, M. Raghunath, V. Sangwan, A anand and N Singh
Dept. of Vet. Surgery and Radiology, College of Veterinary Science, GADVASU, Ludhiana-141004, Punjab

Clinical study was conducted on eleven mares (n=6) suffering from third degree perineal laceration presented to veterinary teaching hospital, at GADVASU, Ludhiana during 3 years periods (April 2007 to Sept. 2010). Surgical repairs of 3rd degree perineal laceration were done in two stages after six week of initial injury under general anesthesia. Anesthesia was induced with xylazine (1 mg/kg B.wt) and ketamine (2mg/kg B.wt.), then endotracheal intubation was done and general anesthesia was maintained with 2% Isoflurane and oxygen mixture using SurgiVet large animal anesthesia equipment. After aseptic preparation of Perineal area, Scar tissue formed at recto-vaginal junction was exposed. Incision was made along the line of scar tissue. Vaginal and rectal walls were dissected and made free. Rectum and vaginal wall were repaired separately. Vaginal roof reconstruction was carried out using Vicryl thread with simple interrupted sutures starting from far end of the vaginal laceration. Two ends of vaginal laceration apposed and reconstruction of vaginal roof was completed. Then the surgical wound was allowed to heal for 4-5 weeks followed by 2nd stage reconstruction of perineal body. In 4 out of 6 mares after surgical repair of third degree laceration healed successfully without any significant complications. Two mares delivered healthy foals after complete recovery. Complications were observed in two mares. One mare developed partial wound dehiscence even after second attempt but eventually recovered after third surgery while in the other mare surgery was unsuccessful.

EQS-7 ✗ **Surgical removal of an unusually large tumor in a horse: A case report**

*Jasmeet Singh, Madhu D. N., S. W. Monsang, I. Sarode, A. M. Pawde, Amarpal & R. Singh**
Division of Surgery and *Division of Pathology, Indian Veterinary Research Institute, Izatnagar-243122

An eight years old non-descript breed male horse was presented to Referral Veterinary Polyclinic IVRI with the history of a large ulcerating lesion in the left thoracic wall region. The lesion started as a small swelling and increased substantially up to football sized lesion within a period of two months. The



lesion was discharging some pus and hence it was kept on antibiotic coverage and then excisional surgery was carried out after 4 days. Under the effect of xylazine and ketamine anesthesia with the animal restrained on right lateral recumbency, a bold incision was made over the longitudinal length of lesion followed by blunt dissection. The whole mass was removed as such in form of a single round ball like body. A Penrose drain was fixed under the subcutaneous tissue for drainage of contents and easy flushing of the wound cavity. The subcutaneous tissue was sutured followed by skin closure in routine manner. The site was dressed and bandaged followed by application of fly repellent cream around the site. Postoperative strict work rest for 1 month and routine care on general basis was prescribed for a week. The skin sutures were removed on 21st day postoperatively and animal made an uneventful recovery. Histopathology of the tumor sample was also carried out and the details of the procedure, findings and clinical outcome will be discussed in the paper.

EQS-8

Commissurorrhaphy in a Foal: - A Report

S. Purohit, V. Mallik, G. Kumar, P. Katiyar, D. Kumar, B. Singh and S. Bansal

Department of Surgery and Radiology, College of Veterinary Science and Animal Husbandry, DUVASU, Mathura, U.P.

A foal aged about 1 years having large incised wound by sharp object on right commissure of the mouth and on the buccal mucosa near to the horizontal rami of lower jaw was presented to Teaching Veterinary Clinical Complex, DUVASU, Mathura. The drooling of saliva and feed material was observed. The animal lost their general conditions day by day. The commissurorrhaphy was performed under xylazine and ketamine anesthesia using chromic catgut no 2. The buccal mucosa inner to the horizontal rami of lower jaw was sutured in horizontal suture pattern using chromic catgut no 2. Two layers of simple continuous suture applied on the muscles without penetrating the oral surface. The skin was closed in horizontal suture pattern using silk no 2. On telephonic communication, the owner reported the eventless recovery under the umbrella of antibiotic and analgesic therapy.

EQS-9

Clinical management of intestinal obstruction in equines

M. S. Bhadwal, Ajay K. Gupta, R. B. Kushwaha, Ashok Kumar, Utsav Sharma, Sharad kumar and J. S. Soodan

Division of Veterinary Clinic and Teaching Hospital, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-J, R S Pura-181102, Jammu (J&K)

Twelve equines were presented in the clinic with the history of moderate to severe colicky symptoms and cessation of defecation from one to three days duration. Per-rectal examination revealed obstructing mass at the colo-rectal junction in eight animals and at the pelvic flexure of the colon in four animals. The obstructing masses from the colo-rectal junction were removed manually either as single piece or in fragments under xylazine sedation and epidural anesthesia. The obstruction at the pelvic flexure was relieved by performing right flank laparotomy and enterotomy under general anesthesia using butorphanol, xylazine and ketamine in three animals, whereas the fourth animal died before any surgical intervention.

EQS-10

Use of silver nano-chitosan and sago starch composite film for wound healing in a donkey

Arul Jothi. N, Ramesh Kumar. B., T.P. Balagopalan and R.M.D. Alphonse. P. Marie Arockianathan* and T.P. Sastry*

Department of Veterinary Surgery and Radiology, RAGACOVAS, Pondicherry* CLRI, Chennai

An 8 month old jenny met with an accident and presented at the Teaching hospital RAGACOVAS, Pondicherry with an extensive wound on the left shoulder region and a complicated fracture of radius ulna and metacarpal bones with 15 inches long wound on the medial aspect of the right foreleg. The animal was stabilized with fluid therapy and prophylactic tetanus toxoid was given. Under Xylazine - ketamine anaesthesia the wounds were flushed with normal saline. Extensive wound on the medial aspect of the right foreleg was sutured by routine manner. Wound on the left shoulder region and right fore leg were protected with silver nano-chitosan and sago starch composite film prepared from CLRI, Chennai. Wound dressing was done with wound protectors once in 4 days and the wound healing was assessed by standard procedure. The animal was administered with 2gm of streptopenicillin IM daily for 5 days. The sutures were removed on 12th day and the animal had an uneventful recovery.



SMALL ANIMAL SURGERY SESSION

Date : 09.12.2010 Time : 9.00 am

Venue : Conference Hall

Chairman : Dr. S.S. Singh

Rapporteur : Dr. L. Nagarajan

LEAD PAPER

Surgical management of urinary bladder in dogs and cats- an update

Dr.S.Thilagar, PhD. FISVS

Controller of examinations, Tamil Nadu Veterinary and Animal Sciences University, Chennai 51- TAMILNADU

Surgical management of urinary bladder in dogs and cats requires regular knowledge refreshment for the practitioners since the condition involving the urinary bladder is increasing in the recent years. Many surgical lesions like Cystic calculi, Bladder rupture, Neoplasm of urinary bladder, blood clot formation and Congenital condition involving abnormal location of tubular structure warrants surgery in the bladder. Advances in the field of Veterinary Surgery needs a revisit in the procedures and general approach. The paper describes different surgical procedures and its advances.

A. Cystotomy

Indication: Calculi removal, space occupying pathological lesion, blood clot congenital condition partially involving bladder and tissue harvest for biopsy.

A surgical procedure incising the bladder either on the dorsal or ventral surface. In some occasion ventral approach is preferred to attain easy exposure of ureter and catheterization. Midline ventral approach after aseptic preparation is the common approach employed in dogs. The urinary bladder is isolated and packed with sterile sponges. Prior to surgery urine is removed from the bladder using 23 G needle with sterile syringe in-order to prevent abdominal contamination. The bladder is temporarily immobilized by applying of two stay suture (cranial and caudal) including serosa to submucosa in the apex and neck. The bladder should be incised using blade 15 and the incision is extended using Metzenbaum scissors. Use of Allis tissue forceps, Crushing thumb forceps are to be avoided. Use of non-crushing thumb forceps will be beneficial in removing the calculi without causing damage to the mucous membrane. Incision close to urteral opening should be avoided in order avoid occlusion of ureter. Although inversion suture is recommended, some time it is impossible to avoid penetration of bladder lumen in thin walled bladder. Bleeding from the incised is best controlled by thumb pressure but by not by either using cryosurgery or hemostatic forceps. The bladder should be lavaged using normal saline which aids in cent percent removal of left out minor calculi, debris, dead cells and casts. In chronic inflammation mucosal fold and neck of the bladder should be examined carefully for minor calculi. In many circumstances this pose problems. Surgeons should count the removed calculi and tally with imaging results to achieve 100 % success. Failure to remove all cystic calculi, catheterization and flushing will aid in recovery rate.

Although many literatures pronounce double layer inversion suture for cystotomy closure, single layer apposition closure is recommended for most cystotomies of thick walled bladder. Thin wall bladders may be closed with an appositional or inverting pattern (Radasch et al 1988). The authors has observed many referred cases of bladder leakage after thickened bladder wall that was suture with inverting suture pattern. Catheterization (closed system) prior to surgery is a preferred method. Antigrade and retrograde catheterization and flushing the urethra is an essential in cystotomy surgery.

The use of monofilament absorbable suture materials is recommended to minimize the incidence of such complication. The preferred suture and needle options is furnished in the table

Table: Choice of suture materials and needles

Structure	I-choice	II-choice	Cat Small	Medium dog dog	Large &Giant 20-45 kg	Needle type
Urinary Bladder	Monocryl (Polycaprone)	PDS II	4-0	4-03-0	3-02-0	TP



Linea laba	Monocryl (young animals)PDS II (old animals)	Vicryl Plus	3-0	3-02-00	2-01-00	TPRC
S/C	Monocryl Plus (antibacterial)	Vicryl PDS II,Vicryl	4-0	4-03-0	3-02-0	TP
Skin	Prolene,Ethilon	silk	4-0	4-03-0	3-02-0	RC

TC-Taper Point RC -Reverse cut

The major risks bladder surgery is those of bleeding (hemorrhage), postoperative infection, urine leakage, and wound breakdown (dehiscence) over the incision. Overall complication rate is low, but serious complications can result in death or the need for additional surgery.

B. Tube cystostomy Providing temporary urinary diversion

Indications: urethral rupture repair, or temporary urethral obstruction

A location in the ventro-lateral bladder wall is identified mid-way between the trigone and the apex of the bladder after mid ventral celiotomy. A purse-string suture of 2-0) or 3-0 polydioxanone is placed. A catheter is placed through a stab incision in the body wall approximately 2cm lateral to the ventral midline at a level that will minimally distort bladder position before the catheter tip is placed into the bladder. The catheter is then inserted into the bladder lumen through a stab incision in the centre of the purse-string suture. The balloon of the Foley catheter is then inflated but kept away from the bladder wall to avoid inadvertent catheter balloon puncture. Once the catheter tip is inside the bladder, the other end of the catheter should be occluded using artery forceps or similar. Four cystopexy sutures of polydioxanone are preplaced in a box configuration around the abdominal and bladder wall incisions. Ideally, the pexy sutures should pass through the seromuscular layers of the bladder wall and partial thickness through the body wall. The sutures are then tied and the catheter tip is drawn up to the bladder wall. The tube is secured with either a Chinese finger trap suture or tape tabs sutured to the skin. Abdominal closure is routine. The catheter is attached to a closed collection system initially

C. Cystectomy Removal of a portion of devitalized urinary bladder, bladder wall with infiltrating lesion

Indication: Polyps, Neoplasm and Rupture bladder wall

Transitional Cell carcinoma most commonly occurs in the urinary bladder specifically the trigone at single or multiple simultaneous sites with in the bladder. Other Primary lower urinary tract neoplasm include squamous cell carcinoma, adenocarcinoma, hemangiosarcoma, leiomyosarcoma, lymphoma, rhabdomyosarcoma. Surgery is treatment method for all tumors located at the apex in the non-metastatic patients in animals 80% of the bladder can be safely resected without affecting long term bladder capacity, but most surgical treatment is limited to debulking procedures. When thinking about surgery the entire mucosal surface should be examined.

There is limited efficacy for TCC located at trigone. TCC is usually red and friable. In cases of neoplasm, attempt to resection is done by isolating the site from the rest of the abdomen via laparotomy pad since the risk of transplantation of the tumor cells in certain neoplasm is a common one. Besides laparotomy usage of new instruments for closure and through flushing the bladder site surgery with saline after closure

In cases of bladder wall rupture with gangrene status, polyps the affected area is resected and reconstructed. The viability of the wall is assessed for bleeding points

D. Diversion surgical techniques

Ileo-Vesicostomy, Anastomosing ileum to the bladder



Indication: Neurogenic bladder, lower urinary tract disaster, urethrocutaneous fistula, lower urinary tract obstruction

This allows the bladder to act as continent reservoir which was drained volitionally through the ileal conduit instead of urethra. (Smith and Hinmann, 1955). Many authors suggested that in patients with severe lower urinary tract symptoms and inability to have frequent catheterization and refractory medical therapy ileovesicostomy is the procedure of choice (Brit Zimmerman and Santuci 2009)

F.Neo-cystostomy: Reestablishing abnormally located the urinary tract by fixing in its original position

Indication: ectopic ureter

In breeds like Golden Retriever, abnormal location of, submucosal location of ureter will results in ectopic ureter. In these cases, the ureter terminal location and the placement should be established after cystotomy. The transected ureter can be fixed to the normal anatomical location using 5-0 or 6-0 suture materials. The mucosa of ureter has to sutured with mucosal of urinary bladder.

E.Augmenting Bladder wall:

In cases of infiltrating lesion, insufficient bladder wall capacity can be augmented using submucosa of intestine. This technique is employed to augment bladder regeneration; experimentally many successful results are recorded in the recent.

Reference

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Flower,D Surgery of the urinary tract Waltham Manual



SAS-1

Evaluation of wound healing potential of coelomic fluid in rabbits

Amarpal, H.P. Aithal, P. Kinjavdekar, A. M. Pawde, Ramesh Tiwary, Rahul Udehiya, K.P. Singh and Ranvir Singh

Division of Veterinary Surgery, Indian Veterinary Research Institute, Izatnagar-243122, India

Sixteen rabbits of about one year of age were used. Rectangular full thickness excisional wounds were created in the skin of the dorsum under general anaesthesia. A total of 4 wounds were created in each animal; two on the left side and two on the right to the midline. Each wound was randomly assigned to one of the following treatments. 1) Application of coelomic fluid; 2) Cleaning with 0.5% povidone-iodine followed by application of coelomic fluid; 3) Cleaning with Normal saline and 4) Cleaning with 0.5% povidone-iodine. Evaluation of the wounds was done on days 3, 7, 14, 21 and 28. On day 3 all the wound size had started to reduce in all the treatment groups and the wounds of treatment III and IV appeared considerably larger than the wounds of the treatment I and II. Wound contraction was maximum in the animals of treatment II (27.56%) followed by the wounds of treatment I (25.07%) but the wound contraction in the treatment groups III and IV was very less. On day 7, the wound contraction was faster in the wounds of treatment I (51.15%) followed by the wounds in treatment II (48.29%) than the treatment I and II. On day 14, out of 11 wounds, two wounds in treatment I and one wound in treatment II had healed almost completely by day 14. In the wounds of treatment III and IV, all the wounds had unhealed area over 1cm². The wound contraction was maximal in the wounds of treatment I (81.09%)



followed by the wounds of treatment II (78.96%) and followed by the wounds of treatment IV and III. On day 21 out of nine wounds, six wounds in treatment I (66.66%) and five wound in treatment II (55.55%) had healed completely by day 21 and the total unhealed wound area in the remaining wounds was lesser than 0.5cm². In the wounds of treatment III and IV, none of the wound healed completely. The wound contraction was maximal in the wounds of treatment II (98.66%) followed by the wounds of treatment I (98.14%) and followed by the wounds of treatment IV (88.29%) and III (88.20%). On day 28 all the wounds of different treatment groups had healed completely. The histological examination confirmed the findings of clinical examination. The results of the study suggested faster healing in the wounds treated with coelomic fluid alone or in combination with 0.5% povidone-iodine as compared to the wounds treated with povidone-iodine alone or normal saline solution.

SAS-2 Incidence of connective tissue neoplasm in dogs of Indore and adjoining areas.

Pooja Arya, B.P.Shukla and Rayes Ahmed

Department of Veterinary Surgery and Radiology, College of Veterinary Sciences & A.H Mhow

The treatment of soft tissue tumors needs the co-ordinated adoption of surgery and radiation therapy eventually, chemotherapy. A tumor in the dogs is a common occurrence and needs immediate and decisive veterinary attentions. A study was conducted in Indore and adjoining places of Indore for occurrence of connective tissue neoplasm in dogs. Among 30 suspected cases of tumors only 15 were found to be true connective tissue tumor after histopathological examinations of excised tumors, in which 5 cases were diagnosed as malignant and 10 cases were benign connective tissue tumor. The incidence for connective tissue tumor was found to be 55.5% during the period of study, which was one year. Canine mammary tumor and transmissible venereal granulomas were not included in the study. Dogs ageing between 8-12 yrs and especially male dogs showed high incidence of connective tissue tumors.

SAS-3 Haemato-biochemical evaluation of Vincristeine, doxorubicin and methotrexate combination in treatment of malignant connective tissue of dogs

Pooja Arya, B.P.shukla & Rayes Ahmed

Department of Veterinary Surgery and Radiology, College of Veterinary Sciences & A.H Mhow

Vincristeine @ 0.02 mg/kg b.wt, doxorubicine @1-2 mg/kg b.wt and methotrexate @ 0.3-0.8 mg/kg b.wt slow i/v along with 5% dextrose was given to the dogs found positive for malignant connective tissue neoplasm at weekly intervals. Different hematological parameters like Hb, TLC, DLC, Platlets and bio-chemical like serum creatinin, alkaline phosphatase, SGPT and c-reactive protein were estimated. There were significant decrease in Hb, TLC, platlets and neutrophil count followed by significant increase in lymphocyte count and also there were significant increase in serum creatinine,ALP, SGPT and CRP showed non-significant increase in all the cases. Therefore VDM combination was safe, economic and easy to administer and was effective in prolonging the disease free survival time in dogs.

SAS-4 Evaluation of Topicure spray for the management of surgical wounds in Canines

S.K. Tiwari, R. Sharda, K.K. Gurmita, Dillip Kumar, Deepak Kashyap & Narendra Naik

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Management of perioperative & postoperative infection contributes a major share in the success of any surgery in canines. Various surgical operations viz docking, aural haematoma, spaying, gastrotomy, cystotomy, urethrotomy, enterotomy, V.G., mammary tumor, laparotomy, & treatment of maggotted & incised wounds was done in a total of 64 dogs. The postoperative dressing was done using Topicure spray (Natural Remedies Pvt.Ltd, Bangalore) There was unevent recovery in 58 animals in a period ranging from 4 to 9 days contributing to an overall success rate of 90.62 per cent. Thus Topicure spray can be effectively used for preoperative preparation and postoperative wound dressing in canines.



SAS-5

Caesarean section under midazolam, medetomidine premedication and propofol anaesthesia in bitches-A report of four cases

S.K. Tiwari, R. Sharda, K.K. Gurmita, Dilip Kumar, Deepak Kashyap & Narendra Naik

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Efficacy of midazolam and medetomidine as premedicants to propofol anaesthesia was evaluated in 4 bitches (2 German shepherd, 1 Labrador and 1 pomeranian) undergoing caesarean section. After atropine sulphate (@ 0.04mg/kg b.wt I/M) injection, midazolam @ 0.3mg/kg I/V was given in two bitches and in the remaining two cases medetomidine @ 20µg/kg I/M was given 10 mins. prior to the administration of propofol (@ 4mg/kg b.wt I/V) anaesthesia. The onset of anaesthesia was very smooth in all the cases. The duration of anaesthesia was for 15.25 + 2.12 mins in midazolam- propofol anaesthesia where as it was 22.50 + 2.60 mins with medetomidine - propofol anaesthesia. Caesarean section was performed as per standard surgical procedure. All the pups born were alive. All the bitches recovered uneventfully from anaesthesia. Routine post operative treatment using antibiotics, fluid therapy, analgesics and antiseptic dressing was done in all the cases. All the animals recovered uneventfully and without any complication in a time period of 8 to 12 days. Thus, it is concluded that midazolam or medetomidine can be safely used in combination with propofol for inducing general anaesthesia in bitches undergoing caesarean section.

SAS-6

A Complicated Case of Chronic Sternum Fistula in A Dog

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A 2½ year male Labrador retriever dog was referred to the Pet Aid Center, with a history of sternum draining fistula of two months duration. The dog has been treated by different local and systemic antibiotic regimes already with no successful outcome. Pus was draining from the fistula. The vital parameter and CBC were in normal range. A blunt metal probe was inserted into the fistula and radiograph was obtained. No foreign body or any other opacity was detected and metal probe showed a wide area of cavity around the sternum area. Also positive radiographic study did not show any foreign body. In an attempt to remove contrast material from the fistula a thin piece of Wheat Straw (Bhusa) about 2.5 cm was appeared in the fistula draining material. The animal was prepared for an aseptic exploratory wound surgery that was anesthetized by acethyl promazine and ketamine. The fistula and its cavity were dissected bluntly from its surrounding soft tissues that were sent for microbiological and pathological examination. The area was closed and the animal received antibiotic, anti-inflammatory and analgesic drugs post operatively. In three weeks the wound area was completely healed with no more draining material. It was concluded that the thin wheat straw has been the cause of draining fistula in the sternum of this dog and its removal regressed the draining fistula.

SAS-7

Evaluation of wound healing potency of *Ocimum sanctum* and *Tinospora cordifolia* ointments on wound healing in dog

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The wound healing potency of *Ocimum sanctum* and *Tinospora cordifolia* ointments (5%) were evaluated on full thickness skin wounds created at the thoraco-lumbar region on 16 clinically healthy mongrel dogs of either sex aged between 1-3 years and weighing 12-15 kg body weight. Four wounds of 4x3 cm full thickness skin, two on left side and two on right to the midline were created on dorsal aspect of the lumbar region of each animal under xylazine-ketamine anaesthesia. The wounds in each animal were randomly assigned to four different treatments i.e. *Ocimum sanctum* ointment (A), *Tinospora cordifolia* ointment (B), Scavon cream (C) and normal saline (D, control). Each wound was observed for 24 days for wound colouration, granulation tissue formation, wound contraction or percent healing, histopathological and biochemical and complete duration of healing. Granulation tissue formation became prominent on



10th day after post wounding treatment in both the group A and B. Wound contraction or percent healing was significantly higher ($P < 0.05$) in A treated wounds (88.40 ± 0.02) than B (78.25 ± 0.03), C (78.25 ± 0.03) and D (77.35 ± 0.03) groups on days 24th post wounding. A higher proportion of wounds healed earlier in group A treated with *Ocimum sanctum* ointment followed by group C, B and D treated with Scavon cream, *Tinospora cordifolia* ointment and normal saline respectively. Histopathological findings showed early disappearance of inflammatory reactions, better epithelialization, more vascularization, fibroplasias, collagenation and early histological maturation and well developed epidermis in group A treated wounds when compared to groups B, C and D treated wounds. The rate of collagen and elastin was also significantly higher in case of wounds treated with *Ocimum sanctum* ointment than Scavon cream, *Tinospora cordifolia* ointment and normal saline treated wounds on 24th day post treatment.

SAS-8

Management of Ocular Hypertension in Cataractous Eyes of Dogs by Phacoemulsification Combined with Gonioimplant

Sooryadas, S., C. Ramani, B. Justin William, Geetha Ramesh and R. Suresh Kumar

Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai – 7.

Six dogs diagnosed of co-existent cataract and ocular hypertension, in which the ocular hypertension could not be medically managed, formed the subject of the study. The dogs had an intraocular pressure (mean \pm SE) of 42.83 ± 9.95 mm Hg and a visual score (mean \pm SE) of 0.67 ± 0.33 out of 6. The co-existent conditions were managed by phacoemulsification - for removal of cataract, combined with implantation of a gonio-shunt tube (gonioimplant) - for the management of the ocular hypertension. The mean reduction of the IOP observed on the 30th postoperative day, was 30.67 ± 9.25 mm Hg. The visual score on the 30th postoperative day was found increased to 2.33 ± 1.09 out of 6. The gonioimplant (Keiki Mehta "BP Valve" Glaucoma Shunt) was found suitable for use in dogs. The combined surgical procedure and the findings in this study are detailed.

SAS-9

Management of Ocular Hypertension in Cataractous Eyes of Dogs by Phacoemulsification Combined with Trabeculectomy

Sooryadas, S., C. Ramani, B. Justin William, Geetha Ramesh and R. Suresh Kumar

Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai – 7.

Six dogs diagnosed of co-existent cataract and ocular hypertension, in which the ocular hypertension could not be medically managed, formed the subject of the study. The dogs had an intraocular pressure (mean \pm SE) of 23.50 ± 0.72 mm Hg and a visual score (mean \pm SE) of 1.50 ± 0.34 out of 6. The co-existent conditions were managed by phacoemulsification - for removal of cataract, combined with trabeculectomy - for the management of the ocular hypertension. The mean reduction of the IOP observed on the 30th postoperative day, was 9.00 ± 2.21 mm Hg. The visual score on the 30th postoperative day was found increased to 3.83 ± 1.22 out of 6. The combined surgical procedure and the findings in this study are detailed.

SAS-10

Role of acellular diaphragmatic xenograft of ovine origin in healing of acid burn wound in dog.

Nasir Altaf Zarger, H.R. Bhardwaj, N.K. Singh, D.K. Dwivedi, and Aditya Sharma

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A case of burn injury at hind limb was presented with a history that dog was subjected to accidental acid burn day before yesterday. On clinical examination there was third degree burn with full thickness skin sloughing. Depending upon the severity of the burn the wound site was profusely washed with saline solution in order to neutralise the acidic skin reaction. After that it was planned to apply acellular diaphragmatic xenograft of ovine origin to wound area. Regular dressing of the wound area was done with non adherent povidone-iodine impregnated sterilized gauze. Acellular diaphragmatic tissue showed excellent adherence to the wound area and graft tissue was well accepted. The complete healing of the xenografted acid wound area was seen in about 14 days. Healing pattern was studied histologically and histochemically.



SAS-11 Electrocardiographic changes in dogs of different age groups

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Electrocardiography is a gold standard to screen any cardiac abnormality in human medicine. In veterinary practice, there is a great variation of species, breeds etc that need to be addressed for clinical use. In the present study electrocardiogram of 18 apparently healthy dogs of different age groups irrespective of their breed and sex was recorded to find out if there is any age related changes on ECG. All the animals were divided into 3 groups as per age- group I consisted of animals of <6 months, group II- 6 months to 5 years and group III > 5 years. A lead II was recorded at a paper speed of 25 mm/sec and amplitude of 1 mV. P-wave amplitude was significantly higher [$P<0.05$] in group I than group III. PR and QT intervals were significantly shorter in animals of group I from that of group II and group III. Heart rate was significantly higher in group I from that of group II and group III. Other parameters like QRS complex and T-waves did not show any significant difference. It was concluded that significantly higher P-wave in group I than that of group III was because of increased heart rate in group I. Further, shorter PR and QT intervals in group I were also due to increase in heart rate in group I as compared to group II and group III. Since PR interval gives a good estimate of AV node function, it can be concluded that there is delay in impulse transmission across AV node in older animals than young ones.

SAS-12 Surgical Management of Subluxated Cataractous Lens using Cryoextraction Technique in Four Dogs and A Cat

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Four dogs and one cat were presented with history of vision loss. Detailed ophthalmological examination using indirect ophthalmoscope and ultrasonography revealed mature cataract with subluxation of lens. The luxated lens was removed following clear corneal incision using cryoextraction technique under general anaesthesia. Postoperatively, topical NSAIDs antibiotic- steroid combination and mydriatics were continued for 30 days.

SAS-13 Clinical Evaluation of Extracapsular Extraction, Manual Small Incision and Phacoemulsification Techniques for Cataract Surgery in Dogs

K. R. Mistry, D. B. Patil, P. V. Parikh, M. J. Sheth, S. K. Jhala, Nisha Joy, D. K. Tiwari, Mehraj u din dar and A. H. Pitroda

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A clinical study using three surgical techniques for removal of cataractous lens viz., Extracapsular Cataract surgery (ECCE), Manual Small Incision Cataract surgery (MSICS) and Phacoemulsification with intraocular lens implantation was conducted on 18 eyes of 17 dogs with cataract. On comparison of the three techniques, with ECCE good results were seen in 66% eyes (4 out of 6), fair in 17% eyes (1 out of 6) and failure in 17% eyes (1 out of 6); MSICS showed good results in 83% eyes (5 out of 6) and fair in 17% eyes (1 out of 6); while phacoemulsification converted ECCE cases yielded good result in 100% eyes (6 out of 6).

SAS-14 Diagnosis and management of Persistent Right Aortic Arch (PRAA) in dogs

J. Mohindroo, P. Verma, Tarunbir Singh, M. Raghunath, N. Singh and N. S. Saini

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Four pups aged between 2 months-6months were presented with history of persistent vomiting immediately after meals. The animals showed stunted growth as compared to their littermates. Plain



radiographs were suggestive of gaseous dilatation of thoracic oesophagus. Contrast radiographs with barium meal revealed dilatation of the oesophagus with accumulation of contrast agent just cranial to the carina which confirmed persistent right aortic arch. Left side thoracotomy after 4th/5th rib resection was performed under diazepam, thiopental, isofluorane anesthesia. Positive pressure ventilation was maintained using Boyles basic anesthesia apparatus throughout the surgery. The PRAA was isolated, ligated at both the sides and transected from the middle. The relaxation of the oesophagus at the site of the constriction was ascertained by passing a gastric tube. Thoracotomy incision was closed in routine manner and before placing the last suture the lungs were hyperinflated to maintain negative pressure in the thorax. Three animals showed marked gain in weight and body condition over a period of follow up of 2 -4 months. One animal showed signs of respiratory distress 3 days after surgery and succumbed.

SAS-15 **Diagnosis and Management of Four Unusual Cases of Urinary Tract Affections in Canines**

Tarunbir Singh M. Raghunath, Navdeep Singh, J. Mohindroo, Pallavi Verma and Shubneet Singh

Department of Veterinary Surgery & Radiology, GADVASU, Ludhiana

The present report includes four dogs suffering from unusual affections of urinary tract. First dog was one year old German shepherd suffering from urinary retention since 6 months. The animal was being managed by repeated cystocentesis and catheterization at field level. Ultrasonography and radiographic examination of the animal revealed a bilobed bladder. The animal was operated for partial cystectomy under general anaesthesia. Postoperatively urinary bladder atony was corrected by giving Bethanechol @ 10mg/kg bwt PO, TID. Animal showed good recovery during postoperative follow up period of one year. Second case was a 4 month old male Labrador retriever pup having a history of blood in urine since one month. Ultrasonographic examination revealed a radiopaque mass simulating the density of calculus in the ventral abdominal area. Passing the normal saline solution during ultrasonography confirmed the mass to be fixed to the bladder wall. Microscopic examination of urine samples showed transitional cell carcinoma. Surgical removal of the growth was performed by performing cystotomy. Postoperatively animal was maintained on antibiotics, analgesics. Histopathological examination of the retrieved mass confirmed it to be a transitional cell carcinoma. Animal did not show any recurrence of carcinoma upto a follow up period of 1 year. Two female dogs suffering from retention of urine since 15 and 30 days were reported. Ultrasonographic examination of these animals showed dilated renal pelvis indicating hydronephrosis. Urinary bladder was catheterised in both animals for continued passage of urine. Recovery was fast in one animal where levels of BUN and creatinine came to normal and animal was passing urine normally by the 4th day of treatment. Second animal was having atonic bladder. The urinary bladder atony was corrected by giving Bethanechol @ 10mg/kg bwt PO, TID. Satisfactory recovery was seen after 15 days of the start of treatment.

SAS-16 **Hematobiochemical Changes and their Prognostic Effect on Canine Gastrointestinal Obstruction**

M. Atray, M. Raghunath, Tarunbir Singh and J. Mohindroo

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The present study was conducted on 22 clinical cases of GIT obstruction of which seven were due to foreign bodies and 15 were due to intestinal intussusception. Hematobiochemical parameters were evaluated pre and postoperatively. Anaemia, neutrophilic leukocytosis, hyponatremia, hypochloremia, hyperkalemia and elevated levels of LDH, lactate and AKP were the common findings in all the dogs preoperatively. Under general anaesthesia, all the dogs were subjected to surgical correction and postoperative treatment regimen including antibiotics and appropriate fluid therapy was given to control the infection and to correct the biochemical abnormalities. Comparison of pre and postoperative values of hematobiochemical parameters among survivors (n=15) and non-survivors (n=7) showed that the levels of haemoglobin, neutrophil count, sodium, potassium and chloride were within the normal range in survivors than in the non-survivors. The changes in hematobiochemical parameters thus could be taken as good prognostic indicators in canine gastrointestinal obstruction cases.



SAS-17 **Surgical Management of Double Intestinal Intussusception in Dogs**

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Intestinal obstruction due to double intussusception is a rare occurrence. The present report puts on record the diagnosis and management of three clinical cases of double intussusception in dogs. Physical examination, abdominal survey radiography and ultrasonography helped in diagnosing the condition. Laparotomy under general anaesthesia revealed jejunoilealcaecocolic double intussusception in all three dogs. Intussusception was reduced manually in one dog and by intestinal resection and anastomosis in two dogs. The postoperative treatment regimen included antibiotics, analgesics and fluid therapy. One dog died on 4th postoperative day. Two dogs showed good recovery indicated by regain of normal appetite and physical activity. Hematobiochemical parameters were in near normal range on 12th postoperative day. Double intestinal intussusception is a rare condition with poor prognosis but if diagnosed early, they could be managed effectively by surgical intervention.

SAS-18 **Diagnosis and Management of Canine Gastrointestinal Obstruction Cases**

M. Atray, M. Raghunath and Tarunbir Singh

Department of Veterinary Surgery and Radiology, GADVASU, Ludhiana

The study was conducted on 22 clinical cases of canine gastrointestinal tract (GIT) obstruction, of which 17 were male and 5 were female dogs, aged between 1.5 months to 7 years and weighing 2.7 to 34 kg. The incidence was highest in Labrador breed. Anorexia, vomiting and diarrhea were the common symptoms with severe anaemia, dehydration and neutrophilic leucocytosis at the time of presentation. Survey radiographs and abdominal ultrasonography complimented each other in diagnosing the condition. Based on the diagnosis and intraoperative findings, the cases were divided as Group 1 (n=7) included obstruction due to foreign body, Group 2a (n=4) included obstruction due to intestinal intussusception that could be manually reduced and Group 2b (n=10) in which intussusception was corrected by intestinal resection and anastomosis. Intraoperatively collected peritoneal fluid culture showed sensitivity to gentamicin, ceftriaxone, streptomycin and neomycin. Postoperatively, the blood hemato-biochemical parameters were towards the normal range. The mortality rates of 14.3 (n=1) and 33.3% (n=5) were recorded in groups 1 and 2 respectively. From the finding of the study it could be concluded that timely diagnosis and surgical intervention with post-operative antibiotic selection based on the culture sensitivity of the peritoneal fluid and rehydration based on hemato-biochemical alterations may help in effective management of GIT obstruction cases.

SAS-19 **Comparison of Conventional versus Laparoscopic Ovario-hysterectomy in Bitches: Clinical studies**

Bijyal, R., Jawre, S., Bhargava, M.K., Shahi, A., Singh, R. and Chandrapuria, V.P.

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The present study was undertaken on 12 bitches, 6 - 12 years of age and weighing 15 to 20 kg. These bitches were randomly divided into two groups, each group consisting of six bitches. In the bitches of group I conventional ovario-hysterectomy was done by midline laparotomy, whereas in bitches of group II, laparoscopic ovario-hysterectomy was done. The animals of both the group were anesthetized by using atropine sulphate + xylazine and ketamine. The duration of surgical anesthesia was significantly more (115.00 ± 15.32 minutes) in group II as compared to group I (65.00 ± 13.78 minutes), whereas complete recovery from anaesthesia was in 117.5 ± 14.00 & 132.50 ± 15.69 minutes in group I & II respectively. The time required to complete hysterectomy was significantly more (84.16 ± 14.28 minutes) in group II as compared to group I bitches (45.00 ± 6.19 minutes). In group I bitches healing completed in 8-10 days, whereas in group II in 3-4 days. The bitches also exhibited more pain, more tissue trauma and restriction of diet and movement post operatively in conventional ovario-hysterectomy as compared



to laparoscopic ovario-hysterectomy. Rectal temperature, respiration & heart rate showed significant decrease up to 6 hrs in both the group of bitches thereafter the values increased gradually and from 24 to 96 hours the values fluctuated with in the normal range in both the groups of dogs.

Comparison of Conventional versus Laparoscopic Ovario-hysterectomy in Bitches: Haemato-biochemical studies

Bijyal, R., Bhargava, M.K., Jawre, S., Shahi, A., Singh, R. and Chandrapuria, V.P.
College of Veterinary Science & A.H., Jabalpur, Madhya Pradesh Pashu Chikitsa Vigyan
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The present study was undertaken on 12 bitches, 6 - 12 years of age and weighing 15 to 20 kg. These bitches were randomly divided into two groups, each group consisting of six bitches. In the bitches of group I conventional ovario-hysterectomy was done by midline laparotomy, whereas in bitches of group II, laparoscopic ovario-hysterectomy was done. The analysis of the blood for hematological attributes shows non-significant decrease in TEC, PCV and lymphocyte count, while non significant change was observed in TLC and monocyte count. Significant decrease in haemoglobin and eosinophil count, while non-significant increase in neutrophil count was observed. Similarly in biochemical parameters non-significant increase in blood glucose was recorded, while non significant variation was observed in total protein, serum albumin, alkaline phosphatase, aspartate amino transferase, serum creatinine and blood urea nitrogen at different time intervals. Comparison between the two groups of animals showed non-significant variation between the two groups of animals in all the above haemato-biochemical parameters.

Diagnostic and Therapeutic studies on ear affections in dogs: Clinical and gross observations

Kumar, Santosh, Bhargava, M.K., Singh, R., Jawre, S., Shahi, A., and Chandrapuria, V.P.
College of Veterinary Science & A.H., Jabalpur, Madhya Pradesh Pashu Chikitsa Vigyan
Vishwavidyalaya, Jabalpur

The present study was under taken on 18 dogs brought to the TVCC for the treatment of otitis and were selected irrespective of their age, breed and sex. These dogs were randomly divided into three groups, each group consisting of 6 dogs. The dogs of group I were treated with cleaning of ear canal with clean cotton swab + normal saline + painting of ear canal with Povidone iodine + Waxolve + Candibiotic ear drops + Inj. Cefotaxim + Inj. Nimusulide, group II : treatment as in group I except candibiotic ear drops + low level laser therapy and group III: treatment as in group I + low level laser therapy. The clinical parameters rectal temperature, heart rate & respiration rate showed non-significant variation within the group and between the groups at different time intervals. Mild to extensive inflammation of pinna was observed before the start of the treatment, whereas on 5th day no inflammation was observed in all the dogs of group III. Colour of pinna in all the three groups of dogs varied from pale to red on 0 day, whereas, normal colour of pinna was observed on 5th day in all the dogs of group III. Serogangrenous to dark brown colour mild to extensive foul smelling discharge was recorded on zero day but on day 5th no smell & discharge was noticed in the all dogs of group II and III.

Diagnostic and Therapeutic Studies on ear Affections in dogs: Video-otoscopic Studies

Kumar, Santosh, Bhargava, M.K., Jawre, S., Singh, R., Shahi, A., and Chandrapuria, V.P.
College of Veterinary Science & A.H., Jabalpur, Madhya Pradesh Pashu Chikitsa Vigyan
Vishwavidyalaya, Jabalpur,

The present study was under taken on 18 dogs brought to the TVCC for the treatment of otitis and were selected irrespective of their age, breed and sex. These dogs were randomly divided into three groups, each group consisting of 6 dogs. The dogs of group I were treated with cleaning of ear canal with clean cotton swab + normal saline + painting of ear canal with Povidone iodine+ Waxolve +



Candibiotic ear drops + Inj. Cefotaxim + Inj. Nimusulide, group II : treatment as in group I except candibiotic ear drops + low level laser therapy and group III: treatment as in group I + low level laser therapy. On video otoscopic examination mild to extensive deposition of cerumen was noticed in all the dogs of three group on day zero. Reduction in the quantity of cerumen was recorded from 5th day onward, which became practically nil on day 15th in all the dogs of groups III. In all the dogs of three groups inflammation of the external year canal ranged from mild to extensive on day zero. From 5th day on onward no inflammation of the ear canal was noticed in all the dogs of group III, whereas, mild to severe inflammation was seen in group I & II. No ulceration of external ear canal was noticed in any of the dog of group I, whereas ulceration was recorded in one dog of group II and three dogs of group III on zero day. On 5th day no ulceration was recorded in all the three dogs of group III, whereas in group II it persisted up to this interval , but it got cured up to 10th day.

SAS-23

Experimental evaluation of *Centella asiatica* leaf paste as promoter of wound healing in Wistar albino rats

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Excision wounds were created in 16 albino Wistar rats to assess the wound healing potential of fresh *Centella asiatica* leaf paste. The rats were divided into two groups comprising eight animals each. The wounds were treated with povidone iodine ointment in group I and with the leaf paste in group II rats. In both the groups, inflammatory reaction and pain sensation reduced gradually and disappeared on 7th post treatment day. Granulation tissue appeared on the floor of the wound cavity on 4th day in group I and on 6th day in group II. The biomolecular markers of tissue repair with particular reference to superoxide dismutase, catalase, tissue protein and collagen showed favourable alterations in both the groups. The study revealed a conclusive proof, under experimental situations, for the traditional information on the wound healing properties of *Centella asiatica*.

SAS-24

Histological observations on the efficacy of an herbal formulation on healing of excision wounds in rats

S. Peer Mohamed and A. Ramanathan*

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To evaluate the healing properties of a traditional herbal formulation containing leaf extract of *Aristolochia bracteata*, *Aloe vera* pulp, *Curcuma longa* powder, neem oil and honey wax, excision wounds were inflicted in 16 albino Wistar rats. Povidone iodine (group I) and the herbal formulation (group II) were applied topically to eight rats each. On fifteenth day all the rats were euthanized and tissue specimens were subjected to histological examination. Fibrous granulation tissue in five specimens and vascular granulation tissue in three specimens was observed in each group. In group I, complete epithelialization in three specimens, partial epithelialization in two specimens and frank ulcers in the remaining three specimens were noticed. In group II, four specimens showed complete epithelialization while partial epithelialization was evident in the remaining four. No frank ulcers were seen in group II. The herbal formulation under study showed a definite positive effect in wound healing as evidenced by deposition of fibrous granulation tissue, neovascularization and faster epithelialization.

SAS-25

A Clinical Study on Ocular Diseases in Dogs

Bharathi.S, K.B.P.Raghavender, and Gireesh Kumar.V

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The study was performed on 110 clinical cases of eye diseases in dogs presented to the surgery ward of College of Veterinary Science, Hyderabad. The diseases were classified into different groups based on the anatomical structure involved, age and breed of the dog. No sex predilection was seen in the



cases undertaken for this study. Eyelid lacerations, eyelid tumours, and prolapse of gland of nictitating membrane were treated surgically. Conjunctivitis and Keratitis were treated according to the culture and antibiotic sensitivity test results. Superficial corneal ulcers were treated by topical antibiotic. Deep corneal ulcers were treated by nictitating membrane flaps, and by temporary tarsorrhaphy. Mature Cataracts were treated by extracapsular and intracapsular methods of lens extraction with help of a cryoprobe. Foldable lens was implanted in two cases. Glaucoma was treated with medical therapy and dermoid cysts were surgically removed.

SAS-26 **Eyelid Tumours in Dogs**

Bharathi.S, K.B.P.Raghavender, and Gireesh Kumar.V

Department of Surgery and Radiology, College of Veterinary Science, Rajendranagar, Hyderabad - 30

The study was conducted in eight cases of eyelid tumours in dogs, of which seven were located on upper eyelid and one on lower eyelid. The tumours were surgically excised and examined histologically by H& E staining. The tumours were diagnosed as Trichoepithelioma, squamous cell carcinoma, sebaceous ductal adenoma, sebaceous epithelioma, papilloma and haemangiosarcoma. The histological features of the tumours are described.

SAS-27 **Management of Canine Epiphora**

Ankush Maini, V.P.Chandrapuria and Shobha Jawre

College of Veterinary Science & A.H., M.P.P.C.V.V.V, Jabalpur (M.P.)

Dogs with epiphora shows overflow of tears due to either excessive production or blocked drainage systems leading to the facial staining of hairs around eyes and a prominent tear streak (Gelatt et al., 2001). However, true epiphora relates to the inefficient drainage of tears because of various nasolacrimal disorders. The study dealt with the therapeutic management of epiphora by nasolacrimal probing and flushing. The study was carried out in 6 healthy clinical cases of dogs presented at T.V.C.C with signs of epiphora. Diagnosis of epiphora was done on the basis of history, signs, clinical examination, ophthalmoscopy, schirmer tear test, dye test and dacryocystorhinography. These dogs were then subjected to probing of nasolacrimal duct system followed by flushing with normal saline. The exit of fluid from external nares confirmed its patency. Following treatment, lacrimation was moderate on 3rd and 7th day in all cases while it was mild on 14th day. None of the cases showed lacrimal discharge on 21st day.

SAS-28 **Ultrasonographic and radiographic observations in cases of obstructive urolithiasis in canine**

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Five dogs, three male and two female between age group of 4-6 years were brought to TVCC, CCSHAU Hisar with the history of dysuria and dribbling of blood tinged urine from the urethral orifice for the last 10-15 days. Dogs did not respond to prior treatment given by field veterinarians. Clinical examination revealed that dogs were dull, depressed and dehydrated, showing signs of abdominal pain on palpation. Polyethylene catheter could not be passed in urethra. Blood examination showed mild anemia, increased T.L.C., D.L.C. and PCV values. Biochemical values indicated high creatinine, blood urea nitrogen, SGOT and SGPT. Radiographs showed presence of cystoliths and urethroliths but ultrasonogram showed presence of nephroliths, cystoliths & nephroliths. The cystoliths and urethroliths produced different pictures than the original during ultrasonography due to acoustic interface. The nephroliths were more clearly visible on sonograms as compared to radiographs. Dogs were prepared for surgery under xylazine & ketamine combination. Urethrotomy was done at multiple sites to remove all the calculi. Para-median cystotomy was done to remove cystoliths in males and median cystotomy was performed in females. Post-operative care was done with course of antibiotics, anti-inflammatory drugs, diuretics, B-complex, fluid therapy and daily antiseptic dressing. Skin sutures & polyethylene catheter were removed after 14



days and all dogs started passing urine normally. Radiography is good for detection of cystoliths and nephroliths but ultrasonography is good for detection of nephroliths. Any change in density of the urine can also be better visualized by ultrasonography.

SAS-29 Intratracheal instillation of nanoparticles through surgical exposure in albino rats for toxicological study

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Natural carbonaceous nanomaterial extracted from " Shilajit" and humus for the use of enzyme immobilization, cellular imaging and other diverse applications was tested for toxicological study to prove that this have no pulmonary toxicity. Surgically intratracheal instillation method was followed in albino rats. a total 32 nos. of albino rats were divided into 4 (four) groups with 8 rats in each groups. Out of 8 rats, 5 were of treatment group & 3 were of control group. Under Xylazine-Ketamine anaesthesia @10mg/kg Bd. Wt. & 150 mg/kg Bd. Wt. respectively. Trachea was exposed by cervical midventral skin incision and blunt dissection. Nanoparticle dissolved in normal saline was injected intratracheally in the treatment group whereas only normal saline was injected in control group. At 1st, 7th, 15th and 30th post-operative days, the rats were sacrificed for lungs histopathology. No microscopic change was observed in lung parenchyma during this study.

SAS-30 Management of Gastroesophageal Sphincter (GES) achalasia and megaesophagus with and without surgical intervention in three large breed bitches.

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Three bitches, one Labrador Retriever, one German Shepherds and another Golden Retriever, 4 years 3 months, 4 years 10 months and 11 years of age, respectively, suffering from chronic regurgitations and treated with several medicines for 1.5 months without any result were examined biochemically and Radiologically in WBUAFS Clinics. On contrast and straight digital radiography, those were diagnosed as case of megaesophagus. The values of Bilirubin, Total Protein, Alkaline Phosphatase, SGOT and SGPT were within normal ranges. The first case was operated for modified Heller's distal esophagomyotomy and was kept on elevated feeding. The 2nd & 3rd cases were kept on elevated feeding and medicinal management. Gradually all bitches started to receive their full calorie intake in normal standing position with no evidence of regurgitation upto 3 months of post-operative and post-medicinal observation as per follow-up information based on telephone interview with the owner and physical examination by the local Veterinarian.

SAS-31 A Clinical Study on Acute Gastric Dilation and Torsion in Canine.

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Gastric dilation with torsion is an extremely serious condition that may prove to be life threatening at many a times. Ten cases of gastric dilation with torsion are reported. The condition was equally noted in either sex with average age of 5.4 years. Deep chested dogs constituted the majority of the cases. Seven of these dogs were presented with history of frequent attempts of vomiting and frothy mucus in vomitus and distension of abdomen in one case. Three dogs were presented with history of gasping, respiratory distress and reluctant to move. All the dogs showed abduction of cranial limbs and open mouth breathing. History in six dogs revealed playing or had exercise about one to two hours of feeding whereas in four dogs no such predisposing factor could be traced out. The plain radiography in right lateral recumbency revealed distended gas filled stomach of varying degrees, with typical Reagler's



sign indicative of gastric dilation with torsion in nine cases, however, in one case, instead of gas filled stomach, a white ground glass appearance was noted. Surgical intervention was undertaken in all with mid ventral laparotomy and torsion was relieved. However, two clinical cases required splenectomy and three cases treated with gastropexy. Eight dogs showed uneventful recovery while two dogs didn't show recovery and succumbed on fifth and sixth day post operative regime, respectively. The hematobiochemical estimations revealed significant increase in TLC, TEC, neutrophil, lymphocyte, monocyte, eosinophil, Hb, packed cell volume and platelets. However, serum sodium, potassium, chloride was not affected. Clinical parameters like HR, RR and rectal temperature was found significantly increased. Eight dogs showed successful recovery with no recurrence in 6 months of observation.

335-32 Acellular aortic grafts for reconstruction of abdominal wall defects in guinea pigs

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Nine clinically healthy adult albino guinea-pigs of either sex were divided in two groups having 6 animals in test group and 3 in control group. The ventral abdominal area was prepared for aseptic surgery and operation was performed under general anaesthesia using xylazine @ 15 mg/kg body wt and ketamine hydrochloride @ 55 mg/kg body wt administered intra-peritoneally. A 2x2 cm full thickness defect was created in mid ventral abdominal wall. The defect was repaired by the acellular aortic matrix of bovine origin. Native aortic sample of the bovine was subjected to 1% anionic detergent for 48h followed by treatment with enzyme (0.25%) for 12 h for the decellularization. Histological studies were performed to confirm the acellularity of the aortic graft. Autograft was used to repair the defect in control animals. Dullness, inappetent and rectal temperature variation was noticed after immediate post operative period in both groups. The swelling, exudation, warmth and pain varied from mild to moderate at the operative site in all animals up-to 3-4 days. The observations were made on 14 and 28 days. Macroscopic examination of grafted site revealed deposition of loose connective tissue and adhesions. Increased vascularity has been noticed at the reconstructed site at day 14 as compared to day 28 in group 1 (test animals). Lesser adhesions were found in control group animals. Normal healing was observed without any complication, which was also confirmed histologically.

335-33 Pulp and Dentine Usage Test for the Evaluation of Dental Materials in Dogs

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The biocompatibility of dental lining and filling material with dentine and pulp was evaluated with pulp and dentine usage test (ISO 7405: 2008-E). Adult dogs of either sex which have all the permanent teeth except third molar were selected for the study. The time periods were 7±2 days, 28±3 days and 70±5 days. Following implantation animals must have at least seven cavities with test material and four cavities with negative control (zinc oxide- eugenol cement) for each time period. In animals with marked gingival inflammation, calculus and debris removal is carried out a few days before cavity preparation until the inflammation is controlled. After the preoperative overnight fasting, preanaesthetic medication was given with atropine, xylazine and ketamine intramuscularly and anaesthesia induced with thiopentone sodium at a dose rate of 5mg/kg intravenously and maintained with 1.5% isoflurane. The surface of the teeth was cleaned and disinfected using povidone iodine or chlorhexidine. Required number of Class V buccal or labial cavities was prepared using sharp burs under an adequate air water spray. All the cavities were prepared in such a way that their remaining dentine thickness was less than 1.0mm, but the pulp was not exposed. The cavities were rinsed with water and dried with cotton pellets and the test materials were inserted. Post operatively, antibiotics and analgesics were administered to minimize the chances of infection, pain and distress. The animals were euthanized at 7±2 days, 28±3 days and 70±5 days and the restorations, teeth and supporting tissues were examined and the abnormalities



were recorded. The treated teeth were removed with the surrounding hard and soft tissues and fixed in a suitable fixing agent and subjected to histopathological evaluation.

SAS-34 Panhysterectomy In Stray Bitches Through Right Flank Keyhole Technique

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The present study was carried out on five stray bitches aged between 1.5 -3 years of age trapped from areas in and around the college campus. The animals were fasted for 24 hours followed by premedication with atropine (0.04mg/kg b.w.) and xylazine (0.5mg/kg b.w.) i/m followed 10 minutes later by combination of xylazine and ketamine (0.25mg/kg and 5mg/kg respectively i/v). Routine surgical scrubbing was carried out and an incision of about 2-3cm length on right side flank region was made just 8-10 cm above second caudal teat. The subcutaneous tissue and abdominal muscles were incised off and the peritoneal cavity was entered through the keyhole port. A spaying hook was introduced to trace out the right uterine horn along with ovary which was removed surgically after proper ligation. Similar procedure was carried out on other side followed by removal of body of uterus up to a region just behind the cervix and the abdominal incision was closed in routine manner. Postoperative care comprised of broad spectrum antibiotics along with NSAIDs for 4 days and daily dressing of the suture line. Skin sutures were removed 10th day postoperatively. The details about anaesthesia, surgical technique, postoperative care and clinical outcome will be discussed in detailed manner.

SAS-35 A Rare Case of Os Clitoridis and its Surgical Management in a Female Dog

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Asix months old female boxer dog was presented with a pink mass protruding through the vulval lips since two months. The dog was uncomfortable when sitting on haunches because of the mass rubbing on the ground. Physical examination revealed a hypertrophied clitoris with a bony structure inside. Radiography revealed a small bone in the hypertrophied clitoris with a shape similar to the os penis (os clitoridis). Under general anaesthesia with xylazine and ketamine after premedication with atropine sulphate the os clitoridis and the hypertrophied clitoris were surgically excised. Post-operative care was provided with cephalixin at the rate of 20 mg/kg body weight orally thrice a day and regular cleaning of the surgical site with povidone iodine solution and application of povidone iodine ointment. The dog had an uneventful recovery.

SAS-36 Non Suture Vasectomy (Amritsar technique) in 302 Stray Dogs

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Vasectomies were performed in 302 Stray dogs with Non Suture Vasectomy also known as Amritsar Technique at Civil Veterinary Hospital, Amritsar under ABC program. The dogs were anaesthetized with Ketamine and Xylazine combination and the site was prepared at scrotal mid raphe. Two specially designed instruments, Vas Fixation Clamp and Vas Dissecting clamp were used for the operation. Vas was brought to scrotal midraphe using three finger technique and was held percutaneously with Vas Fixation clamp. Dissecting forceps was used to puncture and separate skin and all layers covering the vas deferens. The vas was taken out and 3 cm segment was excised and ends ligated with silk no 1/0. From the same hole, other vas was fixed and excised. Alternately for thick skinned dogs, a puncture was first made with Vas Dissecting Clamp and Vas Fixation Clamp was inserted through puncture hole and vas was fixed and taken out one by one and excised. The entire procedure is nearly bloodless and results in a small puncture which does not require any stitch. The dogs were released same day after complete recovery from anesthesia. Hence Non Scalpel Vasectomy (Amritsar Technique) significantly reduces post operative care and is minimally invasive and traumatic as compared to traditional vasectomy and gonadectomy.



SAS-37 Laparoscopic Electro-coagulation and Endo-stapling Techniques for Ovariohysterectomy in Female Dogs

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A study was carried out in twelve healthy female dogs presented to Department of Surgery and Radiology, Veterinary College Hospital, Hebbal, Bangalore, for ovariohysterectomy ranging 8 months to 2 years of age and body weight of 12 to 15 kg. Dogs were randomly divided into Group A and B. Group A dogs were subjected for ovariohysterectomy by Laparoscopic electro-coagulation method while Group B dogs were subjected for ovariohysterectomy by Laparoscopic endo-stapling method. In Group A, ovarian pedicle and cervical end of uterus were electrocauterized by bipolar electrocautery followed by cutting using laparoscopic scissors. In Group B, at ovarian pedicle and cervical end of uterus two rows of staples were applied by endo-stapler followed by cutting using laparoscopic scissors. Both laparoscopic ovariohysterectomy procedures viz., electrocoagulation and endostapling remained free of complications and were well tolerated by the animals. In conclusion, both the laparoscopic techniques were found to be equally suitable for ovariohysterectomy procedure in dogs.

Sas-38 Comparison of Laparoscopic Electro-coagulation and Endo-stapling Techniques For Ovariohysterectomy In Female Dogs

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A Study was carried out in 12 apparently healthy female dogs presented for ovariohysterectomy to Department of Surgery and Radiology, Veterinary College Hospital, Hebbal, Bangalore. Six dogs were sterilized with laparoscopic electro-coagulation technique of ovariohysterectomy while six were sterilized with laparoscopic endo-stapling technique of ovariohysterectomy. Post-operative influence of laparoscopic ovariohysterectomy on physiological and haematobiochemical parameters was studied on 0th, 1st, 2nd, 3rd and 7th day respectively. Time taken for surgery (min) was measured from the time of incision to skin suturing. Post-operative pain was evaluated 24, 48, 72 hours and 7th day after surgery. It was measured based on University of Melbourne Pain Scale. The physiological and hematobiochemical parameters were moderately influenced by laparoscopic ovariohysterectomy in both groups of dogs. The duration of procedure was marginally longer in laparoscopic endo-stapling compared to laparoscopic electro-coagulation technique. The post-operative pain scores were highest in both the groups which receded gradually by 7th post-operative day.

SAS-39 A Retrospective Study of Various Tumours of Dogs presented at Veterinary Clinics, Pantnagar

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Fifteen different cases of tumours of dog presented at veterinary clinics, Pantnagar, during last year were included in this study. The different type of tumour included mammary tumours (5), penile tumours (3), oral tumour (1), subcutaneous tumour at forehead (1), pedunculated tumour of thigh region (1), vaginal tumour (1), testicular (1), subcutaneous tumour in perineal region (1) and soft tissue tumour of right forelimb (1). Histopathological examination revealed adenocarcinoma (5), fibrosarcoma (3), canine transmissible venereal tumour (3), fibroma (2), hemangioma (1) and fibroadenocarcinoma (1). All the animals were subjected to surgical intervention under general anaesthesia followed by chemotherapy (with vincristin sulphate). All the animals except one were cured without any complication.

SAS-40 Studies on the In-Vivo Dissolution Protocols for the Management of Canine Urolithiasis

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The study was conducted on 10 male dogs with an attempt to lay down the dissolution protocols for the management of urolithiasis. An attempt was made for the dissolution of urinary calculi by altering



the urine pH, on the basis of urine pH and crystal composition of the urine. The urethral obstruction was relieved by retrograde hydrorepulsion. Urine pH acidifiers were used in 6 animals (group I) having alkaline urine pH or having crystals formed at alkaline urine pH. Urine pH alkalisers (group II) were used in 4 animals having acidic urine pH or having crystals formed at acidic urine pH. Success of the treatment protocol was assessed using clinical observations, radiographic and ultrasonographic examination. The onset of dissolution was early in group II. In group I, at the end of the treatment period of 30 days, 4 animals were almost free from uroliths and two had shown appreciable reduction in the diameter of the calculi. In group II, by the end of the treatment period of 30 days, an appreciable reduction in the calculi number and diameter was recorded in two animals while complete dissolution of calculi was recorded in other two animals. No complication or reoccurrence was recorded in any of the animals of both groups, upto a follow up period of 6 months.

SAS-41 Studies on the *In-vitro* Dissolution Protocols for the Management of Canine Urolithiasis

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The study included 38 calculi samples collected from 8 animals suffering from urolithiasis which were managed with the help of surgery (urethrotomy and/or cystotomy). The calculi collected were subjected to *in vitro* dissolution, using five solutions having different urine pH. The calculi samples were observed for any change in the colour of the solution, any deposits, any turbidity of the solution, fragmentation and change in weight of the calculus in the different solutions. The dissolution of the urinary calculi was found to be dependent on the pH of solution, pH of urine of the animal and crystal composition of the urine. Degree of dissolution of urinary calculi was more towards the extremes of the urine pH values. Calculi formed at an acidic pH were more susceptible to dissolution in comparison to the calculi formed at alkaline urine pH. The animals where mixed crystals were found in urine showed variable dissolution in both acidic and alkaline solution pH. The results of the study showed that an effective *in vivo* dissolution treatment can be given to the animals on the basis of urine pH and crystal composition of the urine samples.

SAS-42 Collagen Sheet for the Management of Corneal Ulcers in Dogs

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The efficacy of collagen sheet of bovine intestinal origin in the healing of corneal ulcers was studied in six dogs. Surgical manipulations were performed under general anaesthesia and collagen sheet was placed after scarification and/or superficial keratectomy. Temporary tarsorrhaphy was done in all the dogs. Post operative medication with oral administration of Cephalexin, ocular installation of Ciprofloxacin and Flubiprofen was adopted. Collagen sheets were completely absorbed by 3rd day and no remnants were seen. It was well tolerated by the dogs. Fluorescein dye test became negative by 7th day in most dogs treated with collagen sheet and complete epithelization of the corneal defects has occurred by 30th day. Corneal vascularization developed in all the cases were resolved by the end of the observation period. Complete healing of the cornea was seen early in all dogs. In stromal ulcers, the clarity was achieved by 60th day. Corneal pigmentation was the major complication encountered in the treatment under this study.

SAS-43 Unusual Case of *Atresia ani* In Male and Rectovaginal Fistula with *Atresia ani* in Female Pomeranian Pups

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One month old two Pomeranian pups of same bitch were presented to hospital with history of not passing faeces since birth. Clinical observation in both pups revealed absence of tail and anal opening. There was subcutaneous swelling below the ischial arch with distension of abdomen. The female pup was passing scanty faeces through vaginal opening indicating presence of passage with rectum. Hence



depending upon the symptoms and clinical observations both the pups were assisted for surgical correction of congenital anomalies of *atresia ani* in male and recto-vaginal fistula with *atresia ani* in female. Under general anesthesia the blind ends of rectum after blunt dissection were fixed to the skin with continuous 3-0 chromic catgut sutures. In female the recto-vaginal fistula was corrected by suturing the vaginal wall separately and the end of the rectum with opening was fixed to the skin. A circular piece of pipe was fixed at anus to keep the opening intact. Both the cases recovered normally within 10 days.

SAS-44 Immunotherapy for venereal granuloma in canine

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A total of forty-one dogs suffering from Venereal Granuloma were treated with submucosal resection followed by autogenous vaccination and levamesol supplementation on day 0, 10 and 20. Various hematobiochemical parameters and immunological parameters were studied. The haematobiochemical observations revealed significant neutropenia, lymphocytosis, increase in PVC and non-significant increase in serum globulins. The AGPT failed to exhibit immunological response. The ELISA was employed to test rabbit sera against two different VG antigens after repeated inoculations. The humoral antibody response was observed in rabbits when inoculated with VG antigen and tested against the same antigen in both the groups. The comparison between the immunogenic response in clinically healthy dogs and the dogs suffering with Venereal Granuloma on day 0 indicated that the dogs suffering from Venereal Granuloma does elicit humoral antibody response. The humoral antibody response increased with repeated vaccine inoculations which was significantly more after giving three doses of vaccine. Total six dogs showed recurrence over a period of nine months of observation.

SAS-45 The Evaluation of Low Level Laser Therapy on Healing of Surgical Wounds in Canine

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The effect of Low Level Laser Therapy (LLLT) was studied in the healing of surgical wounds in 24 randomly divided dogs followed by the radical surgery. All the dogs were divided into 4 groups. Control (Group-I) received antiseptic dressing and parental antibiotic. The Group- II, Group-III and Group-IV received same treatment as group- I and LLLT of 10 Hz 5 min, 20 Hz 5 min and 40 Hz 5 min, respectively on 0th, 1st, 2nd, 4th, 8th, 12th and 15th day postoperatively. The wound was measured with standardized photographs with sterilized scale in cm. The percentage reduction in length was compared between the treatment groups and control. Clinical, haematological and biochemical estimation was done on above-mentioned days postoperatively. The inflammation at the site of incision regressed at a faster rate and exudation was least in the laser treated groups as compared to control. The laser treated group II has shown a significant percentage reduction in length of the wound as compared to the control followed by group III and group IV. The percentage of wound contraction and percentage of wound epithelialization followed the same order. There was no significant difference in hematological and biochemical parameters in laser treated groups as compared to the control. The LLLT resulted in an enhanced healing of surgical wound post operatively by a decreased size of surgical wound, faster rate of contraction and epithelialization. The effective dose of LLLT found by He-Ne laser treatment in the decreasing order of healing stimulation was 10 Hz, 5 min > 20 Hz, 5 min > 40 Hz, 5 min.

SAS-46 Ocular Dermoid In Calves and its Surgical Management – A Review of Five Cases

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Corneal dermoid is a congenital lesion observed rarely in newborn animals. The incidence of corneal dermoids in domestic animals is 3.4%. Five female calves were presented with the history of hair



growth on both or single eye. Ophthalmic examination revealed dermoid cyst. Auriculopalpebral, retrobulbar nerve blocks and local infiltration around the eyelids were induced using 2% lignocaine hydrochloride. With no. 11 BP blade the cysts were peeled off along with the dermal layers containing the follicles as close as possible to the cornea by partial keratectomy from the palpebral and bulbar conjunctiva and nictitating membrane. Bleeding from the palpebral conjunctiva and nictitating membrane were controlled by ligation using 8-0 prolene, sclera and cornea by adrenalin and digital pressure. Temporary tarsorrhaphy were performed allowing application of chloramphenicol opticaps and left for two days. The calf was administered gentamycin at a dose of 4mg/kg, IM, for seven days. On the second day in all cases corneal opacity and episcleral congestion were noticed. Ciprofloxacin eye drops were instilled after two days. The condition subsided gradually and the animals had an uneventful recovery.

SAS-47 Occurrence of Dental Affections in Dogs - A study in 150 cases

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The occurrence of dental affections was studied in 150 dogs of different age, breeds and of either sex were studied. Out of those dogs studied 102 (68%) was found to have dental or periodontal problems. Dental tartar was highest in incidence (89.22%) followed by epulis (4.9%), oral ulcer (3.92%) and dental attrition (1.96 %). Highest incidence was observed in dogs in age group of five to eight years (37.25%) followed by those in one to four years (45.09%) and least in eight to twelve years age group (17.65%). The breed affected to the maximum was German Shepherd Dog (26.47%) followed by Spitz (20.59%). Nearly equal division of occurrence was observed between male and female animals. An incidence of 71.1% was observed in dogs fed with home made food than of 50% in those fed with dry food. Dental diseases were found more among those dogs received tit-bits and less in those received bones or chews.

SAS-48 Foetal maceration in bitches - Case Report

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Case 1: A three year old Dobermann Pinscher bitch was presented with the history of persistent foetid vaginal discharge since the last whelping, about four months back and poor body condition since then. Abdominal palpation and radiography confirmed the presence of hard irregular mass in the middle of abdomen. On exploratory laparotomy both the uterine horns were found moderately distended and with a hard swelling at the middle of left uterine horn. On incising the swelling, foetal bones and hair was found squeezed together into a mass with the hair adhering to the endometrium. As the owner insisted for retention of uterus, the materials were removed to the extent possible, closed the uterine incision with inversion sutures and laparotomy wound closed in the usual manner. But ovariohysterectomy was performed after two months due to persistent genital discharge and the animal had an uneventful recovery. Case 2: A two year old Rottweiler bitch was brought with the history of strangurea and scanty opalescent discharge from external genitalia. The bitch had a history of abortion in late gestation around five months back. It had leukocytosis with moderate neutrophilia. Palpation, ultrasonography and radiography revealed the presence of a hard mass in the middle of abdomen, possibly in the uterus. Exploratory laparotomy had shown moderately distended uterine horns with hard lemon sized mass in the middle of right uterine horn. Ovariohysterectomy was performed and on exploration, the mass was found to contain compressed bone and hair of the foetus. The bitch had an uneventful recovery.

SAS-49 Treatment of Non-healing Wounds in Dogs Using Stem Cell Therapy

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This study included two rescue dogs having chronic, non-healing wounds which were being treated for a minimum period of 6 months with routine use of antibiotics, and topical application of ointments. The first case was a castrated male of 5 years with a wound on the dorsum of the head, of unknown etiology. The second case was an intact male of 8 years, with lacerations around the right eye. Adipose tissue was aseptically collected from healthy dogs presented to a private clinic for neutering. Isolation and characterization of canine adipose derived stem cells (cADSC) was carried out at the National



Centre for Cell Science (NCCS) laboratory, Pune. $3-5 \times 10^6$ cells suspended in FCS free medium were used for injection. Cells were injected intradermally at the periphery of the wound in both cases. Wound healing pattern was assessed by presence of granulation tissue, wound size, wound contraction, and wound healing percentage. Clinical observations like colour of the wound, hemorrhage, swelling, exudation, presence of warmth, pain, pus, irritation and crust formation were taken on every 7th day till complete healing. To evaluate healing, histomorphological findings were studied on 7, 14 and 21st days and comparison of photographic images. The result of the study was complete healing and closure of these non-healing wounds in 21 days, which were formerly irresponsive to routine methods of treatment.

SAS-50 **Perineal Hernia – Review of 5 Cases**

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Three German Shepherds, one Cocker Spaniel and one Pomeranian were presented with history of perianal swelling, difficulty in defecation, tenesmus, blood tinged feces and constipation. All patients were intact males over 6 years of age. A day prior to surgery evacuation of feces was done by giving enema or by digital evacuation. Premedication was done with Xylazine @0.1mg/kg BW, Ketamine @10mg/kg BW IM, Diazepam @0.1 mg/kg BW IV. Induction was done with propofol and for maintenance 2% Halothane and nitrous oxide. A curved incision made over the perineal mass and contents of the hernia were exposed. Herniation of urinary bladder, large intestine, retroperitoneal fat and prostate were seen. The herniated organs were returned to their anatomic positions and closure of the hernial sac was done with Prolene 1-0. Prolene mesh was used in 2 German Shepherds and the Cocker Spaniel due to large hernial ring. For closure of the defect, muscles used for leverage were Levator ani, Coccygeus and Superficial gluteal muscles, taking care to avoid entrapment of the Sciatic nerve. Subcapsular partial prostatectomy sparing the urethra was carried out in the Pomeranian dog with prostatic hyperplasia. Subcut was closed routinely by simple interrupted sutures and staples for skin closure. Castration was carried out in all cases except 1 due to its inability to withstand anaesthesia. Complication was seen in the Cocker Spaniel as infection of the surgical site, which resolved with antibiotics. Uneventful recovery and no further complication or recurrence was seen in these cases subsequently.

SAS-51 **Unusual Gastric Foreign Body in Dog - Review of 2 Cases**

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Two dogs aged about 6 month and 3 year were presented with history of eaten shock 4 hours and 5 days ago, respectively to Teaching Veterinary Clinical Complex, DUVASU, Mathura. The first case showed the distended abdomen with slight colic signs. While in second case, the animal was completely off feed and made futile attempts to drink water. The radiographic and sonographic examination revealed a foreign body in the stomach. Retrieval of foreign body through the oesophagus under the C-arm image intensifier was not fruitful. The foreign body (shock) were retrieved back by gastrotomy operation under xylazine and ketamine anaesthesia. The dogs were managed on fluid therapy for 3 days, liquid diet for next 5 days then solid diet increase day by day. The eventless recovery was observed under the umbrella of antibiotic and analgesic

SAS-52 **Prophylactic efficacy of Seabuckthorn oil vis-a-vis other gastroprotective agents against gastric ulcerations and erosions**

S.P. Tyagi, A.C. Varshney and Amit Kumar

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The various drugs available in the market for prevention of the gastric ulcerations and erosions (GUE) or at least minimizing its severity show variable efficacy and also have undesirable side effects. In the present study Seabuckthorn seed oil was compared with "Omeprazole", "Sucralfate" and "Magnesium-Aluminum hydroxide gel" for the prevention of steroidal anti-inflammatory drug-induced GUE in dogs. The study was conducted on 20 healthy dogs divided in to five equal groups. Inj Dexamethasone @1



mg/kg was administered I/M or I/V s.i.d in all dogs for 16 days to induce GUE. Group I was kept as untreated control whereas, Seabuckthorn oil @ 5ml/dog b.i.d., Omeprazole @ 0.7 mg/kg s.i.d., Sucralfate @ 1gm/dog b.i.d. and "Magnesium-Aluminum hydroxide gel" @ 10ml/dog b.i.d. were orally administered in group II, III, IV, and V respectively. The severity of GUE was analyzed on the basis of clinical, haematological and endoscopic examinations which will be discussed in the presentation.

SAS-53 Clinical Evaluation of Serratiopeptidase on Wound Healing in Canine

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Department of Surgery & Radiology, College of veterinary & Animal Sciences, Parbhani (MS),

The present study was undertaken to evaluate the usefulness of serratiopeptidase for assessment of wound healing process. The healing was assessed on the basis of clinical, physiological and the histomorphological findings. Wound contraction was more during 7th day in the entire treatment group (67.08 ± 0.31) compared to control group (49.32 ± 0.74). In control group, the wound contraction was from $3.45 \pm 0.12 \text{ cm}^2$ to 0.97 ± 0.05 (28.35%) area, which had 71.65 percent on 14th day whereas in treatment group the wound contraction from 3.57 ± 0.20 to 0.46 ± 0.05 (23.25%) area which had 86.75 percent contraction on 14th day. The value of serum ascorbic acid showed significant variation but they were within physiological normal limit. The value was higher in treatment group B compared to Control group indicating good collagen formation. Based on histomorphological sections of granulation tissues, it can be stated that serratiopeptidase enzyme stimulated wound healing properties in terms of proliferation of collagen fibers and vascularization of wound area indicating its beneficial effects in treatment group compared to Control group.

SAS-54 Laparoscopic and ultrasound guided biopsy of abdominal organs in dogs: a comparative study

Ajay K. Gupta, M. S. Bhadwal, R. B. Kushwaha, R. Raina, Rajiv Singh and N. K. Sood

Division of Veterinary Clinic and Teaching Hospital, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-J, R S Pura-181102, Jammu (J&K)

Thirty two apparently healthy dogs of either sex were divided in two groups (I and II). Ultrasound guided and laparoscopic biopsies of liver, spleen, kidney and prostate were obtained using 16-G automated biopsy needle, from four animals each of groups I and II respectively. The accuracy to obtain biopsy from target organ was good with both the techniques. However, good to excellent histologic quality samples were obtained in 80% and 100% (liver), 37.5% and 50% (spleen), 75% and 100% (kidneys), 75% and 100% (prostate) with ultrasound guidance and laparoscopy, respectively. Haematuria, clearing in 3 to 7 days, was minor complication following renal and prostatic biopsy using both the techniques. Haemato-biochemical alterations following biopsy with both the techniques were not of any clinical significance and no significant difference was observed between the techniques. Although both the techniques were easy, safe and accurate for obtaining biopsies of abdominal organs in dogs, samples of better histologic quality with lesser fragmentation and more accuracy were obtained with laparoscopy.

SAS-55 Diagnostic Approach for Cystic Endometrial Hyperplasia - Pyometra Complex

Salvekar. S. P., Upadhye. S. V., Dhakate. M. S., Panchbhai. V. S., Gahlod. B. M., Akhare. S. B., Fani. F., Thorat. M. G., Khante. G., Donekar. M., Kumble. M.

Nagpur Veterinary College, Maharashtra Animal and Fishery Sciences University

Sixteen female dogs of various breeds and between 5 – 14 years of age were presented at TVCC, Nagpur Veterinary College over the period of one year with classical signs of cystic endometrial hyperplasia- pyometra complex like, vaginal discharge, fever, vomiting, polyuria, polydipsia and distended abdomen. These females were subjected to abdominal radiography, ultrasonography, hemato-biochemistry and exfoliative vaginal cytology. The uterine discharge was classified on the basis of appearance and cultural isolates. The vaginal discharge was subjected to the antibiotic sensitivity test



and for culture to isolate the organism. Abdominal USG proved to be the best non-invasive tool for confirmation of the diagnosis supported by the hematology which revealed leucocytosis along with prominent neutrophilia and marginal rise in BUN and serum creatinine values. The presence of parabasal cells, extensive infiltration of neutrophils along with gram negative rods was observed in the exfoliative cytology. Ovariohysterectomy was the treatment of choice along with the parental antibiotic administration. Ciprofloxacin and ceftriaxone showed maximum zone of inhibition to *Pseudomonas* spp and the *E. coli* culture isolates in AST. Fifteen bitches recovered whereas one succumbs on third day postoperatively.

SAS-56 **Perineal Hernia in Dogs - A Retrospective Study (2004 - 2010)**

L. Nagarajan, G.D. Rao, S. Dharmaceelan, C. Ramani, M. Gokulakrishnan and R. Sureshkumar
Tamil Nadu Veterinary and Animal Sciences University, Chennai - 51

Perineal herniorrhaphy performed in dogs over a period of 7 years is reported. A total number of 46 cases were treated. The incidence of perineal hernia based on the breed, age, side affected and hernial contents is reported. The disease was found to be more prevalent in the age group of 7-8 years and among cross breeds. The incidence of unilateral herniation was more than bilateral. Among the unilateral cases right side herniation was more predominant than the left. The commonly encountered hernial contents were rectum followed by retroperitoneal fat, prostate, bladder and omentum. Perineal herniorrhaphy was carried out in two dogs following resection of huge perianal tumours. The herniorrhaphy techniques performed were the conventional technique, internal obturator flap and fascia lata reinforcement.

SAS-57 **Endoscopic and Therapeutic Study of Canine Megaesophagus-18 Case Study**

Ravi Suryawanshi, K.B.P.Raghavender and V.Gireesh Kumar

Department of Veterinary Surgery and Radiology College of Veterinary Science, Rajendranagar, Hyderabad-500030

The present study was undertaken in 42 cases out of the 120 clinical cases of dogs presented with diseases of esophagus and stomach with the history of persistent vomiting or regurgitation to the Department of Veterinary Surgery and Radiology, College of Veterinary Science, Rajendranagar, Hyderabad and Teaching Veterinary Clinical Complex, Bhoiguda, Secunderabad, from March-2008 to May -2010. In the present clinical study, out of 42, 18 clinical cases of megaesophagus were recorded. The disease was encountered in Labrador (2 dogs), Golden Retriever (2 Dogs), German Shepherd (5 Dogs), Doberman (2 Dogs), Mongrel (3 Dogs), Pomeranian (2 Dogs), Cocker Spaniel (1 Dog) and Boxer (1 Dog) breeds of dogs. The mean age of occurrence was found to be 6.25 ± 0.88 years. Out of these 18 dogs, 11 were found to be males (61.12%) and the rest were females (7 dogs; 38.88%). All these 18 dogs showed the signs of regurgitation of the food soon after food consumption. The haematological and biochemical studies showed that all the parameters studied were within the normal range, except for haemoglobin. Ultrasonography did not reveal any sort of esophageal pathology. Radiographic features of megaesophagus in the seven dogs were air filled dilated esophagus and tracheoesophageal stripe sign. Esophagography clearly revealed generalized distention of esophagus in all the 18 dogs. While endoscopy revealed markedly dilated, flaccid esophagus and pooling of retained fluid, in the most dependent segment of the esophagus. The results of the present study indicated that among the three treatment regimens tested, Metoclopramide combined with feeding the dogs in an upright position from an elevated platform improved the esophageal function to the maximum extent. Post mortem examination of the seven dogs died or euthanized showed severe dilatation and thinning of the esophageal wall, while histopathological examination showed scanty muscle bundles, infiltration of polymorphonuclear cells with submucosal congestion and enlargement of submucosal glandular pattern with epithelial irregularity. Scanning electron microscopy revealed destruction of blood vessels, loss of normal architecture and direction of inner circular as well as outer longitudinal muscle fibers while, transmission electron microscopic examination showed complete loss of cellular architecture, mitochondrial destruction and complete loss of architecture of myoneuronal plate at the neuromuscular junction suggestive of neuromuscular disorder.



SAS-58 Effects of stages of cataract on phacoemulsification variables during cataract extraction in dogs - A retrospective study

C. Ramani, M. Shiju Simon, Mohd. Shafiuza, L. Nagarajan, S. Sooryadas and R. Suresh Kumar
Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai -7.

Two hundred and thirty six cases presented to the Small Animal Ophthalmology Unit of the Madras Veterinary College Teaching Hospital from 2005 to 2009 with various stages of unilateral or bilateral cataracts were subjected to this study. All animals were apparently healthy and the thoracic radiograph, haematological and serum biochemistry results were normal. Pre-operative pharmacological dilatation of the eyes was done with 1% tropicamide and the stages of cataract were assessed based upon the lens opacity and fundic reflection. Amongst two hundred and thirty six cases, 156 animals were affected with immature cataract, 63 with mature and 17 with hypermature cataract. The variation in the phaco parameters used to deal with different stages of cataract and the details in the phacoemulsification procedures will be discussed. Based on the stages of cataract the complications like phacolytic uveitis were observed in eight animals of mature and one in hypermature cataract, transient edema of cornea were noticed in six animals of mature and one in hypermature cataract, post-operative hypertension - in four animals of mature and two in hypermature cataract, vitreal protrusion - each two animals in both mature and hypermature cataract, retinal detachment - each one animal in both mature and hypermature cataract and endophthalmitis - in one case of hypermature cataract..

SAS-59 Clinical approach of keratoconjunctivitis Sicca with topical cyclosporine in dogs- A review of 30 cases

Ramani.C., Shiju Simon S. Sooryadas, R. SureshKumar and S.Thilagar

Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai - 7.

Keratoconjunctivitis Sicca is a common ophthalmic problem in dogs, characterized by aqueous tear deficiency. Thirty dogs presented to the Small Animal Ophthalmology Unit of the Madras Veterinary College Teaching Hospital with the symptoms of conjunctivitis and keratitis were studied. The basal Schirmer tear test (STT) readings were compared with subsequent readings during treatment in all the affected dogs. The condition was bilateral in 26 cases and unilateral in 4 cases. Topical cyclosporine was used in addition to artificial tears for medical management. Clinical assessment during treatment was made based on symptoms and STT values. The etiology, predictor response of STT and use of cyclosporine and artificial tear replacement therapy will be discussed in detail.

SAS-60 Removal of Urethral Calculi - A Report of 2 Cases

B.Venkateswaralu and G.Balakrishnan

Lyka Pet Clinic and Surgical Centre, Dindigul - 624001 (TN)

One German Shepherd dog and a Spitz were referred here with difficulty in micturition. Oliguria, straining & haematuria noticed during micturition. Abdominal palpation revealed bladder tension. Preoperative plain radiograph & catheterization revealed the presence of blockage due to calculi. Animal was sedated with atropine sulphate @ 0.045 mg/kg i/m bwt and xylaxine 1 mg/kg i/m bwt. Prescrotal urethrotomy was performed under local infiltration with 2% lignocaine. Numerous urethral calculi were removed from the urethra. Retrohydropropulsion with normal saline was performed to remove the calculi from the bladder. Catheter was retained inside the urethral passage by a stay suture. Catheter was removed by second postoperative day and the wound was allowed to heal by second intension. Postoperative parenteral antibiotics were given for one week. In both the cases, the recovery was uneventful and relapse did not occur.



SAS-61 Evaluation of Surgico-Pathophysiological Status of Search and Rescue (SAR)

Dog

S. S. P. Singh, Samar Halder, S. K. Nandi, A.K. Maji, P. Das, P. R. Ghosh and S. K. Guha

Department of Veterinary Surgery and Radiology, F/O Veterinary and Animal Sciences, West Bengal University of Animal and Fishery Sciences

In the present study, a total of twenty (20) dogs those were engaged in the search and rescue operation in and around Kolkata of Kolkata Police Dog Squad, 247, Acharaya Jagadish Chandra Bose Road, Kolkata-27 (PTS) were studied. The dogs were categorized as per their activity (working type) into (i) Explosive detection dog (ii) Crime Tracking (iii) Narcotic dog (iv) Rescue Work dog and (v) Guarding dog. It was recorded that injury and illness occurred in dogs of all the category either during working period or at rest but all were minor. In respect of hematological parameters, in general, values were well within the physiological range. However, lymphocytosis in six cases with ehrlichiosis were noticed. In respect of biochemical parameters, in general, values were well within the physiological range except ALT and AST. Increased AST and ALT were noticed without any associated clinical signs. In the present study, the changes in cortisol level never crossed the higher range of physiological limit, though in all the cases it was well above the lower range of the physiological limit. The dogs may be considered as 'under chronic stress'. In respect of electrocardiographic study, though normal values were recorded in most of the dogs but Ischemia in the lateral wall of the heart, Ventricular tachycardia, Sinus tachycardia, dilated cardiomyopathy, different degrees of AV block were also recorded. Surgical cases (30%) recorded in the present study were all minor in nature.

SAS-62 Application of Therapeutic ultrasound for extensive wound in dogs

T.P. Balagopalan., N. Arul jothi., R.M.D.Alphonse., B.Ramesh Kumar

Department of Veterinary Surgery and Radiology, Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry

Two year old female spitz and an eight month old non-descriptive male dog with extensive avulsion wounds on the face and left forelimb were presented at Teaching hospital, RAGACOVAS Pondicherry. The animals were treated by local vet for 10-20 days the wounds did not show any tendency to heal. Clinical examination of the case No.1 showed contaminated deep extensive non-healing wound on the right side of the face extending from the forehead to the lower eye lid, exposing the nasal bone with swelling of the eyelids. Case No.2 was having avulsion of skin from the anterior aspect of the forelimb from elbow to digits, exposing the bones with disarticulation at the knee joint. Under xylazine + ketamine anaesthesia wound was sutured following standard procedure and therapeutic ultra sound 1 MHz was given on the periwound skin for 10mts (0.2 watts cm²) the limb was immobilized with PVC splint. For case no 2 after suturing the wound ultrasonic massage was given for 10mts at periwound area. Ultra sound application was done for once in 4 days. Both the animals showed wound healing without any complications. Wound healing was assessed as per standard procedure.

SAS-63 Histopathological and histochemical alterations following cystoplasty using Fish air Sac/Bladder in canine models

Hemant Kumar, A K Sharma, L. L. Dass, Dipti kiran

Dept of Vety Surgery & Radiology, Ranchi Vety College, Ranchi(Jharkhand)

The present Experimental cystopalsty was undertaken in 36 canine models of either sex in apparently good health status. The cystoplasty was accompanied by maximum amount of collagen(0.473), respectively. The increase in hydroxyproline and collagen was significant up to day 28 of the cystoplasty. The higher concentration of hexosamine on day 7 was observed in all the animals which gradually decreased up to day 28. The elastin % increased slightly upto day 28 in all the animals which was indicative of better laying down of the elastic tissue in these animals. Histopathologically, neovascularisation of the graft along with the mononuclear cell infiltration as well as formation abridges with the proliferating host granulation tissue was evident as patches/islets. Signs of disintegration of the graft and its subsequent voiding in urine were evident by day 28 of the cystoplasty. However, the graft acted as an optimum bio-scaffold for the regrowth of all the layers of the urinary bladder wall by this time.



SAS-64 Use of Amcrylate in The Treatment of Refractory Ulcers in Dogs

V. Kadambari and K.B.P.Raghavender

Dept of Surgery and Radiology, College of Veterinary Sciences, Rajendranagar, S.V.V.U.

Refractory epithelial erosions, persistent corneal ulcers, recurrent corneal erosion syndrome, recurrent erosions, indolent ulcers, boxer ulcers, and rodent ulcers are names for superficial corneal ulcers that heal poorly or slowly, and tend to recur. Cyanoacrylate tissue adhesives have been used in the treatment of refractory ulcers. The adhesives protect the cornea, have antimicrobial properties, and provide a barrier to microorganisms. The main aim of this clinical study is to determine the use of AMCRYLATE® - Isopentyl -2- cyanoacrylate in the treatment of such refractory ulcers in canines.

SAS-65 Development of recurring histiocytoma in a dog during successful surgical management of elbow hygromas of dogs and goats - A report of six recent cases.

A.K Maji, S. Nandi, S.Haldar, Shashi Shekhar P.Singh, Arnab Maji, Munmun De

West Bengal University of Animal & Fisheries Sciences, Kolkatta, West Bengal

Four dogs comprising 3 Labrador Retriever and 1 German Shepherd with unilateral or bilateral elbow hygroma and a Jamunapuri goat with large size unilateral cases were surgically operated in WBUAFS clinics as per standard procedure with no report of recurrence. The goat was tried by medical treatment with refractory result prior to operation. In one case (6th Case) of Golden Retriever the left elbow hygroma was operated by a local canine practitioner in private clinics as like that of abscess treatment. Continuous chronic irritation caused a recurring growth and it was excised twice by a surgeon. On presentation to the University clinics it was diagnosed as histiocytoma and the rapidly growing mass of 16 X 10 cm was removed surgically. On histopathology it was it was diagnosed as Benign fibrous histiocytoma.

SAS-66 Clinical and Histopathological biomarks in Sciatic nerves of Rabbits exposed to Static Magnetic Field

Abdalbari Abbas Alfars

Dept.: Vet. Internal, Preventive Medicine, Surgery & Obstetric, University of Basrah. Basrah-Iraq.

The present work was conducted to investigate the effect of magnetic field for regeneration of sciatic nerve injury in 30 rabbits. They were divided into three groups (control group, magnetic field group 10G and magnetic field group 15G). The sciatic nerve axotomy was done in the left hind limb and the nerve was apposed immediately by nylon (0-5 mm). After 24 hours of surgery, the magnetic field groups exposure to magnetic field (North Pole) at a distance of 2.5 cm for 15 minutes, daily for two weeks. The experimental wound was evaluated clinically throughout the period of study (2 months, 4 months). Five animals from each groups work euthanised after 2 month and noted the macroscopic and histopathological changes. After 4 months, the remaining animals from each groups work euthanised and examined. The results showed the accelerated regeneration of sciatic nerve and improved motor and sensory function of the nerve was best in the magnetic field group 15Gauss, followed by second group.



ORTHOPAEDIC SESSION

Date : 09.12.2010 Time : 11.15 am

Venue : Conference Hall

Chairman : Dr. S.S. Rathore

Rapporteur : Dr. S. Ayyappan

Bone Tissue Engineering

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Bone is a dynamic tissue which undergoes remodeling, and it is constantly being resorbed and rebuilt following injury. In spite of being capable of self-regeneration after injuries or to remodel in relation to local stress in case of severe injury, the fracture repair mechanism of bone can fail and thus bone may not heal correctly and regain its mechanical function. Resulting in fibrous non unions requiring additional treatment. Moreover, bone tissue can suffer from several diseases, most of which are due to an imbalance between the breakdown and formation of bone resulting bone loss. These include osteoporosis, hyperparathyroidism, hypercalcaemia and malignancy, Paget's disease, metastatic disease in bone, local destruction of bone in the jaws in periodontal disease, periarticular bone loss in rheumatoid arthritis, bone loss in immobilization due to the absence of mechanical stimuli and bone loss associated to glucocorticoid treatment. All these conditions could be helped by blocking bone resorption, but this is not always possible. In such situations, bone tissue engineering can bring up the ultimate solution and hope for many patients suffering from these problems.

The clinical need for musculoskeletal tissue is diverse. Attempts to engineer bone, cartilage, meniscus, tendons and ligaments, which regenerate poorly in the body, could provide relief for patients with arthritis, osteosarcoma and trauma.

Core concepts of bone tissue engineering are

- A. First principle – cells: Bone formation requires sufficient number of osteogenic progenitors
- B. Second principle – osteoconduction: Defect must be filled with a scaffold or matrix that facilitates attachment, migration and differentiation of osteogenic progenitors.
- C. Third principle- osteoinduction: Important that cells in scaffold receive stimuli to induce them to differentiated towards bone phenotype (e.g. Growth factors)

Bone tissue engineering strategies

Conventional approaches in bone repair have involved biological grafts such as autogenous bone or auto grafts, allogenic bone or allograft and xenografts. The disadvantage of autografts is patient pain, infection and high cost, similarly the disadvantages of allograft like donor shortage, immune rejection, infection and pathogen transferred. Currently, auto grafts are most often used in clinical settings, as they do not represent risk of immune rejection or disease transfer.

However, the limited availability of auto grafts and the risks of morbidity have fueled the continuously growing interest in the development of alternative approaches to bone repair based on tissue engineering strategies. As stated before, the ultimate goal of tissue engineering is to replace, repair or enhance the biological function of damaged, absent or dysfunctional elements of a tissue or an organ. Many different strategies may be used to develop these engineered tissues. As mentioned below

1. Cell self-assembly

The *Cell self-assembly* approach corresponds to the direct in vivo implantation of isolated cells or cell substitutes and is based on cells synthesizing their own matrix. This approach avoids the complications of surgery, allows replacement of only those cells that supply the needed function and permits manipulation of cells before infusion.

2. Acellular scaffold

This approach is based on the direct In vivo implantation of biomaterials and relies on the in growth of tissue and cells into a porous material; this process, by which the regeneration is affected by ingrowths



from surrounding tissue, is known as Tissue induction. In many cases, in this approach the matrix (polymeric scaffold) is loaded with growth factors or any other therapeutic agent. In case of the bone, this three-dimensional process depends on the chemical surface properties of the implant, its three-dimensional structure and porosity and its rate and mechanism of degradation. These are the properties of the materials that may enhance the attachment, migration and distribution of cells responsible for the bone-healing response throughout the volume of the graft site, i.e., the osteoconduction behavior.

3. Cell-seeded polymeric scaffolds

In this approach, the temporary scaffold provides an adhesive substrate for the implanted cells and a physical support to organize the formation of the new tissue transplanted cells adhere to the scaffold, proliferate, secrete their own extracellular matrices (ECM), and stimulate new tissue formation. During this process, the scaffold gradually degrades and eventually eliminated.

DESIGN AND PROCESSING OF SCAFFOLDS

The requirement for a scaffold material to be considered suitable for tissue engineering applications are complex and in many cases there is no consensus among the biomaterials research community about specific demands that are required for a particular application. There are some general key characteristics that a scaffold material must process.

- i) **Biocompatibility** both in implanted and degraded form
- ii) **Appropriate mechanical properties** to provide the correct stress environment for the neo-tissues, this is particularly important for the regeneration of hard tissues, like bone
- iii) **Controlled degradation rate**
- iv) **Appropriate pore size and morphology:** porosity, pore size and pore structure are important factors that are associated with nutrient supply to transplanted and regenerated cells. Small diameter pores are preferable to yield high surface area per volume, as long as the pore size is greater than the diameter of a cell in suspension (typically 10 μm).
- v) **Appropriate surface chemistry for cell attachment, proliferation and differentiation:** because most organ-cell types are anchorage dependent, they require the presence of a suitable substrate to retain their ability to proliferate and perform differentiated functions since cell adhesion is the prerequisite for further cellular functions, such as spreading, proliferation, migration and biosynthetic activity.
- vi) **Easily** sterilized either by exposure to high temperatures, ethylene oxide vapor, or gamma radiation and remain unaffected by any of these techniques.
- vii) **Easily processed into three-dimensional shapes** of irregular geometry that can be maintained after implantation. In some cases, a scaffold with unique three dimensional geometry is required to fit an irregular defect. The regenerated tissue is therefore expected to take the shape of the initial scaffold

Scaffolding materials for BTE

In scaffold-based tissue engineering strategies, the successful regeneration of tissues from matrix-producing connective tissue cells or anchorage dependent cells (e.g., osteoblasts) relies on the use of a suitable scaffold. Therefore, the design and production of an appropriate scaffold material is the first and one of the most important stages in hard tissue engineering strategies based on seeding and culturing an appropriate type of cell onto the constructs prior to implantation. In this critical stage, the selection of the most adequate raw material is a primary consideration. There are many biocompatible materials available among metals, ceramics and polymers. However, the criteria of biodegradability exclude the use of all metals and most ceramics as scaffolds materials. Although biodegradable /



bioresorbable ceramic materials, such as tri-calcium phosphate and sea coral, have been used with some success as scaffold materials (mainly in orthopedic applications), they usually present at least one of the following limitations:

- First they are usually not only quite brittle but also difficult to process into porous materials with complex shapes
- Second, It is currently not possible to generate matrices with clinically useful degradation rates from most of the available ceramics.

Polymers, on the other hand, are ductile and easily formed into any shape. The wide range of biodegradable polymers used in tissue engineering have been the poly - hydroxy acids (HA) of the aliphatic polyesters, / polyglycolic acid (PGA), polylactic acid (PAL) and copolymers (PLGA) of these materials. This has created additional difficulties for the development of new materials with improved properties, specifically tailored for tissue engineering applications.

Composite substrates or scaffolds able to stimulate cell activity, i.e. adhesion, proliferation and differentiation, with the aim that differentiated osteoblasts produce bone ECM (Extra Cellular Matrix).

CELL SOURCES

Embryonic stem cells

Embryonic stem cells can provide an unlimited supply of pluripotent cells for tissue engineering application. The recent identification of human embryonic stem cells - cells that can give rise to essentially all cell type in the body, depending on the culturing conditions. Bone tissue engineering by directly differentiating embryonic stem cells (ESCs) (Embryonic Stem Cells) into osteoblast has been unsuccessful so far the ESCs (Embryonic Stem Cells) can be used in case of BTE(Bone Tissue Engineering) by the process of endochondral ossification

Bone marrow stromal cells

A further important consideration for the most widely studied tissue engineering approaches, which are based on the seeding and extended *in vitro* culturing of cells within the scaffold prior to imputation, is the cells source and the ability to control cell proliferation and differentiation. Primary cells derived from the patient's own healthy tissues (i.e. , autogenic cells) could be the first obvious choice, since this avoids many of the problems associated with immune rejection of foreign tissues.

The bone marrow is comprised of hematopoietic cells and adherent stromal cells of non-hematopoietic origin which together with the extracellular matrix provide supportive scaffolding termed the bone microenvironment. The cellular components of the marrow microenvironment include reticular endothelial cells, macrophages, adipocytes, fibroblasts and osteogenic precursor cells.

In Vitro culturing system -Bioreactors

Several recent studies demonstrate the importance of mimicking certain critical aspects of the native environment for the engineering of functional bone tissue substitutes. Therefore, besides the selection of the scaffold material and the cell source, it is necessary to develop more advanced procedures for culturing cells-scaffolds constructs in order to achieve microenvironments that encourages the cell and matrix organization to recapitulate the tissue's natural structure and function, optimizing the invitro culturing systems currently used. These systems, so called bioreactors, may have different designs attempting to achieve one or more of the following objectives

1. Maintain a uniform distribution of cells into 3 D scaffolds
2. Provide adequate levels of oxygen, nutrients, cytokines and growth factors
3. Expose the culture cells to mechanical stimuli



Bioreactors are also one of the focus of the development of a manufacturing technology for tissue engineered products, because they represent a chemically and mechanically controlled environment in which a tissue-like construct can be grown in reproducible conditions. When the main purpose is to obtain engineered tissue-like substitutes, the type and the specific functional design characteristics of a bioreactor are determined by the dimensional and functional requirements of the tissue to be substituted/regenerated as well by the cell-scaffold system used. There are several types of bioreactors currently available, which can be grouped in to three main types, namely

- the spinner flasks
- the rotating bioreactors
- Flow perfusion culture systems.

Conclusions

Bone defects represent a medical and socioeconomic challenge. Different types of biomaterials are applied for reconstructive indications and receive rising interest. However, autologous bone grafts are still considered as the gold standard for reconstruction of extended bone defects. The generation of bioartificial bone tissue may help to overcome the problems related to donor site morbidity and size limitations. Tissue engineering is a fascinating field of research and is bound to dramatically change clinical practice in reconstructive surgery. Osteogenic cells for bioactive implants are readily available following minimally invasive harvesting and *ex vivo* expansion. Osteoinductive substances may further enhance bone formation within engineered composites. Optimized implantation technique is one more essential step towards clinical application of engineered bioartificial bone tissue. The answer towards up scaling of bioartificial devices will be delivered by advances in the area of vascularization. Therefore bone tissue engineering is one of the emerging field towards bone tissue regeneration in orthopedic conditions.



ORS-1

Epoxy-pin external skeletal fixation for management of open long bone fractures in calves and foals: a review of 16 cases

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The study was done to evaluate the possibility of using the epoxy-pin external skeletal fixation for the management of open infected bone fractures in calves and foals. 12 calves and 4 foals were treated; most of them were less than one year of age, weighing between 50 and 100 kg. Majority of the animals (9 calves and 3 foals) were females. Nine cases were of metatarsal fractures, 3 cases were metacarpal fractures, 2 cases were of tibial fractures, and in 2 cases hind limb fetlock joint was involved. In all but one case the fracture was comminuted in nature, and mostly middle and distal third of the bone was involved. In all the animals, fracture fragments were stabilized using either bilateral linear (13 cases) or circular (3 cases) designs of epoxy-pin fixation systems, and in 9 cases transarticular fixation was done. Both proximal and distal bone fragments/bones were immobilized using 2.0-3.0 mm K-wires fixed at different levels as per the need. Fixation wires in the same plane were bent and joined; and using additional wires, connecting bars/rings were constructed to make a temporary scaffold. Thoroughly mixed epoxy putty (M-Seal) was then applied by taking the scaffold as guide and by incorporating the wires within the mold. The epoxy-pin construct was then allowed to set for 45-60 minutes. All the animals were evaluated based on different clinical and radiographic observations made at regular intervals up to healing.



The epoxy-pin fixation was easy to apply and provided stable fixation as indicated by early weight bearing on the limb. The different sizes and shapes of connecting bars and rings could be constructed on the spot. Good healing of open wound, fracture healing and functional recovery of the limb were observed within 60 days in majority of cases (except in 2 cases, which failed to heal). In conclusion, in addition to provide stable fixation of unstable fractures, the epoxy-pin ESF technique is simple, less expensive, requires minimal instrumentation and hence can be used to treat a variety of open fractures and dislocations in calves and foals (weighing up to 100 kg) which are difficult to treat by conventional techniques.

ORS-2

Comparison of DCP and horn plates for the long bone fractures repair in canines

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The study was conducted on 19 clinical cases of dogs with long bone transverse fractures presented at University Veterinary Hospital during the period from April 2009 to March 2010 to compare the clinical and radiographical healing with the use of dynamic compression plate and horn plate. The animals were divided into two groups. In Group A (n=12), long bone fractures were stabilized using dynamic compression plate. In group B (n=7), long bone fracture were stabilized using horn plates, prepared from horns collected from cadaver of cattle. In the present study, males (84%) were affected more than the females. Radius and ulna bone had highest occurrence (73.69%) followed by femur (15.79%) and tibia (10.5%). Majority of fractures occurred due to automobile accidents (63.2%). Dogs with age less than one year of age were more affected (57.89%). In dogs included under study, it was observed that dogs with weight ranging from 10 to 20 kg were more affected (52.6%). Labrador (42.1%) and Mongrel (26.31%) were most common breeds affected. In both the groups, A and B, Dynamic compression plates and Horn plates, provided satisfactory fractures reduction and effective stability, except in one case of horn plate, in which horn plate developed tear and led to implant failure. Return to normal weight bearing was comparable in both the groups. Horn Plates had tendency to develop cracks on repeated autoclaving making them unsuitable for use as implant for fracture repair. Horn plates could be cheap alternative to dynamic compression plates, but not superior to them.

ORS-3

Clinical use of University of Melbourne pain scale (UMPS) for assessment of pain and response to analgesics in canine orthopaedic patients

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Sixteen canine patients underwent surgery for orthopaedic affections were selected for the study. These animals were divided randomly into two groups of eight animals each and were administered with tramadol (2 mg/kg body wt. IM for 5 days, b.i.d) and fentanyl (4 µg/kg body wt. IM for 5 days, b.i.d) respectively for postoperative analgesia for 5 consecutive days. Pain was evaluated on days 0, 1, 3 and 5 of administration of analgesics using University of Melbourne Pain Scale (UMPS). Evaluation of analgesia by UMPS showed no significant difference in the analgesia provided by tramadol and fentanyl. However, tramadol provided comparatively longer duration of analgesia than fentanyl and thus increased pain score was present on day 1 and 3. However, on day 5 the scores reduced from the base value in all the groups. The total score of UMPS in tramadol group decreased from 5.75 to 3.25. In fentanyl group the scores reduced from 6 to 2. The scale seems to be promising in the evaluation of pain and also in the evaluation of analgesics during the postoperative period in canine orthopaedic patients.



ORS-4

Development of local drug delivery system based on ceftriaxone-sulbactam composite drug impregnated porous hydroxyapatite in treatment of osteomyelitis.

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The present investigation deals with a systematic and extensive approach incorporating *in vitro* and *in vivo* experimentation to treat chronic osteomyelitis, using hydroxyapatite (HAp) porous scaffolds. The inability to maintain high concentrations of antibiotic at the site of infection for an extended period of time along with dead space management is still the driving challenge in treatment of bone infections. For the first time, a novel approach was given to treat such infections using the porous scaffolds and drug combinations of ceftriaxone sodium and sulbactam sodium. *In vitro* studies include variation of porosity with interconnectivity, pore-drug interfacial studies by Scanning Electron Microscopy-Energy Dispersive Analysis of X ray (SEM-EDAX) and drug elution studies both in contact with phosphate buffered saline (PBS) and simulated body fluid (SBF). *In vivo* trial based on experimental osteomyelitis in rabbit model induced in tibia by *Staphylococcus aureus*. The characterizations include observation of development of osteomyelitis, histopathology, radiology, SEM and estimation of drug in both bone and serum for 42 days by HPLC method. Samples which had 50-55% porosity with an average pore size ~ 110 μm having higher interconnectivity (10-100 μm), moderately high adsorption efficiency (~ 50%) when loaded with the drug showed a prolonged, sustained and uniform release of the drugs considered being sufficient to treat chronic osteomyelitis with desirable bone formation. The result of the animal experimentation has been clinically applied in human osteomyelitis patient with encouraging outcome.

ORS-5

Sequential changes in synovial fluid parameters of cattle with acute septic arthritis treated by conventional and arthroscopic lavage

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Septic arthritis in twelve cattle each were treated by conventional lavage (group I), arthroscopic fibrin debridement (group II) and arthroscopic debridement and partial synovectomy (group III). Synovial fluid samples from affected joints were collected at different time intervals and evaluated. The purulent/turbid synovial fluid observed on day 1 became clear on day 14 in 23.81, 90.48 and 100 percent samples of group I, II and III respectively. Significantly increased synovial fluid volume and protein content returned to its normal value on day 21 in group I and on day 14 in both group II and III. The raised alkaline phosphatase activity, serum-synovial fluid glucose difference, total nucleated cell count returned to their base value on days 28, 21 and 14 in group I, II and III respectively. The difference in time taken for the various parameters to become normal reflects the relative efficacy of the three techniques in bringing about resolution of inflammatory reaction and infection.

ORS-6

Histological changes in synovial membrane and articular cartilage of cattle with septic arthritis

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Arthroscopic debridement and partial synovectomy was performed in 21 joints of cattle with septic arthritis. Histological examination of biopsy materials collected during arthroscopy revealed presence of bacterial colonies in 11 synovial membrane specimens (52.38%), 8 fibrin deposits (38.1%), 1 articular cartilage (4.8%) and 2 subchondral bone (9.52%) specimens. Fibrin deposits over the articular cartilage and synovial membrane in 10 specimens (47.61%), degeneration and necrosis of synovial membrane in 5 specimens (23.81%), granulation tissue formation in 4 specimens (19.05%) and necrosis of subchondral bone in 2 specimens (9.52%) were also observed. Identification of bacterial colonies in biopsy specimens justifies the usefulness of fibrin debridement and partial synovectomy in eliminating bacterial colonies and faster resolution of joint infection.



ORS-7

Comparative Clinical Studies on Tie-in Configuration and Intramedullary Pinning as Techniques for Stabilization of Femoral Fractures in Dogs

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Comparative assessment of two methods of fracture repair namely, intramedullary pinning and tie-in configuration technique, was carried out in 12 clinical cases of diaphyseal femoral fractures in dogs. Twelve dogs were randomly divided into 2 groups of 6 animals each. In dogs belonging to group I, intramedullary pinning was carried out whereas in dogs belonging to group II, tie-in configuration technique was carried out. The post-operative clinical evaluation revealed no exudation of the surgical site and complete wound healing in almost all the dogs except a dog each in both the groups owing to the post-operative complications. Serosanguinous discharge was noted at entry points in all the dogs of group II. All the dogs showed sever pain upto the 2nd post-operative day which subsided by 14th post-operative day in dogs belonging to group I whereas it was still evident in dogs belonging to group II. The earlier return to the functional usage of the limb was observed in the form of partial and complete weight bearing in dogs belonging to group II as compared to those of group I. Proper reduction and alignment of fracture ends were noticed in all the dogs immediately after the fracture stabilization. However, most of the dogs of group I when observed post-operatively had mal-alignment either in the form of impacted fracture fragments or rotation of the distal fragment. Good post-operative alignment was observed in most of the dogs of group II throughout the study. Varying degrees of periosteal reaction were observed in all the dogs in present study but it had no effect on bone healing or functional usage of limb. Implant failure in the form of loosening of transfixation pin was observed in 3 of the 6 dogs of group II. Post-operative complications in the form of proximal migration of pin, seroma formation near the cut end of the pin, rotational deformity and impaction of fragments were noticed in most of the dogs belonging to group I. In group II, however, these complications were not observed owing to the stability provided by tie-in configuration assembly.

ORS-8

Comparative Clinical Studies on Ilizarov Circular External Fixation and Intramedullary Pinning as Techniques for Stabilization of Tibial Fractures in Dogs

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Comparative assessment of two methods of fracture repair namely, Ilizarov technique of circular external fixation and intramedullary pinning, was carried out in 12 clinical cases of diaphyseal tibial fractures in dogs. Twelve dogs were randomly divided into 2 groups of 6 animals each. In dogs belonging to group I, Ilizarov technique was carried out whereas in dogs belonging to group II, intramedullary pinning technique was carried out. The fracture healing was evaluated clinically and radiographically in both the groups of dogs. Most of the dogs of group I showed partial weight bearing by 2nd postoperative day while complete weight bearing was observed by 7th postoperative day. Most of the dogs belonging to group II showed partial weight bearing by 7th postoperative day and complete weight bearing by 24th postoperative day. The earlier restoration of the functional usage of the limb in group I could be attributed to the closed reduction, no external infection and axial stability of the Ilizarov apparatus. Proper reduction and alignment of fracture ends were noticed in all the dogs immediately after the fracture stabilization. The postoperative clinical evaluation revealed mild swelling around the proximal lateral K wire insertion sites in most of the cases of group I and no exudation whereas mild swelling and exudation from the fracture site in some cases of group II. Good post-operative alignment was observed in most of the dogs of group I throughout the study. Complete callus formation was seen in dogs with Ilizarov apparatus within 45 days except one case which did not show endosteal bridging at all as against 7-8th week in dogs having an intramedullary pin. Healing of fractured tibia following Ilizarov technique was excellent with minimum complications as compared with intramedullary pinning alone. Application of Ilizarov technique nullified the disadvantages



of intramedullary pinning by resisting rotational fracture forces, giving added stability to the fractured bone, allowing early weight bearing and joint mobility, minimum blood loss and preventing disuse muscle atrophy.

ORS-9

Successful Surgical Management of Avulsion Fractures in Dogs

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The present report puts on record the successful surgical management of two cases of avulsion fractures. Dog 1 was a 11 month old male racing Greyhound which was presented with a history of non weight bearing lameness on right hind limb after first practice racing session. Cranio-caudal and lateral X-rays of right stifle revealed completely displaced avulsion fracture of anterior tibial tuberosity. Dog 2 was a 8 month old male German shepherd presented with a history of fall from height resulting in non weight bearing lameness on left hind limb. X-ray revealed complete, transverse, displaced fracture of calcaneus. Open reduction under general anaesthesia was attempted in both the dogs and the fractures were stabilized with tension band wiring technique. Post operatively, both the dogs showed partial weight bearing on 2nd day and full limb usage by 10th day, with complete fracture union by 60th day. Both the dogs showed uneventful recovery and dog 1 was put back on racing track after 6 months.

ORS-10

Surgical and conservative management of multiple bone fractures in canine patients

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Fractures involving more than one bone are difficult to stabilize. Rehabilitation of such patient is a real challenge faced by the surgeon. The present report puts on record six dogs with multiple fractures managed by surgical and conservative methods. Three dogs had history of automobile accident and rest three had a fall. Dogs 1 and 2, had bilateral femur fractures with displaced pubic symphysis fracture in dog 1, dog 3 had a right femur fracture with ipsilateral 2nd metacarpal fracture, dog 4, had a left distal 3rd comminuted, supracondylar femur fracture with intercondylar and trochlear ridge fracture along with ipsilateral proximal 3rd comminuted radius ulna fracture. Dog 5 had a left femur fracture along with T2 compression fracture and dog 6 had a left femur fracture along with bilateral sacroiliac separation and pubic symphysis fracture. In all the dogs femur fractures were stabilized with static intramedullary interlocking nailing. In dogs 3 and 4 the fore limb fractures were stabilized with padded full limb casts. In dogs 1 and 6 the pelvic fractures were stabilized by padded pelvic bandage. All the dogs showed early partial weight bearing by 3rd post operative day however dogs 1 and 6 were having staggering gait. Recovery was good in all the dogs except dog 5 which showed fore limb lameness owing to T2 compression fracture.

ORS-11

Treatment of Comminuted Proximal Metacarpal Fracture in a Sambar Deer Fawn (*Cervus Unicolor*) Using Acrylic Gutter Splints

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A one month old Sambar Deer (*Cervus unicolor*) fawn was presented with comminuted fracture of the proximal end of the right metacarpal bone. Gutter splints were devised using dental acrylic and applied to the affected limb including the carpal joint and the phalangeal joints with a walking plate covering the sole. Radiographs taken three weeks after immobilization revealed callus formation at the site of fracture. After one and a half months of immobilization the animal was found to bear weight on the limb satisfactorily. There was progressive improvement in the use of the limb and by the end of three months the animal had a normal gait.



ORS-12 Segmental Spinal Stapling for Vertebral Fracture-luxation in an Adult Bonnet Macaque (*Macaca radiata*)

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An adult male Bonnet Macaque was presented in a paraplegic state with wounds all over the body. The primate was in a state of shock. Physical examination revealed a deformed vertebral column. Radiographic examination revealed fracture-dislocation involving the L3-L4 vertebrae. Pedal and patellar reflexes, and deep pain sensation were absent in both hindlimbs. After stabilizing the primate medically it was anaesthetized with diazepam at the rate of 0.25 mg/kg b.wt. and ketamine at the rate of 5 mg/kg b.wt. intravenously after premedication with atropine at the rate of 0.045 mg/kg b.wt., the vertebral column was stabilized by segmental spinal stapling with 2.5 mm Steinmann pin and 20 G stainless steel wire involving the L2 to L6 vertebrae. Post-operatively, cefazolin was administered at the rate of 20 mg/kg body weight IV at an interval of 8 hours. However, the animal died on the subsequent day.

ORS-13 Rehabilitation on Paraplegic Animals on Locally Fabricated Wheelcarts

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Paraplegic animals which do not respond to medical or surgical treatment can be rehabilitated on wheel carts. A paraplegic dog and a kid, which had sustained vertebral fracture following an automobile accident and dog bite respectively were rehabilitated on wheel carts fabricated with aluminium rods and fabric after they failed to respond to surgical treatment. Wheels were fabricated with plastic bottle lids and acrylic. The animals were found to be comfortable on these wheel carts and the carts were found to be durable.

ORS-14 Acrylic Gutter Splints - An Alternative to Plaster of Paris Casts for External Coaptation in Domestic Animals

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Plaster of Paris casts, though favoured by many practitioners for the treatment of fractures in domestic animals, has several disadvantages in animal patients. Acrylic splints prepared from dental acrylic can be a very effective external coaptation device with advantages like light weightedness, non-wettability, toughness, reusability and radiolucency. The ability to incorporate a durable walking plate into the acrylic gutter splints also is an added advantage over Plaster of Paris casts. Acrylic gutter splints were used for the treatment of fractures in domestic animals and were found to be very effective and advantageous for immobilization of the fractured bones.

ORS-15 Surgical Management of Mandibular Fracture in Sloth Bear (*Melursus Ursinus*)

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A Seven years old male sloth bear belonging to Bannerghatta Biological Park weighing about 150 kgs was presented to Veterinary College Hospital, Bangalore with the history of automobile accident to the safari van. Physical examination revealed injuries to the jaws with drooping of the lower jaw and malalignment of jaws. Further mediolateral view radiograph of the skull with open mouth revealed bilateral oblique fracture of horizontal rami of the mandibles. It was decided to repair the fracture by external skeletal fixation. The bear was prepared for aseptic surgery. The horizontal mandibles on both the sides were surgically exposed for reduction of the fracture. Schanz screw of 4mm diameter two to the proximal and two to the distal segment was inserted through and through to both right and left fractured mandible and connected with connecting rods on either sides of the mandible. Which yielded adequate



immobilization. The soft tissue and skin were closed in routine manner. Post-operatively, Ceftriaxone (20mg/kg) was given for 7 days systemically twice daily and oral topical application of chlorhexidine ointment was used. Sloth bear was able to eat soft foods by 7th post operative day and wounds healed by 15th day, and animal started taking solid food by 30th post operative day without any complications.

ORS-16 Comparison of Type 1b, Type 2 and Type 3 External Skeletal Fixation for Radius Fracture Treatment on Dogs

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A study was undertaken in eighteen clinical cases of dogs with radius fracture to evaluate the efficacy of different configurations of external skeletal fixators viz., Type 1b, Type 2 and Type 3 (Group A, B and C of six dogs each). Based on fixator stability, pain evaluation, weight bearing, patient tolerance and radiographic assessment of fracture healing, it was found that Type 1b, Type 2 and Type 3 fixator frames can be easily applied for the treatment of radius fracture. Of which, Type 3 external skeletal fixator provided better stability when compared to Type 1b and Type 2 external skeletal fixator.

ORS-17 Metacarpal Fracture Repair in a Leopard

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One male leopard aged about 5 months housed at Bannerghatta Biological Park, Bangalore was brought to the Veterinary College, Bangalore with a history of forelimb injury due to a fight with adult leopard. Animal was anesthetized with Xylazine 1mg/kg b.wt and Ketamine 5 mg/kg b.wt. intramuscularly. On physical examination an open wound at left metacarpal region with exposed fractured fragments of metacarpal bone was found. Radiographic examination confirmed complete transverse fracture of second and third left metacarpal bones and it was decided to go for stabilization. Under general anesthesia animal was prepared aseptically for surgery and fracture of second and third metacarpals were repaired with intramedullary pinning using 2.5mm K wire. The wound was repaired and skin edges were apposed as per routine manner. The animal was recovered uneventfully.

ORS-18 Repair of Bilateral Mandibular Fracture in Camels

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Bilateral mandibular fracture was noticed in 6 male camels aged 5 to 15 years and occurred due to infighting (5) and accidental fall over road (1). All the animals were presented for surgical repair within 12 hours to 2 days after occurrence of fracture. The site of fracture was near canine tooth (4), rostral to premolars (1) and in between 2nd & 3rd cheek teeth (1). Immobilization of fractured mandible was done by bilateral pinning (1), unilateral pinning and interdental wiring (2), bilateral interdental wiring (2) and external support provided where site of fracture was in between 2nd & 3rd cheek tooth (1). Complications like migration of pin, loosening of interdental wiring and suppuration at the site of fracture were noticed. However, clinical union of fractured mandible was noticed in 5 camels after 30-45 days of immobilization.

ORS-19 Correction of Mandibular Fractures in Dogs with Steel Wiring and Supportive Pop Bandage

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Seven dogs (GSD-01, ND-05 and POM-01) of 3 to 7 months age were presented with a fractured jaw (unilateral or bilateral) following an accident. Detailed oral examination revealed bilateral (05) and unilateral (02) fracture of mandible with complete uneven tearing of oral mucosa. Internal wiring with 22 gauge



orthopedic wire was done by drilling the holes in both sides of the fracture line and additional circulate provided around the persistent premolar /adjacent tooth of mandible for fracture stabilization. Oral mucosa was sutured with 3 – 0 chromic catgut. Post operatively the dogs were withheld for food and maintained on fluid therapy for 5 – 6 days. Externally, plaster of paris bandage was applied on lower jaw for supportive immobilization. All the dogs showed uneventful recovery and wires were removed after 30 days.

ORS-20 **Fractures and Their Management in Three Birds**

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Three birds; Falcon, Chikor (local name) and Parrot, were brought to the clinic with the history of inability to fly. In all three birds, the involved leg was left side. Clinical and radiographical examination revealed transverse fracture of distal femoral diaphysis in falcon and distal tibial diaphysis in chikore, and proximal tibial metaphysis in parrot. Retrograde intramedullary pinning was done in falcon whereas open reduction and normograde intramedullary pinning was done in Chikor under ketamine @ 50 mg/kg body wt. In Parrot, fracture was immobilized by plaster of paris cast. Post-operatively, Novamox syrup 5 drops b.i.d. was given orally for 7 days. The falcon flew after one post-operative follow-up in which palpation revealed no movement at fracture site. In Chikor and Parrot, pin and plaster of paris cast was removed on 35 and 28 days, respectively.

ORS-21 **Management of Open Tibial Fracture in A Parakeet - A Case Report**

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A 5 year old male parakeet weighing about 300gm was presented to the Small Animal Orthopaedic Unit, Madras Veterinary College teaching hospital with history of rat bite injury on the right limb. The bird was depressed and off feed. Clinical examination revealed compound fracture of right distal tibia. The distal segment of the limb was found loosely attached to the proximal bone segment with a small amount of soft tissue and skin at mid tibia. Under general anaesthesia, fractured fragments were reduced and a 1 inch 23G hypodermic needle applied as an intramedullary pin was inserted from the tibio tarsal joint in to the diaphysis of proximal tibia. C Arm guided image was taken to assess the placement of the needle in the medullary cavity. Oral medication of Oxytetracycline @ 5mg /kg weight was advised. The history, diagnosis, treatment and management of open tibial fracture is discussed.

ORS-22 **Surgical Management of Lumbar Spinal Cord Compression with Dorsal Hemilaminectomy and Polyethylene Glycol (Peg) in a Dog: A Case Report**

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A 3 year old male Doberman was presented to the small animal orthopaedic unit of the Madras veterinary college teaching hospital with a progressive ataxia and loss of conscious proprioception. Neurological examination indicated an LMN lesion that was localised between T3 and L3 segments. Plain radiography was inconclusive. Myelography indicated an abrupt stoppage of contrast material at L6-L7. A tentative diagnosis of disc protrusion was made. A surgical decompression was accomplished by performing a dorsal hemilaminectomy. PEG was then infused at the decompressed area. The Pre and post neurological and radiological findings, post surgical functional outcome and efficacy of PEG are discussed.



ORS-23 Pan Carpal Arthrodesis using Stepdown Plate for The Management of Bilateral Carpal Hyperextension in a Dog - A Case Report

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A 2-year-old male German shepherd was referred to the Small animal orthopaedic unit of the Madras Veterinary College Teaching hospital with a history of abnormal deviation of both forelimbs since six months. Initial treatment at a private clinic included placement of PVC splints. Clinical examination revealed acute bilateral carpal hyperextension with carpal joint instability and increased range of motion. Plain radiographs indicated increased joint space at the carpal joint. Pan carpal arthrodesis was performed by using a step down eight-hole locking compression plate after debriding the joints. Ancillary stability was provided by placement of 2 mm K-wires as cross pins. Routine postoperative care was followed. Arthrodesis of both the carpal joints were observed by eighth postoperative week with reduction in carpal hyperextension. The clinical signs, surgical technique and functional outcome are presented.

ORS-24 Pitfalls and Complications in Small Animal Orthopaedic Surgery - A Retrospective Study in 202 Cases

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A total of Two hundred and two small animal cases (September 2009 to August 2010), which underwent orthopaedic surgery were evaluated. Post surgical complications such as pin breakage, pin migration, external fixator pin loosening, recurrent patellar luxation, plate and screw loosening, plate breakage, wire loosening, osteomyelitis, ILN protrusion, refracture, and ankylosis were encountered. The cause of the complications and the functional sequelae are discussed.

ORS-25 Successful Treatment of Tibia Fibula in A Mongoose

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A 3 years old indigenous was presented with swollen left hind limb and lameness at the TVCC, Orissa Vety. College BBSR. On close examination it was revealed that there was complete fracture of tibia fibula of left hind limb which was confirmed on C-arm exam. There was simple complete oblique fracture of tibia fibula at mid shaft region. Injection meloxicam 1:3 dilution was administered along with oral serratopeptidase and nimusulide. On next day the swelling was subsided and modified Thomas splint was applied after correction reduction of fracture fragment under C-arm. The splint was kept for 15 days and was seen that the mongoose is able to move slowly. The above case study suggested that the modified Thomas splint bandage is also effective in the wild creatures.

ORS-26 Evaluation of Type II external skeletal fixators of modified frame constructions for tibial diaphyseal fracture in dogs

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Twelve dogs presented to the College Hospital with unstable diaphyseal tibial fractures were taken as clinical material for the study. The dogs were equally divided into group I and II of six animals each. The fractures were stabilized with modified frame constructions of Type II external skeletal fixators of positive profile end threaded half pins and smooth full pins of minimal type (group I) and modified frame constructions of Type II external skeletal fixators of positive profile centrally threaded full pins of maximal type (group II) following standard procedures. Selection of appropriate size of pins, connecting rods and clamps according to age, body weight and type of fracture provided good fracture stability. In both the groups, modified AO mini clamps, Beta clamps with knurl rods and low cost acrylic and local epoxy



putty modified connecting frames were used in small dogs. No technical difficulties were observed while application of these modified construction frames of Type II external skeletal fixators in these animals. The outcome of fracture stabilization and healing was evaluated with postoperative lameness grading, pain score, radiography and biochemical analysis. In both the groups, stabilization showed good clinical outcome with complete weight bearing and normal limb usage within seven weeks except in one case of group I where fixation failure with smooth pin migration and destabilization of fixator and fragments separation was recorded by second week. In this case, the fracture was again stabilized by passing pins and tightening with clamps which was healed later. In group II, no migration and pin loosening of centrally threaded pins was observed except pin tract infection with pin bone interface wound formation. These complications not showed any disturbance on clinical weight bearing and healing of fracture. The overall average healing time in both the groups was 4-12 weeks. The fractures showed radiographically excellent postoperative healing of cortical union, absence of fracture lines with endosteal bridging callus. Both minimal and maximal modified Type II external skeletal fixators with standard and low cost connecting frames according to fracture patient assessment were good for stabilization of unstable tibial fractures for early limb ambulation and excellent healing. However the application of positive profile centrally threaded pins with predrilling of pilot hole was found easier than end threaded half pins with advantages like good stability, less pain and more pin and cortical intact of bone.

ORS-27 Management of Diaphyseal Long Bone Fractures using Interlocking Nail Stabilization in Dogs Under C-Arm Guidance

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The study was carried out on clinical cases referred to the Small Animal Orthopaedic Unit, Veterinary Teaching Hospital, Madras Veterinary College, Chennai. Twelve dogs with the clinical and radiological signs of diaphyseal long bone fractures (n= 10 femur fractures and n= 2 tibial fractures) were divided into two groups. In group I, six dogs were treated with interlocking nail application using external aiming device (Jig) under C-arm guidance and in group II, six dogs were treated with interlocking nail application under closed reduction using C-arm image intensifier. In group I animals, open reduction aided adequate alignment of fracture fragments and rapid return to function with gradual reduction in the lameness grade and good to excellent functional outcome by 60th post-operative day. In group II, closed reduction of fracture fragments and application of interlocking nailing under closed reduction was minimally invasive but was difficult to perform. Radiological evaluation indicated appropriate progression towards healing in five cases of group I. In one case 'wind-shield wiper' effects with delayed union was observed. In two cases, there was mild protrusion of nail and evidence of secondary bone healing. In group II, the fractures healed by secondary bone healing in four cases. Two cases had refracture at 60th post-operative day. The ILNs were removed and the cases managed conservatively. In this study, internal fixation using interlocking nail with external aiming device under open reduction provided good realignment of the fractured fragments and facilitated proper fixation of the nail and screws, resulting in early functional weight bearing in dogs. The interlocking nailing insertion under closed reduction with C-arm guidance was minimally invasive but the learning curve for this procedure and the time of exposure to fluoroscopy was higher and it was technically more demanding to perform. This technique was found to be suited only in minimally overriding unstable fractures presented within 3 hours of trauma.

ORS-28 Tibial fracture repair in calves using canine intramedullary interlocking nails

Shahnawaz A Bhat, H.P. Aithal, P. Kinjavdekar, Amarpal, A.M. Pawde, M. M. S. Zama, A. C. Saxena and S.W. Monsang

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The study was conducted to evaluate the feasibility of using interlocking nails, and to standardize the dimensions of nails, for the fixation of tibial fractures in calves. Four calves aged 6-12 months, weighing 60-90 kg, having comminuted fracture of tibial diaphysis were treated. In all the animals, 7 mm diameter 17-18 cm long, straight interlocking nails developed for dogs were used to stabilize the fractures.



Standard medial approach was used to expose the fractures site. A nick incision was made on the dorsal surface of medial condyle, medial to the middle patellar ligament half way between the tibial crest and the medial tuberosity. The nail was introduced through the incision by normograde technique using a guide wire. Once the nail has reached the distal end of proximal fragment, the bone fragments were aligned and the nail was progressed into the distal fragment till the proximal end of the nail was concealed below the skin. After confirming that the bone fragments were adequately reduced and nail is fixed stably, the nail was locked using 3-4 fixation bolts (3.5 mm) fixed two in the distal fragment and at least one in the proximal fragment ('static' fixation). The technique of application, and clinical and radiographic observations made at different intervals indicated that interlocking nail could be used in the bovine tibia, and provide stable fixation of unstable fractures. However, the nails were found inadequate in terms of design and dimensions, particularly they were found short. It was seen that 10-12 mm diameter and 20-24 cm long nails could be optimum for use in tibia of calves.

ORS-29 **Bone plating for tibial fracture repair in two calves**

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Bone plating was evaluated for the repair of tibial fractures in two calves. The first case was a 1-year-old female crossbred cow calf weighing about 100 kg. It had the history of fall one week back leading to fracture of right tibia with lameness in the hind limb. Radiograph revealed comminuted mid-diaphyseal fracture of tibia. Under epidural analgesia, fractured bone was approached through medial incision and the bone fragments were immobilized using a 6 mm thick, 24 cm long stainless steel bone plate, fixed antero-medially using 10 screws (3.5 mm) spanning the whole length of bone, along with a hemi-cerclage wiring. Second case was a 6-month-old male buffalo calf met with a traffic accident one day back, having comminuted mid-diaphyseal fracture of right tibia. In that animal also, under epidural analgesia, the fractured bone was approached using standard procedure and bone fragments were immobilized using a 16 cm long, 5 mm thick stainless steel bone plate using eight 3.5 mm screws, along with hemi-cerclage wiring. In both the cases, fracture immobilization was rigid and stable. Both the animals started bearing good weight on the limb in the immediate postoperative period. In the first calf, loosening of distal two screws and breakage of a screw near the fracture site in the proximal fragment were noticed at different intervals, however, fixation maintained till the healing occurred by 60 days, by then the plate and screws were removed. Functional recovery of the limb was good in both cases, though a sinus tract persisted at the fracture site in case No 1 for about 2 months after removal of the plate. The results show that bone plating along with hemi-cerclage wiring may provide stable fixation of tibial fractures in calves, however, standard bone plate with 3.5 mm screws is inadequate, especially in heavier calves.

ORS-30 **Modified cross pin fixation for repair of distal humeral fractures in dogs and goats**

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Modified technique of cross pinning was done in 8 dogs and 2 goats having condylar/supracondylar fracture of humerus. Distal end of humerus was exposed by a standard lateral incision through the anconeus muscle at the level of joint space, the incision was then continued proximally through the distal aspect of the lateral head of the triceps. The bone fragments were exposed gently by taking care not to damage the radial nerve. Then two K-wires (1.5 to 2 mm) were passed alternatively in crossed manner from the epicondylar portion of the distal fragment, one from the anterior and another from the posterior aspect of the lateral surface. Once the wires reached the proximal end of distal fragment, the bone fragments were reduced, aligned and then the K-wires were progressed alternatively in the proximal fragment. The wires were taken out through the antero-medial aspect of proximal humerus. After seating the distal end of wires below the level of articular cartilage, the extra length of the wires were cut close to the skin proximally, and the surgical incision was closed routinely. Stable fixation of fractures was



seen in all the animals, as indicated by early weight bearing on the affected limb. Pin migration was seen in a few animals, nevertheless, it did not affect the fracture stability, and good functional recovery was observed in all the animals. Generally cross intramedullary pinning is done to provide stable fixation of supracondylar fractures, pin being passed from the epicondylar portion of distal humerus one from the medial and another from the lateral aspect, that leads to more exposure and tissue trauma. The present modified technique of cross pinning from the lateral approach allows minimal exposure and tissue handling, besides providing stable fixation of distal humeral fractures.

ORS-31 **Comparison of plate rod construct and bone plating for long bone fracture in dogs**

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Total 12 dogs suffering with long bone fractures were divided in to two groups viz. Group I and Group II consisting of 6 dogs each. In group I, the fractures were treated with plate-rod construct whereas bone plating was done for the fractures of group II cases. In plate rod construct, intramedullary pin was inserted first for efficient spatial alignment of the major fragments, followed by application of plate of appropriate length. The intramedullary pin used was so selected as to occupy approximately 25 – 40% of the diameter of the medullary canal. In group II, only bone plate and screws were used as per the standard protocol. All the animals (group I & II), except two of group I, showed weight bearing on affected limb for the period of initial two days (Grade III) as soon as they recovered from the anaesthesia. From 3rd to 5th day post operative day they hold limb above the ground and gradually started supporting while standing and walking during 4th, 5th and 6th post operative weeks, all dogs except two, attended full weight bearing. Radiographs at day 30th post operative day revealed good alignment of fragments, proper position of implants and mild to moderate periosteal callus formation. On day 45th, endosteal bridging callus and obliteration of fracture line was observed in all the cases of both groups except in two cases of group I and one case of group II. The plating was found more suitable for long bone fractures at shaft whereas plate rod construct for multiple, supra or inter condoler fractures.

ORS-32 **Incidence of tibial fractures in dogs: a survey of 318 cases**

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The study was carried out between January 2007 and December 2009 at the the Small Animal Orthopaedic Outpatient Unit, Madras Veterinary College Teaching Hospital, Chennai. Among the total long bone fracture cases, tibia and fibula accounted for a total of 318 cases out of 1038 cases reported. The highest incidence was recorded in Non-descript breed 101 cases (42.0%). Incidence was more in males 145 cases (61.0%) whereas in females it was 94 cases (39.0%). Most of the tibial fractures recorded in less than six months aged. Among the tibial fracture cases, tibial diaphyseal fractures accounted for 239 cases (75.2%) where as epiphyseal, physeal and metaphyseal fractures constituted a total of 79 cases (24.8%). Out of 239 tibial diaphyseal fractures, tibial and fibular fractures constituted 158 (66.1%), only tibial fracture 77 (32.2%) and only fibula four (1.7%). Midshaft diaphyseal tibial fractures were recorded in 129 cases (53.9%), whereas proximal and distal tibial fractures were recorded in 43 cases (17.9%) and 67 cases (28.2%) respectively. Right tibial fractures constituted 123 (51.5%), whereas left tibial fractures constituted 116 (48.5%).

ORS-33 **Surgical management of unstable diaphyseal tibial fracture with minimally invasive plate osteosynthesis (MIPO) in dogs : a review of six cases**

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The study was conducted on six clinical cases of different breed, sex, age and body weight referred to the Small Animal Orthopaedic Outpatient Unit, Madras Veterinary College Teaching Hospital, Chennai

the period from July 2008 to December 2009. The parameters studied during the pre and post operative period were clinical and radiographic evaluation, lameness grade, functional outcome and postoperative complications. Preoperatively fracture patient assessment score (FPAS) was considered about mechanical, biological and clinical function. Normal weight bearing on all limbs at rest and walking (grade 1) was observed in one case on 7th postoperative day, three cases on 14th postoperative day and one case on 60th postoperative day but in one case showed limping upto 60th postoperative day. At 60th postoperative day, functional outcome was graded as excellent in four cases (66.7%) and fair in two cases (33.3%). Progressive secondary bone healing was noticed in four cases and progressive primary bone healing in one case but in one case, delayed union was noticed at 60th postoperative day after implant removal. Screw loosening with protrusion of the plate resulting in implant failure through the caudal aspect of distal tibia was observed at 7th postoperative day in one case.

ORS-34 Study on minimally invasive plate osteosynthesis (MIPO) for tibial fracture management in dogs

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The study was conducted on clinical cases referred to the Small Animal Orthopaedic Outpatient Unit, Madras Veterinary College Teaching Hospital, Chennai. Twelve dogs with diaphyseal tibial fractures were selected and divided randomly into two groups. Group-I: six dogs were treated with minimally invasive plate osteosynthesis (MIPO) technique without C-arm guidance and group-II: six dogs were treated with minimally invasive plate osteosynthesis (MIPO) technique under C-arm guidance. The parameters studied during the post operative period were lameness grade, functional outcome, radiographic evaluation and postoperative complications. Group-I, normal weight bearing on all limbs at rest and walking (grade 1) was observed in one case on 7th postoperative day, three cases on 14th postoperative day and one case on 60th postoperative day but in one case showed limping upto 60th postoperative day whereas in group-II, two cases on 7th postoperative day, two cases on 14th postoperative day, one case on 30th postoperative day and one case on 60th postoperative day. At 60th postoperative day in group-I, functional outcome was graded as excellent in four cases (66.7%) and fair in two cases (33.3%) whereas in group-II, excellent in five cases (83.3%) and good in two cases (16.7%). In group-I, secondary bone healing was noticed in four cases and primary bone healing in one case but in one case, delayed union was noticed at 60th postoperative day after implant removal. In group-II, clinical union by primary bone healing was noticed in two cases, progressive secondary healing in two cases and progressive primary bone healing in two cases. In group-I, screw loosening with protrusion of the plate resulting in implant failure through the caudal aspect of distal tibia was observed at 7th postoperative day in one case but in group-II, there was no postoperative complications.

ORS-35 Study on serum biochemical evaluation of fracture healing after plate osteosynthesis in dogs

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The study was conducted on clinical cases referred to the Small Animal Orthopaedic Outpatient Unit, Madras Veterinary College Teaching Hospital, Chennai. Eighteen dogs with diaphyseal tibial fractures were selected and divided randomly into three groups. In Group-I, II and III, six dogs were treated with conventional dynamic compression plating (DCP), minimally invasive plate osteosynthesis (MIPO) technique without C-arm guidance and minimally invasive plate osteosynthesis (MIPO) technique under C-arm guidance respectively. Blood samples were collected on the preoperative day and on immediate postoperative day, 7th, 14th, 30th and 60th postoperative day in all the groups to evaluate the serum levels of alkaline phosphatase, calcium and phosphorus. Serum biochemical evaluation revealed increased alkaline phosphatase on immediate postoperative day as compared to preoperative day and gradually declined from 7th postoperative day to 60th postoperative day in all three groups. Serum level of calcium significantly increased at 60th postoperative day compared to preoperative day in Group II and III whereas in Group I revealed progressive non significant increase ($P < 0.05$) during postoperative period. Serum



level of phosphorus significantly increased at 60th postoperative day compared to preoperative day in Group I, II and III.

ORS-36 Study on ultrasonographic assessment of fracture healing after plate osteosynthesis in dogs

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The study was conducted on clinical cases referred to the Small Animal Orthopaedic Outpatient Unit, Madras Veterinary College Teaching Hospital, Chennai. Eighteen dogs with diaphyseal tibial fractures were selected and divided randomly into three groups. In Group-I, II and III, six dogs were treated with conventional dynamic compression plating (DCP), minimally invasive plate osteosynthesis (MIPO) technique without C-arm guidance and minimally invasive plate osteosynthesis (MIPO) technique under C-arm guidance respectively. Ultrasonographs were taken for preoperative and postoperative 1st, 7th, 14th, 30th and 60th day. In Group I, II and III, fracture gap was identified as a discontinuity in the hyperechoic line of the cortex in all cases preoperatively and reduction in the fracture gap was observed at 1st and 7th postoperative days. In Group I, one case echogenic irregular callus formation was observed at 14th post operative day and clinical union was observed at 30th post operative day whereas in other 5 cases no echogenic irregular callus formation were observed at 30th post operative day but progressive primary healing was observed in four cases at 60th postoperative day. In Group II, one case showed smooth, homogenous hyperechoic cortical line at 30th postoperative day indicating early callus formation, three cases showed clinical union at 60th postoperative day but in one case showed no clinical union at 60th post operative day. In one case, implant was removed at 30th postoperative day. In Group III, two cases showed smooth, homogenous hyperechoic cortical line at 30th post operative day indicating early callus formation, two cases showed progressive healing at 30th and 60th postoperative day and two cases showed no clinical union at 60th post operative day, only echogenic irregular callus formation at the fracture site noticed.

ORS-37 Surgical management of unstable diaphyseal tibial fracture with conventional dynamic compression plating (DCP) in dogs : a review of six cases

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The study was conducted on six clinical cases of different breed, sex, age and body weight referred to the Small Animal Orthopaedic Outpatient Unit, Madras Veterinary College Teaching Hospital, Chennai the period from July 2008 to December 2009. The parameters studied during the pre and post operative period were clinical and radiographic evaluation, lameness grade, functional outcome and postoperative complications. Preoperatively fracture patient assessment score (FPAS) was considered about mechanical, biological and clinical function. Normal weight bearing on all limbs at rest and walking (grade 1) was noticed in one case on 7th postoperative day, in two cases on 14th postoperative day and in three cases on 30th postoperative day. At 60th postoperative day, functional outcome was graded as excellent in three cases (50.0%), good in two cases (33.3%) and fair in one case (16.7%). Primary bone healing was noticed in five cases and secondary bone healing in one case. Mild plate bending was observed in one case and severe plate bending in one case at 14th postoperative day. Distal three screws were found to be exposed through the skin at 60th postoperative day in one case.

ORS-38 Incidence of Coxofemoral Joint Affections in Dogs

Arun Prasad. A., Md. Shafiuzaama, S. Ayyappan, R. Sureshkumar, S. Thilagar, S. Prathaban and C. Balachandran

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Five hundred and seventy five cases of coxofemoral joint affections were recorded in dogs of different breed, age and sex reported to Madras Veterinary College Teaching Hospital, Chennai, during the period from 2007 to 2010. Among the disease, hip dysplasia accounts for 54 % (310), the breed



distribution was German Shepherd Dogs 25 % (78), Labrador Retriever 43 % (135), Great Dane 9 % (28), Rottweiler 6 % (18), Spitz 4 % (13) and others < 2 %. The clinical manifestation of hip dysplasia in susceptible breeds less than one year of age (199 cases), hip dysplasia 92 % (182) was noticed in German Shepherd Dogs 28 % (50), Labrador Retriever 49 % (90), Great Dane 14 % (25) and Rottweiler 9 % (17). The clinical manifestations exhibited by 182 dogs of less than one year of age revealed that 71 % (129) were between four to eight months of age. Osteoarthritis accounts for 28 % (159) the breed wise distribution was German shepherd dogs 30 % (47), Labrador retriever 25 % (39), Great Dane 3 % (4), Spitz 19 % (30) and others < 2 %. The incidence was more above four years of age 82 % (130). The incidence of fracture luxation was 18% (106), the breed wise distribution was Labrador retriever 23 % (24), German Shepherd Dogs 5 % (5), Spitz 19 % (20) and others < 2 %, the incidence was more common (51 %) in dogs of less than one year of age (active period of growth) . The age wise distribution were 45 % (256) in the animals < 1 year of age that was in active period of growth, 19 % (110) in the animals of 1-4 year of adult stage and 36 % (209) in animals > 4 years of age i.e. aging stage. Among sex both the populations were equally affected. Etiology of coxofemoral joint diseases included hip dysplasia 54 % (310) and osteoarthritis 28 % (159); out of which 33 % (105) were secondary to hip dysplasia. Fracture luxation accounted 18 % (106) out of which 20 % (20) had luxation secondary to hip dysplasia and trauma 80 % (86).

ORS-39 Total Hip Arthroplasty in Dogs - First of its Kind in India

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Total hip arthroplasty (THA) is an excellent salvage procedure for debilitating conditions that included osteoarthritis, hip luxation, femoral head and neck fracture and revision of femoral head ostectomy providing excellent hip joint function. Six dogs with hip dysplasia and luxation (three), severe osteoarthritis (two) and luxation (one), weighing 25 kg b.wt were subjected for THA. Premedicated with tramadol @ 0.2 mg/kg body weight, prior to glycopyrrolate @ 0.002 mg/kg body weight and 20 minutes later xylazine hydrochloride @ 1 mg/kg body weight i/m with propofol induction @ 5 mg / kg b.wt i/v and maintained with isoflurane anaesthesia under IPPV. The animals were preoxygenated 20 minutes prior to surgery and anaesthesia was performed with particular considering Bone cement implantation syndrome. THA was performed through craniolateral approach. Indigenously designed stainless steel modular hip prosthesis to suit the canine femur of four different sizes viz. size- 5 -9, with the head sizes of +0 or +3 depending was used. The acetabular cup was made of UHMWPE in the size ranged from 20 to 25 mm outer diameter with radio opaque wire for defining the lateral angle of the cup. The implants were selected based on the preoperative template measurement with the ventro-dorsal hip radiographs. PMMA bone cement was used for fixation of implants. Postoperative orthopaedic clinical and radiological assessment was made by numerical scoring system modeled on WOMAC scoring index. Radiographic assessment scores as per Iwata *et al.* by standard hip extended radiograph, that included the mean score of canal fill was 1.17 ± 0.48 , cement mental fill was 1.00 ± 0.37 , presence of radiolucent line in and around the acetabular component was 0.83 ± 0.48 , cement porosity was 0.83 ± 0.54 and position of cup was 1.17 ± 0.31 . Clinical assessment scores that included the mean score of pain on palpation were 2.33 ± 0.56 , early complication was 1.83 ± 0.75 and late complication was 1.83 ± 0.70 . The mean score of radiological and clinical assessment was 13.50 ± 4.67 out of 40 points. The outcome of procedure was assessed excellent in three cases, good in one case and poor in two cases. The dogs exhibited signs of pain free limb movement, full range of motion of the limb with increase in thigh muscle mass with no limb shortening except in two cases where implant luxation was noticed for which the implant was removed and made to form pseudoarthrosis as in case of excision arthroplasty.

ORS-40 Clinical Canine Orthopaedic Practice

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Communited and open fractures of radius ulna and tibia fibula constitute high percentage of fractures in clinical canine practice. These fractures are difficult to deal with as comminuted fractures are unstable.



The paper presents successful treatment of these fractures in clinical canine cases using External skeletal fixators in non hospitalised patients.

Communited and open fractures cannot be fully reconstructed. Any attempt to reconstruct comminuted fractures of radius and tibia involve time consuming dissection with compromise in regional blood supply and increased risk of infection. Fractures of the Tibia require perfect apposition as planes of motions of stifle and hock joint are parallel otherwise it may result in secondary complication such as osteoarthritis. Fractures of tibia are compound and often do not heal. The two most common complications of tibial fractures are non union and angular deformity. Fractures of Radius and ulna may occur in any location but may occur mostly in middle and distal third. Angulations and rotation has to be taken care of if good results are to be obtained.

External skeletal fixators are useful in tibial and radius fractures because of lack of musculature at this level allows almost unlimited access to fixation pin placement. ESF also help to maintain bone length and ultimately gives good result.

ORS-41 Application of Modified Thomas splint for management of femur fracture in birds

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An adult brown headed barbet and a parrot were presented at Teaching Hospital RAGACOVAS Pondicherry, with history of limping. Clinical examination confirmed it as simple mid shaft fracture of the left femur. After reduction manually, the fragments were immobilized using a locally fabricated modified Thomas splint using stainless steel orthopedic wire. Cephalaxine powder @ 10 mg and multivitamins drops were administered orally. Both the birds were restrained in bird cage and the splint were removed after 21 days following uneventful recovery. When the birds gained its flight it was left free by the owner.

ORS-42 Radio graphical, biochemical and flurochrome labeling studies in growth factors augmented fracture healing in rabbit

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Augmentation of segmental bone healing by direct application of growth factors at the fracture site may improve clinically to treat several fracture complications. Increasing evidences of both *in vitro* and *in vivo* experiments have established the osteoinductive effect of insulin-like growth factor-1 and transforming growth factor- β 1. A total of 28 clinically healthy rabbits of both sexes divided in four groups were maintained and a segmental defect of 5 mm in length created in the metaphysis of right tibia under strict asepsis and sedation. Growth factors (IGF-1 and TGF- β 1 singly and in combination) injected percutaneously at the segmental defect of each rabbit on 0, 7, 14, 21 day after stabilizing the fracture with stainless steel K-wire of 18 mm diameter. The defect was closed in routine manner. The aim of the present study is to evaluate the role of these growth factors in augmentation of segmental bone healing in rabbit tibia fracture model. X-ray examinations, hematology and serum biochemistry were done on 0, 7, 14, 21 and 30 days throughout the experiment. Hematological and biochemical studies concluded a nonsignificant change among four groups at different time intervals in the entire period of this study. X-ray examinations revealed augmentation of healing and remodeling of fracture in combo group better as compared to IGF-1 treated group, which was observed less in TGF- β 1 group and least in control group. Flurochrome labeling studies showed extensive new bone formation in rabbits of group IV as compared to others treated and control group. These observations concluded that the local application of IGF-1 and TGF- β 1 synergistically augments healing and progressed remodeling process significantly without any systemic changes as compared to apply alone.



RUMINANT SURGERY SESSION

Date : 09.12.2010 Time : 2.00 p.m

Venue : Conference Hall

Chairman : Dr. P.E. Kulkarni

Rapporteur : Dr. C.B. Devanand

LEAD PAPER

Recent advances in the surgical management of ocular disorders in ruminants

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Present Scenario

Ophthalmology in ruminants is not a well developed subject in veterinary science due to economic value of the animal, lack of trained persons and ophthalmic equipments. The progress is slow due to these reasons. At present, no veterinary institute or veterinary hospital in India is having a separate ophthalmic unit for ruminants. The ophthalmic surgery in ruminants is restricted to eye lids and extra ocular region. Intraocular surgery is not attempted in ruminants for the correction of cataract, glaucoma, retinal disorders on a routine basis in ruminants. Extirpation of eye for the treatment of eye cancer is the only well known and practiced surgery even in institutional conditions. The data on large scale involving a wide geographic area on the incidence of various ocular disorders are lacking. Ocular disorders have been reported in India through case reports based on one or two animals. Even the work on infectious diseases affecting the eye of ruminants are lacking in the country.

Why developments are required in ocular disorders

1. Due to huge economic impact of ocular disorders in ruminants which is not well reported.
2. Due to increasingly recurring ophthalmic conditions
3. To protect precious milch and draught breeds of India

Economic impact

The economic impact due to eye diseases in ruminants is not well reported in India. However, they have been sufficiently recognized in developed countries and attempts have been made for their detailed investigation. Infectious diseases of eye and eye cancer appear to be major reason for the economic losses as reported in the developed countries. Infectious bovine keratoconjunctivitis is estimated to cause a loss in the United States of America in excess of \$150 million annually. Eye cancer is estimated to cause losses in excess of \$ 20 million annually in beef cattle in United States. Eye cancer is the third leading cause of cattle carcass condemnation by the USDA. Infectious diseases of eye are seen as an outbreak in large population of cattle leading to conjunctivitis in Bovine rhinotracheitis, anterior uveitis and panophthalmitis in malignant catarrhal fever and chorioretinitis and retinal dysplasia in Bovine viral diarrhea-mucosal disease.

ADVANCES

Incidence of ocular disorders

Incidence of eye disorders varies from herd to herd and is 1 to 20 % (Nishimura and Frisch, 1997). Long back, it was known in Australia that eye cancer in beef cattle comprises of about 80% of all tumors. Incidence of eye disorder in Brown Swiss cattle was found to be 18.8 % (Amman, 1968). In India, incidence of eye disorders in bovine was reported to be 11.29% (Sarma et al., 1990) and in buffaloes, 9.19 % (Tomar and Tripathi, 1997). Incidence was 18.92% for corneal opacity, 17.6% for eye cancer, 10.73% for orbital cellulites, 9.44 % for corneal ulcer, 8.15% for rupture of eye ball, 8.6% for cataract, 17.17% for other conditions such as conjunctivitis, dermoids, myiasis etc. (Dharaneppa et al. 2001). Malathi and Muraleedharan Nayar (1972) observed incidence of 43.9% for conjunctivitis, 39.02% for keratitis and 17.07% for corneal ulcers. Incidence of eye cancer in United States of America was reported to be 0.92%. Bhaskar (2010) observed an incidence of 2.81% for eye cancer in bullocks when



compared to all other surgical affections treated over a period of 15 years in a referral hospital. The incidence of eye cancer was more in bullocks when compared to cows and buffaloes. Arora et al (1977) reported higher incidence of thelazia eye worms in cattle. Prasad et al (1980) observed higher incidence of corneal opacity in cattle when compared to buffaloes, sheep and goat. The low incidence in sheep and goat may be due to their short life span and early age of slaughter.

Incidence of acquired ocular conditions is more when compared to congenital anomalies of eye. Incidence of congenital anomalies was found less than 4%. Among all congenital defects, incidence of congenital conditions of eye accounted for 5 to 18%.

Breed predisposition

Holstein-Friesian	Cataract, Glaucoma
Jersey	Cataract, strabismus
Hereford	Cataract, retinal dysplasia
Sheep (many breeds)	Entropion, coloboma
Newzeland Romney (sheep)	Cataract

No work has been done on a large scale to know breed predisposition of ocular disorders in ruminants in India. However, buffaloes especially younger calves were found to be predisposed for infectious orbital cellulitis (Shivaprakash. 2003).

Diagnostic procedures for eye disorders

Visual evoked response	practiced in ruminants
Obstacle course	.....do.....
Pupillary reflex, corneal reflex, palpeb. reflex	...do....
Fundus photography	possible in ruminants
Direct, indirect ophthalmoscopy	possible, not followed on routine
Culture cytology of cornea and conjunctiva	.....do.....
Schiotz tonometry	.....do.....
Gonioscopy for iris Advances	not commonly practiced in ruminants
Biomicroscopy	.....do.....
Electroretinography	.....do.....
Vitreous paracentesis	.....do.....
Flourescein of cornea	.....do.....
Orbital angiography	.....do.....
Dacrocystorhinography	.....do.....
Ultrasonography	.....do.....
Nasolacrimal flush	.....do.....

Ultrasonography of eye

A- scan,	portable ultrasonograph, small pencil transducer
B-scan	Real time sector scanner, 7.5 MHz transducer
Coupling medium	1% methyl cellulose

Advances in use of mydriatic drugs

1% Tropicamide	Rapid onset, Short duration of action Reports are not available about its exclusive use in ruminants
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Advances in use of topical anesthesia of eye

Tetracaine Reports are not available about its exclusive use in ruminants
Proparacaine
Benoxinate

Orbit

1. Anophthalmia/microphthalmia reported in jersey as 1 out of 2800 calves
2. Strabismus Not common
3. Nystagmus 0.5 to 8%, de to brain tumor, metal, chemical, plant toxicity
4. Orbital neoplasia Not common
5. Orbital cellulitis emerging disorder in buffalo calves. (Shivaprakash et al., 2003)

Incidence is highest in buffalo calves when compared to all other eye disorders. The cause is infectious. Upper or lower or both the eyelids or third eyelid may be involved up to the preseptal orbit leading to closure of palpebral fissure. Treatment is surgical drainage.

Eyelid disorders

Entropion Secondary entropion is seen in cattle rather than congenital. Congenital cataract is seen occasionally in newborn sheep. Limited work has been done in ruminants.

Ectropion incidence is not common. Most of them are acquired and may be due to trauma and maggot infestation.

Eyelid laceration Eyelid laceration is more common in cattle and buffaloes in the country where free grazing system is followed due to fighting among the animals or injuries from fenced wires.

Nasolacrimal system

Disorders requiring nasolacrimal surgery are infrequent in ruminants.

Estrus ovis infestation in sheep

Larvae of the sheep nasal bot fly are deposited around the nostrils and migrate to dorsal turbinates and frontal sinuses. After several weeks, they fall down. OPC are effective.

Conjunctiva

Infectious bovine rhinotracheitis

Although IBR virus is widely distributed in cattle population across the world, reports in India are meager. Conjunctivitis, ocular exudates, anterior uveitis and peripheral corneal edema are seen. Treatment is symptomatic.

Keratoconjunctivitis in sheep and goats

Chlamydia and mycoplasma have been reported to be causative agents in sheep and goats. The disease is also seen in India. Large scale works are lacking. Follicular conjunctivitis, hyperemia, iritis and keratitis are the sequelae. The author has tried nictitating membrane flap along with antibiotics in an outbreak of goat herd.

Infectious bovine keratoconjunctivitis

This condition is reported in all breeds of cattle throughout the world. The economic losses are reported to be in excess of \$150 million annually in the United States. The average infection rate reported in these countries is 75% for calves and 63% for cows. Reports are scanty in India. The cause is attributed to *Moraxella bovis*, the disease is also known as pink eye. It is a common practice by the practitioners to designate any conjunctivitis as pink eye even though *Moraxella* is not isolated. Hence care is required



in diagnosing and reporting such cases.

CORNEA

Dermoids

Dermoids are often encountered in cattle. Based on this author's observation, dermoids are more common on cornea when compared to conjunctiva or eye lid as reported. Dermoids affect vision and reduce the market value of the animal. Fortunately, the treatment is simple and involves superficial keratectomy.

Rupture of eye ball (perforating wound on cornea)

Rupture of eye ball is common in buffaloes as observed by this author probably due to the fact that unlike bullocks, they are let out for grazing and are prone to injuries by the people, vehicles or by other animals. Generally the ruptured line is vertical and in the middle of the cornea leading to evisceration of internal structures of eye. The treatment should be made on emergency basis to retain little vision whatever possible. There are no reports on large scale management of rupture of eye balls. This author has observed successful repair of such cases by repositioning of prolapsed structures and suturing of cornea with fine absorbable sutures followed by nictitans flap. In none of the cases, extirpation is performed. Cosmetic appearance is retained although the vision is compromised.

Eye cancer

Eye cancer has been recognized in 19th century in western countries and were confirmed as ocular squamous cell carcinoma. The disease is common in cattle but uncommon in buffaloes, sheep and goats. The reported incidence is 0.8% to 1.6% in cattle population of United States (Moulton, 1961, Cleaver et al., 1972). In some areas, it was reported to be even 5%. In North Karnataka, the incidence was found to be over 2% in bullocks (Bhaskar, 2010). At present, the treatment followed in India is exclusively the extirpation of eye. This removes the cancerous condition but the eye is lost leading to reduced market value of the animal.

Advances in the treatment of eye cancer

Superficial keratectomy has been introduced for the treatment of corneal and limbal neoplasms (Gelatt and Wolf, 1988). Corneal scar is hardly noticeable in cattle after superficial keratectomy. Superficial keratectomy was performed in more than 200 bullocks at Veterinary College, Bidar for the eye cancer where the vision is not completely lost. This technique helped in removing the neoplasms and also retaining the vision. Superficial keratectomy can be combined with other techniques such as cryotherapy for the prevention of recurrence.

Cryotherapy

Cryotherapy is indicated as a sole technique if the corneal or limbal neoplasms are less than 5 to 10 mm or it can be performed after superficial keratectomy. Liquid nitrogen is commonly used but is expensive when compared to other cryogens. Initial inflammatory reactions may be more but corneal healing is without complications and unnoticeable after 60 days (Joyce, 1976, Farris and Fraunfelder, 1976, Kainer, 1984 and Bhaskar, 2010).

Beta radiation (Wheat et al., 1954) has been tried for neoplasms of eye but is not applied widely in clinical practice of ruminants.

Auto immunotherapy has been tried but the results lack consistent evidence.



Cataract

The incidence of cataract in cattle and buffalo appears to be less than that of canines. This may be due to the fact that the food animals are slaughtered at an early age before the development of cataract. Lens extraction is attempted in bovines by Dr. Panchabhai but works on intraocular lens implantation in ruminants are scanty. This may be due to lack of availability of suitable implants and economic utility of the animal.

Glaucoma

Works on glaucoma in ruminants are scanty



RUS-1 Treatment of uroperitoneum in buffalo calves and a ram with Tube Cystotomy technique

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COVS, CCS HAU, Hisar-125004

Six male buffalo calves of three month to two year of age and a three year old breeding ram were presented in the clinical complex with the history of no urination since last three to ten days. On clinical examination fluid thrill on abdominal percussion / 'water belly' condition and staring appearance of the animals were observed. On peritoneocentesis, there was freely flowing urine through the needle. On biochemical examination the concentration of urea in the blood was high (230-615 mg/dl). To save the life of these animals and to preserve the breeding value of ram tube cystotomy with folly's catheter through ventral approach was performed. On laparotomy, rupture of urinary bladder with no urine inside it was observed in five cases. However, in two cases urinary bladder was partially filled and urine was also present in the abdominal cavity out of which, in one case adhesion of bladder with rectum was observed. The peritoneal cavity was lavaged with normal saline. Post-operatively, ammonium chloride (@ 250 mg/kg) and fluid therapy was given along with antibiotic, analgesic and vitamin B-complex in each case. Four buffalo calves and the ram started urinating normally after 4-10 days of the treatment. Two buffalo calves died due to uremia.

RUS-2 Successful hernioplasty using synthetic nylon/polypropylene mesh for massive ventral abdominal hernias in adult bovines

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Six clinical cases of adult bovines (4 buffaloes, 2 cows) weighing 350 -400 kg presented with ventral / ventrolateral abdominal hernias were included in the study. All the animals were female with the history of recent calving. The cases selected were those in which herniorrhaphy could not be performed due to the massive size of the ring and/or cutting through of sutures when traction was applied. The abdominal hernioplasty was performed in dorsal recumbency under GA in all the animals. Autoclaved Synthetic nylon mesh prepared from mosquito net was used in five cases and poly propylene mesh in one case. All the animals showed uneventful recovery with minimal postoperative complications. To conclude, this clinical study advocates the use of nylon mesh is effective and an economical alternative to polypropylene mesh for the repair of massive abdominal hernias in adult bovines.

RUS-3 Clinical, histopathological and histochemical evaluation of Topicure gel in the management of surgical wounds in bovines.

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Department of Veterinary Surgery and Radiology, College of Vety. Sc. & A.H. Anjora, Durg (C.G.)

A total of 53 surgical wounds in bovines were treated with Topicure gel (Natural Remedies Pvt. Ltd Bangalore) which was operated for various surgical ailments. Out of this 49 animals recovered uneventfully



in a time ranging from 7 to 21 days giving a success rate of 92.54percent. Histopathological studies in experimentally induced surgical wounds (36) revealed increased vascularity on 6th day with excellent and uniform appearance of granulation tissue by 10th day. With complete healing in 15th day. Histochemical studies revealed a significantly ($P < 0.05$) higher concentration of Collagen and hydroxyproline in Topicure gel treated wound as compare to control groups. The concentration of hexosamine decreased gradually as the wound became older. Thus it was concluded that Topicure gel could be safely used for the post-operative management of surgical wounds as it provides early healing of wounds without any side effects.

RUS-4 Management of Corneal Ulcer in A Calf

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Eight months old crossbred cow calf was presented with the history of corneal injury since five days. Clinical examination revealed corneal opacity, absence of menace response, ditch in the centre and lacrimation. Fluorescein staining revealed corneal ulcer in the centre. Third eyelid flap was used to cover the corneal ulcer under retrobulbar nerve block. Post operatively flubiprofen eye drops and, ofloxacin and atropine eye ointments were instilled for a week. Subsequent fluorescein staining was normal, corneal opacity resolved to almost 80 % and positive menace response was noticed. Sodium chloride eye ointment was given to resolve corneal edema. Fifteen days later corneal edema was completely resolved, scar tissue was healed and animal regained normal vision

RUS-5 Survey of Ocular Affections in Domestic Animals and their Management

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The study was conducted on 57 clinical cases of different species of domestic animals reported for ocular problems at IVRI polyclinic, Izatnagar, during 4 months period from March 2010 to June 2010. Out of 57 cases, incidence was found to be highest in canines (75.43%) followed by equines. The highest cases of eye affections were seen in animals of 2-4 years of age (24.56%). In canines highest cases were recorded in spitz breed (30.23%). Males suffered more frequently than females from ocular affections (61.40%). The cases of corneal opacity were highest among eye affections. Ocular affections were treated by medical management and by surgical treatment as per the need of the case with the variable rate of success. 4 cases of squamous cell carcinoma, 1 case of prolapse of third eyelid, 2 cases of dermoid cyst, 1 case of lower eyelid laceration, 2 cases of cataract, and 5 cases of equines with ocular setariasis were treated surgically. 3 cases each of conjunctivitis and ocular discharge, 3 cases of proptosis, 4 cases of epiphora, 2 cases of glaucoma, 4 cases of corneal ulceration were treated by both oral and topical administration of drugs. The outcome of cases and comparative efficacy of different treatment modalities will be discussed. 2 cases of blindness couldn't be treated due to retinal atrophy.

RUS-6 Studies on the eye affections in domestic animals

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A total of 630 animals were presented for the treatment of various surgical affections during the period from March 2007 to march 2009. The overall prevalence of total eye affections was calculated 8.57%. Out of which maximum prevalence was recorded in bovine (61.11%) followed by ovine (18.51%), equine (12.96%) and caprine (7.40%). Among various eye affections highest percentage of prevalence was of conjunctivitis (25.92%) followed by hypovitaminosis (18.51%), corneal opacity (14.81%), corneal ulcer (12.96%), keratitis (9.25%), corneal rupture (5.55 %), pannus (3.70%), panophthalmia, orbital injury, entropion, dermoid and eye worm affection (each 1.85%). Ninety six percent response of treatment was



recorded in the present study. Study on season was prevalence of eye affection revealed that the maximum cases (74.07%) occurred during summer (April -July) followed by 25.92% in winter (November-February). The factor for higher prevalence of eye affections during summer might be attributed to the outdoor grazing and to various traumas due to the thorny bushes, barbed wire etc. This can be obviated by restricting the outdoor grazing and roaming of the animals during summer.

RUS-7

Bovine Uroliths Analysis: A Review of 30 Cases.

Parrak JD, Hussain SS, Moulvi BA, Singh M, Athar H and Dedmari FH.

Division of Veterinary Surgery and Radiology, Fisheries and Veterinary Science and Animal Husbandry, Shuhama, SKUAST-K

Calculi obtained from 30 clinical cases of obstructive urolithiasis in male calves during surgery were subjected to complete analysis including physical, microscopic and chemical examination. Cystic lumen and neck, jointly, was the commonest site of calculi retrieval (47%) cases, followed by cystic neck (33%) cases and cystic lumen (20%) cases. In majority (90%) of the cases small multiple calculi were retrieved. The calculi retrieved were usually as free sandy material mixed with blood and other tissue debris but in 3 cases a mass comprising of calculi embedded in blood clot and tissue debris was retrieved from cystic lumen. The urethral calculi were either loop shaped or impacted sandy material. Microscopic examination revealed that one or more well defined nuclei (nidus) were found in each concretion. The nuclei and the surrounding concentric layers of laminae were enclosed by a single capsule. The calculi were composed of magnesium ammonium phosphate, calcium phosphate, calcium carbonate, calcium oxalate, hippuric acid, tyrosine and uric acid. Twenty three (77%) calculi samples were composed of magnesium ammonium phosphate only.

RUS-8

A clinical study on crystalluria in bovine obstructive urolithiasis

Parrak JD, Hussain S S, Moulvi B A, Athar H, Singh M, Dedmari F H

Division of Veterinary Surgery and Radiology, Fisheries and Veterinary Science and Animal Husbandry, Shuhama, SKUAST-K

The present study was conducted on 30 clinical cases of obstructive urolithiasis in cattle calves. These cases were managed by two surgical techniques i.e., tube cystostomy and cystotomy with indwelling urethral catheterization. Tube cystostomy was performed with polyvinyl chloride catheter in 10 cases (group A1) and with Foley's catheter in another 10 cases (group AII). Cystotomy with indwelling urethral catheterization was also performed in 10 cases (group B). Crystalluria was used to diagnose the disease and evaluate the surgical techniques. Heavy crystalluria was recorded in the animals of all groups on the day of admission. Postoperatively the crystal score showed progressive declining trend with the result the score was mild by 48 hours in the animals of group AII and by 168 hours in the animals of group A1 and B. Triple phosphate crystals were found in all the urine samples, however seventy five percent urine samples were found to contain only triple phosphate crystals. Other types of crystals like calcium oxalate, hippuric acid, calcium carbonate and uric acid were found as minor components of triple phosphate crystalluria in these samples. Crystal morphology was highly variable. Broadly struvite crystals were categorized into prism shaped and fern like or feather shaped. Crystalluria was found a very useful aid in the diagnosis of obstructive urolithiasis in cattle calves. It also helped in the institution of proper treatment and monitoring its efficacy.

RUS-9

Peritoneal Fluid Cytology in Clinical Cases of Bovine Obstructive Urolithiasis

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Division of Veterinary Surgery and Radiology, Fisheries and Veterinary Science and Animal Husbandry, Shuhama, SKUAST-K

Thirty clinical cases of obstructive urolithiasis, 15 with intact urinary bladder and 15 with ruptured urinary bladder, were used to study the changes in peritoneal fluid cytology. The percentage of neutrophils was highly increased than the normal reference range reported for cattle with slight decrease in lymphocyte percentage. The value for neutrophil percent was almost similar in both intact and ruptured urinary bladder cases. The monocyte/mesothelial cells/macrophage percent, though increased than the normal reference range were identical in both the groups. There was a predominant decrease in



eosinophil percentage with more decrease in intact urinary bladder cases. Polymorphonuclear-to-mononuclear cell ratio was same in both the groups, but higher than the normal reference value (1:1). Eosinophils at 8% and neutrophils at 30% could be established as a reference range of peritonitis in calves. Red blood corpuscles (RBCs) were totally absent in the peritoneal fluid samples obtained from intact urinary bladder cases except in one case. However, in the peritoneal fluid samples obtained from ruptured urinary bladder cases, RBCs were found in abundance in 3 cases and very few in 2 cases. The morphology and the different cell type present in the peritoneal fluid samples also varied according to the status of urinary bladder. In intact urinary bladder cases, neutrophils were mature and non degenerate, while in ruptured urinary bladder cases degenerate and hyper segmented neutrophils were more. Mesothelial cells were equally distributed in both the groups. Bacteria were found extracellular as well as intracellular in degenerate neutrophils in 4 cases with ruptured urinary bladder and only extracellular in 2 cases with intact urinary bladder. Peritoneal fluid cytology can be used for differentiation of peritonitis from normal cases and non septic peritonitis from septic peritonitis besides diagnosing the uroperitoneum in calves.

RUS-10 **Rare congenital defects in buffalo calves- a clinical report**

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Artesia ani, knuckling due to shortening and adhesion of flexure tendons and persistent urachus are the common congenital defects in new born buffalo calves. Here are some rare congenital defects which were reported at TVCC, Hisar for the surgical treatment in 1-2 day old buffalo calves. These include agenesis of prepubic tendon in two cases, elongation of metatarsal bone and open fetlock joint since in-utero in left hind limb, partial atresia of proximal rectum/distal colon with adhesions in peritoneal cavity, absence of ventral abdominal muscles with an enlarged persistent urachus, a bilingual bignathic buffalo calf, malformed vagina, atresia ani along with a nodule like structure in place of vulvar lips and obstruction of urethra at its very beginning by a membrane like structure leading to retention of urine. Their surgical management and outcome will be discussed.

RUS-11 **Surgical management of some unusual swellings in cattle - A report of 4 cases**

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Four clinical cases of cattle were presented to the Teaching Veterinary Clinical Complex during the past one year for treatment with the history of swellings at unusual size and locations. All the animals were females aged between two to nine years. Three cows were graded up jerseys and one was a Holstein Friesian cross bred. On the basis of physical examination, exploratory paracentesis, radiology and/or ultrasonography, hematology and histopathology, three cows were diagnosed for presence of growth in the metatarsal region, mammary glands and intra uterine region, respectively. The fourth animal developed a huge unilateral swelling extending from the gluteal to the hock region and was diagnosed as a haematoma. All the cases recovered uneventfully. Diagnostic procedures adopted and surgical management of all these cases shall be discussed.

RUS-12 **Rumenostomy in Yak (*Propeophagus grunniens*)**

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Yak (*Propeophagus grunniens*) is a very vital animal of great economic importance in the high altitudes (9000 feet above mean sea level) of Arunachal Pradesh and Ladakh etc. where no other production animal can thrive for extreme low temperature and low oxygen tensions. The difficulties of handling the semi wild animal, lack of a standardized anesthetic technique and peculiar anatomy of the animal presented a particular challenge in carrying out the operation. Two adult male yaks belonging to the National Research Centre on Yak, Dirang, and Arunachal Pradesh were chosen for a feeding trial and



study of rumen biology which required daily regular collection of rumen fluid and the authority of the centre decided to fix rumenostomy apparatus. The animals were kept off from feeds for 12 hours and water for 6 hours prior to the operations. They were roped and dragged into the surgical theatre by six-seven people and physically restrained inside the tubular service crate. Anesthesia for the operation was achieved by using Atropine sulphate, Xylazine and Ketamine. The paper describes the surgical procedure for fixing the rumenostomy apparatus in the species and its outcome.

RUS-13 Radiographic, Ultrasonographic and Theloscopic Diagnosis of Milk Flow Disorders in 30 Dairy Animals

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The present clinical study was conducted in 30 dairy animals with milk flow disorders. All animals underwent detailed physical and clinical examination followed by radiographic, ultrasonographic and theloscopic examination of the teats. Radiography was performed in 25 teats of 20 animals (15 cows, 5 buffaloes) using iopromide, whereas ultrasonography and thelscopy was performed in 42 teats of 30 animals (25 cows, 5 buffaloes). Radiography revealed proximal teat obstruction in 04 animals and middle teat obstruction in 16 animals. Ultrasonography and thelscopy revealed proximal and middle teat obstructions in 05 and 25 animals, respectively.

RUS-14 Management of Milk Flow Disorders using Conventional Surgical Technique and Theloresectoscopy in 50 Dairy Animals

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Management of milk flow disorders using conventional surgical technique using BP blade No. 15 was performed in 28 teats of hard milkers, whereas 30 teats with membranous obstruction were subjected to theloresectoscopy. Anamnesis regarding age, stage of lactation, day's postpartum and average milk yield, interval between first recognition of the symptoms and referral to the clinic and the pretreatment regimen if any, were recorded in all the cases. Gross examination of the affected teat and quarter included visual inspection to describe color, swelling of udder and teat, pain on touch, teat tip to floor distance, teat length, teat diameter, hardness at or near teat end, openness of teat end and teat skin condition. All cases of hard milkers were successfully resolved. Theloresectoscopy was successful in 25 cases, while in five cases there was recurrence. Out of five, in two cases theloresectoscopy failed to resolve the condition.

RUS-15 Clinical Epidemiology of Preputial Pathologies in Gir Bulls of Saurashtra Region in Gujarat State

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A clinical survey was conducted at different Gaushalas across the Saurashtra region of Gujarat to categorize various pathological stages and to study the etiopathology of preputial prolapse in Gir bulls. Amongst the 140 Gir bulls; 49 (35%) bulls were used for breeding purpose. All the Gir bulls had 1st stage of preputial prolapse, which was simple in nature. Whereas, out of the 49 breeding Gir bulls; 11 bulls had pathological preputial prolapse, which ranged between 2nd and 4th stages. Thus, the incidence of preputial prolapse in Gir bulls was 22.45 per cent. Traumatic injury to prepuce followed by its contamination was the main etiology for the preputial prolapse in all 11 bulls. All 49 breeding Gir bulls had common anatomical / structural deformities of preputial sheath.



RUS-16 Clinical Studies on Preputial Prolapse and its Management in Gir Bulls

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A clinical study on preputial prolapse and its management in Gir bulls was carried out in 11 Gir bulls and a bullock with the history of chronic preputial prolapse. Twelve animals were divided into two groups of 6 animals each based on surgical technique employed, circumcision method (Group I) and reefing / conservative resection technique (Group II) was used. The inflammatory swelling was observed in 3 cases of group I and 2 cases of group II. Thus total 5 animals showed postoperative swelling (41.67%). In group I wound, dehiscence was observed in 4 cases, while in group II it was observed in 3 cases about 7 days postoperatively. As such out of 12 cases; 7 animals had wound dehiscence (58.34%) at surgical site. Three bulls (50%) out of 6, operated by circumcision technique had stricture formation at preputial orifice which did not return to breeding work. Rest of the three bulls recovered uneventfully and have started to give normal services. Out of 5 bulls and a bullock subjected to reefing / conservative resection, 4 recovered satisfactorily (66.67%) and the bulls have started giving normal service, except a bull which had right lateral deviation of penis. Results of the present study indicated that the postoperative stricture formation was more common complication following circumcision than that of conservative resection technique, thus the conservative resection technique was found to be more advantageous than the circumcision method for amputation of preputial prolapse.

RUS-17 Surgical Intervention for Intestinal Obstruction in Cows

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Eleven cross-bred cows were presented with the history of not passing faeces and partial or complete off feed condition since 2-7 days. All the animals were exhibiting different clinical signs of colic. On per-rectal examination mucous flakes, scanty faeces with mucous, mucous coated faeces or blood tinged mucous flakes were found in rectum. After evaluating general clinical parameters they were subjected to surgical intervention. Surgical observations were made which will be discussed at the time of presentation.

RUS-18 Clinico-haematological Studies of Intestinal Obstruction in Crossbred Cows

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Eleven cases of intestinal obstruction in crossbred cows were operated. Clinical and haematological parameters were estimated prior to laparotomy (at 0 day) and 10th post-operative day. Pre-operative values of respiratory rate and heart rate were significantly higher than post-operative values. Rectal temperature and ruminal motility were found higher at postoperative period. Haematological parameters like hemoglobin, PCV and total erythrocyte count were increased significantly pre-operatively. Leucocytosis and neutrophilia were observed pre-operatively with non significant decrease in eosinophil & monocyte count.

RUS-19 Incidence of Intestinal Obstruction in Cattle and Buffaloes

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Retrospective study was carried out for cases of intestinal obstruction in cattle and buffaloes presented at college clinic during last 10 years. During the period from January, 2000 to December 2009, total 112



cases of intestinal obstruction were diagnosed. Analysis of data revealed high incidence in female (71.42 %) than male (28.58 %) and more numbers in cattle (64.28 %) than buffalo (35.72 %).

RUS-20 Cesarean and enteroanastomosis in a cow

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A Holstein Friesian cow pregnant about 9 months was brought to the VC&RI teaching hospital with the history of anorectic and not voiding dung since 5 days. On clinical examination, the rumen consistency was normal and ruminal motility was present. Rectal examination revealed rectum filled with a scanty dark and tarry colored mucus coated dung and fetal parts palpated. Since the animal was showing colic signs with the presence of mucus coated dark colored faces, it was tentatively diagnosed as intussusceptions. It was decided to perform cesarean to create manipulative space for correcting intussusception. The cesarean and intussusception was performed through a right mid flank approach. A live male calf was removed and the animal was treated with postoperative follow up with antibiotics, I/V fluids, ecobolics. The animal could pass dung 24 hours after surgery and recovered uneventfully.

RUS-21 Resection of massive tumor in a buffalo

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A six year old buffalo was presented to the Teaching Veterinary Hospital, GADVASU with the history of a huge growth on the ventro lateral side of the abdomen. The growth started as a small mass about a year back started growing at a fast pace over the last month. On palpation, it was found to be a hard mass. Animal was otherwise having normal appetite. Fine needle aspiration revealed frank blood. The animal had normal blood parameters. Animal was operated under general anesthesia using Midazolam and Thiopentone and maintained using Halothane. The animal was cast in semi dorsal position and an elliptical incision was given around the mass. The encapsulated weighing 39.6 kgs was removed after ligating the blood vessels. The excess skin was removed and skin wound closed in a routine manner.

RUS-22 Surgical management of perineal hernia in buffaloes

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The present study included four buffaloes which were presented at Teaching Veterinary Hospital GADVASU with the history of swelling at the perineal region since variable periods varying from 1-3 months. The animals were active and had normal appetite. The palpation revealed soft fluctuating mass which were not adhered to the perineal wall, however, the masses were non reducible. The animals were operated under epidural anesthesia using xylocaine 2%. A curvilinear incision was given at the site. Hernial contents were intestine in one case, in another it was omentum and fat along with intestines and in two cases it was urinary bladder. The herniated parts were reposed in the abdomen and the perineal muscles were sutured using Vicryl No. 2. In case of urinary bladder herniation, the bladder the urine was evacuated for easy reposition of the hernia mass. All the cases showed uneventful recovery.

RUS-23 Surgical Management of tongue Laceration in a Cross bred Jersey Cow

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The present article reports a case of irregular lacerations of a tongue of a 5year old, 3 months pregnant cross bred Jersey cow which happened due to accidental contact with sugar cane crusher while taking sugar cane tops. Oral examination showed four irregular lacerations which were attached to base of tongue at Torus Linguale. Under tranquilization with Siquil and Mental Nerve block with 2% Lignocaine,



interrupted sutures wire applied with No.1 Ethicon silk. Post operatively the animal was kept on intravenous fluids, Intamox 4.5gms and Melonex-5ml I/M for 5days along with liquid diet. The animal was gradually shifted to chopped grass and then to normal diet by 30th post operative day. Sutures were removed after 30days. Healing of the tongue was rapid due to good vascularity. After completion of pregnancy the animal delivered a young healthy male calf.

RUS-24 Evaluation of wick of lantern for repair of hernias in ruminants

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Six clinical cases presented to TVCC Bidar with hernias constituted the materials for study. The hernias were diagnosed by clinical examination. The standard herniorrhaphy procedure was followed under local anesthesia in all the animals of study. The hernial ring was sutured by the wick of the lantern and overlapping edge was sutured by chromic catgut. The skin wound was closed by nylon. The animals were assessed for postoperative response such as oedema, infection and wound dehiscence. None of the animals showed clinical complications.

RUS-25 Surgical management of obstruction of nasal cavity in bovine - a clinical report on ten cases

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Ten cases of bovine (5 buffaloes and 5 cattle) were admitted to the College Clinic over a period of 4 years with complaints of respiratory problems for the last 2 to 5 months. The local veterinarian tried to treat the cases by administering drugs such as antibiotics (oxytetracycline), anti-inflammatory drugs (Meloxicam), local inhalatory drugs and B-complex but there was no satisfactory improvement in the respiration. There was blood tinged mucus discharge in four cases and mucopurulent discharge in two cases from both nostrils. Percussion of the nasal bone revealed, dull sound at the site of obstruction. Patency of the nasal cavity was also checked by passing small diameter nasogastric tube. The cases were referred to Radiology Section for the radiography of the nasal area to judge the exact location of the lesion. A sterile swab was inserted into the nasal cavity to take smear of the pus material in 2 buffaloes and watery material in 1buffalo and a bullock for cultural examination and antibiotic sensitivity testing. These cases were treated after sedating with Xylazine (0.1 mg/kg) i.m. by two approaches. In first approach, protruding growth was pulled by whelping forceps out from the nasal cavity. In remaining eight cases the lesions were cleared by rhinotomy. In this approach, the rhinotomy was performed at the site of obstruction after achieving local analgesia by infiltrating 2 % lignocaine hydrochloride. The results of the rhinotomy showed that the nasal cavity was observed to be obstructed with neoplasm in four cases (2 buffaloes and 2 bullocks), nasal cyst in two cases (1buffalo and 1 bullock) and nasal abscesses in remaining two buffaloes and two cows). Post-operatively, the cases were given Streptopenicillin (5 gm) i.m for 5 days, Vincristine sulphate (5ml dissolved in 10 ml distilled water) i.v. weekly repeated thrice in cases of neoplasm only, Anthiomaline 15 ml deep i.m on 5 alternate days, Chromostat (20-30) ml i.m. for 3 days, Turpentine oil inhalation and antiseptic dressing till removal of the skin sutures were also given. The histopathological reports of the growths revealed presence of osteoma and osteomyxoma. The cases of osteomyxoma could not respond to the treatment and were euthanised. Rest of the cases responded well to the treatment.

RUS-26 Optimization of protocols for decellularization of aortic matrix of buffalo origin

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In the present study optimization of protocols for decellularization of aorta of buffalo origin was done. Fresh posterior aorta of buffalo origin was collected from the local abattoir and immediately preserved in



ice-cold sterile phosphate buffered saline (pH 7.4) containing antibiotic (Amikacin – 1mg/ml) and 0.02% EDTA. The maximum time period between tissue procurement and processing was less than 4 h. To make the aorta acellular a total number of twelve protocols comprising of detergents (alone and in combination) and in combination with enzyme were tested. All the protocols were categorised into two groups (A and B). Aortic samples were subjected to continuous shaking in an orbital shaker at the rate of 180 rpm and at 37°C during the decellularization protocols to provide better contact of tissue with chemicals. The aortic tissue was treated with 1% concentration of biological detergents and 0.25% concentration of enzyme for different time intervals. The native aortic tissue treated with 1% anionic biological detergent for 24 h followed by treatment with 0.25% enzyme solution for 2 h and then again with same 1% anionic biological detergent for again next 24 h showed complete acellularity with normal thickness and arrangement of collagen fibres.

RUS-27 Repair of superficial digital flexor tendon of a Red Khandari bullock

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A six year old bullock was presented at Teaching Veterinary Clinical Complex, Udgir with the history of cocked toe (upward rotation of toe) due to accidental injury while ploughing. The thorough examination of the injured part revealed rupture of superficial digital flexor tendon. The wound was cleaned with the normal saline and the tendon was sutured by the Bunnel's suture technique using hypodermic needle 16 G to put the sutures on the tendon. Technique involved passing the needle into the tendon through and through followed by insertion of stainless steel wire in to the hypodermic needle from the tip and secured same through hub while removing the hypodermic needle. The patient showed weight bearing after surgery to a major extent, hence was kept under observation for a month. After due post-operative care, the bullock recovered fully without any complication.

RUS-28 Perineal Urethrostomy for the Management of Urethral Rupture in a Kid

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A 5 months old non-descript male kid was presented with a history of anuria for the past six days. A distended urinary bladder and a painful swelling in the perineal region below the anus over the penis were palpable. Paraphimosis with gangrene of the glans penis was observed. The skin over the perineal swelling was incised under local infiltration analgesia with 2% lignocaine hydrochloride. The site of urethral rupture was located and catheterized using No.8 infant feeding tube. Cystoliths were removed from the bladder by aspirating urine through the tube. Perineal urethrostomy was performed by suturing the edges of the urethral wall to the skin of the perineal region using No. 1-0 nylon simple interrupted sutures. The infant feeding tube was fixed to the skin edge using No. 1-0 nylon. The kid recovered uneventfully and was urinating freely through the urethrostomy site when examined three weeks after surgery.

RUS-29 Neonatal Resuscitation in Lambs Delivered through Laparohysterotomy

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Route of delivery is known to have a critical role in determining the thermoregulatory adaptation after birth in lambs. In the present study, 39 lambs delivered by laparohysterotomy, required resuscitation. Most of the lambs retrieved from laparohysterotomy were found to have air way obstruction, defective cardio-pulmonary function, hypoxia, hypothermia, hypoglycemia and dehydration either alone or in combination. These were remedied as following. The best method of clearing the airways was nasopharyngeal suctioning, Heimlich's manoeuvre followed by percutaneous transtracheal suctioning. Suction using endotracheal tube was found unsuccessful. For treating apnoea, and to restore cardiopulmonary function, external cardiac massage with oxygen supplementation was proved to be best, followed by doxapram administration and AMBU's bag application. Intra uterine oxygen



administration was equally better to that of keeping the lamb in oxygen chamber. In a case of emergency, intra tracheal oxygen catheters should be avoided due to the tedious job of intubation. Treatment of hypothermia was best done using an incubator that had a light source, while the other procedures like plunging the lamb in hot water was also good. An infrared radiator for this purpose did not give any favourable result. The neonatal hypoglycemia could be best treated by injection of glucose solution intraperitoneally. The access to the intravenous and intra osseous fluid therapy was not easier. An indigenously prepared incubator served the purpose to provide oxygen and warmth to the neonate to correct hypoxia and hypothermia.

RUS-30 A Clinical Case Study of Surgical Management at Different Stages of Horn Cancer

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Seven cases of horn cancer comprised of the different stages of horn cancer were included in this study. The different stages of progression of the lesion included softening and swelling of base of horn, tilting of the horn, breaking of the horn, growth of the tumorous mass and typical cauliflower like growth. All the animals were sedated with xylazine @ 0.1 mg/ kg B. W., IM and cornual nerve block was performed prior to surgery. All the animals were subjected to surgical removal of the horn using flap method in field conditions, at the door step of the farmer. Postoperative management comprised of the parenteral administration of antibiotic for 7 days and antiseptic dressing until complete healing. An uneventful recovery was observed in all the cases. Histopathological examinations of the biopsy samples, confirmed them as squamous cell carcinoma of horn. No recurrence of the growth was reported in any case up to one year.

RUS-31 Clinical Cases of Various Eye Tumours of Bovine

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Twenty cases of eye tumours presented at veterinary teaching hospital, Pantnagar as well as in field during last one year were subjected to this study. The tumours were located at upper and lower eye lid (8), third eye lid (6) and palpebral conjunctiva (5). The neoplastic growths were successfully operated under aseptic conditions under regional nerve block and the sedation with xylazine @ 0.1mg per kg body weight intramuscularly. Biopsy samples from the tumour mass were collected for histopathological examination. The microscopic feature of the lesion revealed squamous cell carcinoma (40%), papillomas (40%) and basal cell carcinoma (20%). All the animals after surgical operations were subjected to chemotherapy and follow up action revealed that there was no recurrence of the growth.

RUS-32 Urinary Obstruction Due to Penile Trauma - A Report of 2 Cases

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A stray bull aged about 6yrs was presented to the Surgery Department with a complaint of urinary incontinence since one month. On examination a hard mass was felt involving the penis and the penile sheath. Prepucectomy was conducted and penis was freed from the fibrosed mass after which there was free flow of urine. Then it recurred after 2 months. Again the sheath was found swollen with infiltration of urine. The bull was sedated with 5mg of xylazine hydrochloride. Ischial urethrotomy was conducted. A polythene catheter was introduced and there was flow of urine. The local wound dressing was done with povidone iodine and fly repellent spray. From that day the bull was marked to urinate normally through the urethrostomy site. Another bullock inflicted injury in its penile region by another bullock. The bullock developed urinary incontinence. Prepucectomy was conducted and the penis was freed and fixed to the skin. The bullock urinated normally.



RUS-33 Clinico- Surgical Findings of Cows Affected with Non- Metallic Ruminal Foreign Bodies

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The study was conducted in eight cross bred cows affected with recurrent tympany due to non-metallic foreign bodies. Heart rate, respiration rate, total leucocyte count, neutrophils, total protein and glucose were increased non- significantly ($P>0.05$), whereas, the haemoglobin, packed cell volume and total erythrocyte count were decreased non- significantly on presentation of affected cows as compared to normal cows. The rumenotomy was performed under weingarh's rumenotomy set and a large amount of non metallic foreign bodies and non- embedded metallic foreign bodies have been retrieved. Out of 8, six cows were recovered uneventfully after surgical intervention whereas, in two cases, a recurrence was found.

RUS-34 Incidence and Management of Different types of Tumours in Cattle

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The present research work was carried out on 1649 bovine cases and out of which, 59 cases were diagnosed as tumours. In that, 46 were white cattle and 13 were buffaloes. Highest incidence of tumours was noticed in females (61%) compared with males (38.98%). Animals in the range of 6-9 years of age showed highest incidence (i.e., 44.06%), and lowest incidence at 12 – 15 years of age (6.77%). HF cross bred animals had highest incidence of tumours i.e., 27.11%, followed by Buffaloes (23.72%), Jersey (16.94%), non descript (15.25%), Ongole (13.55%) and lowest was in Hallikar breed (3.38 %). Histologically 13 different types of tumours were diagnosed. Papillomas were predominant in the present study followed by squamous cells carcinoma of eye and horn. Fine needle aspiration biopsy, impression smear examination before the surgical procedure was found to be beneficial in diagnosing the tumorous condition. Changes in Clinical, hematological cytological and biochemical parameters were recorded. Surgical excision was found to be satisfactory in majority of the cases and cryotherapy was good in few cases.

RUS-35 Correction of Odontoma in Large Animals

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A Jersey heifer and a buffalo were presented with a chronic extensive tumorous mass originating from the tip of the mandible at lower jaw with complete eruption of the incisor teeth. Both the animals were operated for extraction of tumour under Xylazine sedation in sternal recumbancy. Post operatively the animals were maintained on fluid therapy for 7 days. Both animals showed normal recovery within 15 days.

RUS-36 Intussusception bypass surgery using Gastro intestinal anastomosis devices in cows

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Intussusception is the invagination of the portion of the lumen of its adjacent segment and is frequent cause of the obstruction in cattle. Jejunal intussusception mostly occurs in cattle and the survival rate of surgery is 35% - 45%.The routine methods of intussusception treatment include resection of intussuscepted mass along with mesentry and anastomosing the parts by inverting, everting or approximate suture patterns but the method is time consuming with significant risk for intraoperative contamination or morbidity or recumbency for prolonged time. Mesentric manipulation also leads to bleeding and sometimes shock.



The use of staplers in animals was described by Schawrtz in 1994 and till date have not been fully exploited in farm animals. Keeping in view the disadvantages of various conventional methods, present study was designed to perform intussusception bypass surgery by using GIA staple. The open antiperistaltic side to side (functional end to end) enteroanastomosis is significantly quicker anastomotic technique. The patients at significant risk for intraoperative contamination or morbidity for prolonged time and recumbency, the use of GIA stapling device should be considered. The outcome and complications of the study will be discussed.

RUS-37 Surgical Management of Accidental Heavy Ingestion of Onion in a Crossbred Cow

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A HF cow with history of accidental ingestion of about 15 Kg onion was presented at TVCC KNP College of Vet. Science, Shirwal, Maharashtra. There was esophageal obstruction and acute tympany with restlessness and anxious look. Emergency rumenotomy was performed after relieving choke with the help of a probang. The temperature of rumen was 42.5°C. Cold water along with yeast culture powder was poured in the rumen. Post operative broad spectrum antibiotics and analgesic were given. Uneventful recovery was observed on next day.

RUS-38 Surgical Management of an Unusual Lateral Abdominal Hernia in a She-buffalo

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A two year-old she-buffalo was presented to the TVCC (Case no: 4210) with the history of a football size swelling on the left lower flank behind the thirteenth rib for the last one and a half year. The swelling was ulcerated in the center. On clinical examination, the contents were reducible. Hernioplasty was decided. On exploration of the hernial sac, the omentum was found closely adhered to the wound, the adhesions were cleared off and the omentum was sutured using catgut no: 2 with horizontal mattress suture. However, the wall of the ventral sac of the rumen was intact. A hernial ring of 41 x 30 cm² was identified. A nylon mesh was fixed over the hernial ring with Trusilk no: 2 using interrupted mattress suture pattern. Further the muscles were sutured with half inch wide sterilized satin tape using horizontal mattress suture pattern.

RUS-39 Management of Complete rupture of superficial and deep digital flexor tendons of the hind limb in heavy bulis, bullocks and cows

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Tendon repair is always a challenge even in man and small animals owing to its slow healing, less vascularity and difficulty in maintaining the immobilization for four to six months. The treatment is reported as guarded in horses. The reports of successful return to function after treatment when both the superficial and deep digital flexor tendons of the hind limb are severed are extremely rare in clinical cases of horses and large ruminants. The study was conducted on clinical cases of bullocks and cows presented with either laceration of superficial digital flexor tendon or with rupture of both the superficial and deep digital flexor tendons of the hind limb to know the different etiological factors, diagnostic features and to compare the success rate of closed immobilization and open tendon suturing techniques. The animals were presented on day one to day seven after the injury. The etiological factors included injury from the iron blade of the cultivator used during ploughing in case of bullocks and fighting in case of bulls and fall of zinc sheets from the roof of the housing or accidental injury in case of cows. The diagnosis could be made by clinical signs alone by observing the incised wound on the plantar aspect of hind leg below the fetlock and drop of pastern leading to weight bearing on heels in case of laceration of superficial digital flexor. Whereas in case of ruptured superficial and deep flexors tendons, the incised wounds were observed above the fetlock with characteristic drop of fetlock to the ground surface. Secondly, the palpation through the incised wounds revealed the cut ends of the flexors and the direct



metatarsus bone underneath. The animals showed severe supporting limb lameness with the fetlocks touching the ground. The animals were divided into two groups consisting of six animals in group I and four animals in group II. Two animals with rupture of both the tendons also showed purulent discharge from the site of injury and surgery was not attempted in these cases. In group I, plaster cast or PVC cast immobilization was done for four cases of laceration of tendon and two cases of rupture of both the tendons above the fetlock. In group II, tendon suturing followed by immobilization with plaster cast was made. The incision was extended on either side of the cut wound above the fetlock. Both the superficial and deep digital tendons were freed and brought nearer by locking loop sutures with knots tied on the outer surface using heavy double layered nylon. The skin was sutured with vertical mattress pattern using nylon. In cases of late presentation the skin wound could not be closed completely and allowed to heal by granulation. The plaster cast was applied by incorporating aluminum splints on three sides leaving a window for dressing. All the animals with laceration of superficial flexor tendon showed negligible lameness when observed after four months. The bullocks with rupture of both the tendons repaired with plaster cast although showed straightening of the limb, the lameness persisted at the end of the four months. Majority of the owners sold the bullocks due to economic reasons. Two animals repaired with open surgical repair of tendons and prolonged plaster cast application showed immediate weight bearing on the sole and lameness while walking. The lameness was still detectable after four months but the animals could walk better when compared to the animals treated only with plaster cast. The postoperative care of tendon repair and open wound was tedious and prolonged. The results were encouraging considering the body weight of the animals and open healing.

RUS-40 Surgical technique for chronic refractory paraphimosis in bulls and rams

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Paraphimosis is an uncommon condition in large ruminants and rare in small ruminants. Most of the cases are not managed early and effectively leading into chronic refractory cases endangering the affected animal. Lack of knowledge an effective technique is the main reason for unsuccessful treatment. Hence this study was conducted to know the success rate for the treatment designed in refractory paraphimosis of ruminants where the penis was swollen, blackish and grossly appeared leathery. Five bulls and two rams presented with paraphimosed penis formed the subject of this study. The cause was not known in most of the cases and trauma was suspected. Urination was normal in all the cases suggesting that deeper tissue were not necrosed. The cases were referred after 4 to 6 days when all the efforts including surgery to replace the penis into the prepuce were failed due to considerable swelling of penis and necrosis. In the present study a modified reefing similar to the one used for the management of chronic prolapse of prepuce was used but was applied on the shaft of the penis. The cases were operated under xylazine sedation and local analgesia. Two circular incisions were given on the necrosed portion of the paraphimosed penis. The first circular incision was on the tip of the glans penis and the second one was just behind the necrosed portion of penis attaching to the inner prepuceal sheath. Two circular incisions were joined by two longitudinal incisions on the dorsal and ventral surface of penis and the dried leathery portion was peeled on either side until the pink tissue was visible. The depth of the incision varied in each case depending upon the chronicity and extent of necrosis. The damage to the urethra and the blood vessels were avoided. The size of the penis was found considerably reduced once the necrosed leathery portion was excised but was not enough to replace the penis into its normal position. No 1 Chromic catgut suture was passed from prepuceal attachment of the penis at the posterior circular incision and taken through the anterior circular incision near glans penis. The sutures were passed back into the prepuceal sheath near the posterior circular incision in the mattress fashion and pulled tightly so as to replace the penis into its normal position. No difficulty was found to replace the penis into the prepuceal sheath in any of the chronic refractory case of the paraphimosis. Prepuceal cavity was cleaned for five postoperative days and smeared with oily antibiotic ointment. Antibiotic and antiinflammatory drugs were given postoperatively. Recurrence was not noticed in any of the bull or the ram proving the utility of this surgical technique in saving the affected animals.



RUS-41 Vision saving techniques for eye cancer involving a portion of cornea in bullocks

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Eye cancer is the most common neoplasm of cows through out the world and is of great economic importance. Extirpation of eye is the most common technique adopted in India for the management of eye cancer. This will save the animal but the animal will lose one eye and also the market value. Studies on bullocks are limited and not aimed at preserving the eye and eliminating the cancerous condition at the same time. Hence the study was conducted to know the prevalence of eye cancer in bullocks considering the data of 15 years in the referral hospital and two data in five district hospitals. The incidence was quite significant (over 1%) when compared with all surgical affections in bullocks. Most of eye cancers were found on the limbus of the eye in initial stages affecting the vision only marginally. Hence the study was conducted in phase II on 15 clinical cases of bullocks to know the various stages of bovine ocular cell carcinoma, and to evaluate surgical techniques to eliminate the cancer and at the same time to save the vision. The bullocks were divided into three groups consisting of five animals in each. In group I, the corneolimbal lesions were removed by superficial keratectomy alone. In group II, the lesions were removed by superficial keratectomy followed by Silver nitrate application. In group III, the lesions were removed by superficial keratectomy followed by cryotherapy using nitrous oxide. Membranoplasty was conducted following above treatments in all the three groups and maintained for seven days postoperatively. The animals were evaluated on day 15, 30 and 60 for clinical improvement. Haematological and biochemical observations were made before surgery and on day 15, 30 and 60 postoperatively. Gross and histological examination revealed three stages of neoplasm viz., the plaque, the papilloma and the invasive carcinoma. The inflammatory changes on the operated site of cornea and limbus were minimum with superficial keratectomy alone on day 15 when compared to silver nitrate application and cryotherapy. However, on day 30, the inflammation was minimum even in cryotherapy. On day 60, corneal healing was uncomplicated in all the three groups without much scarring in the adjacent cornea. The vision was retained in all the bullocks of all the groups. Recurrence was not noticed in any of the group. There was no significant difference in haematological and biochemical values between the groups and between the intervals. The values were within the normal before and after surgery in all the bullocks. Except for slight difference in inflammatory changes, all the groups showed similar clinical improvement. However, superficial keratectomy followed by cryotherapy was found as a better technique in destroying the tumour bed, retaining the transparency of cornea. In addition, nitrous oxide is a much cheaper agent when compared to liquid nitrogen and is sufficient for small and moderate lesions of bovine ocular cell carcinoma.

RUS-42 Successful correction of the G.I. tract ailments through a single incisional laparotomy incision in bovines.

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Twenty clinical cases of various types of G.I. tract disorders in bovines have been included in this study. Animals were of various age groups ranging from 1.5 years – 6 years and body weight from 35k.g to 300k.g. The surgical conditions like impaction of rumen (5), omasum (4), abomasum (4), intususception(4), & caecal dilatations (3). All the cases were approached in right lateral recumbence with fore and hind legs restrained separately. Laparotomy incision was made at left lower flank ventro-oblique site under linear infiltration of L.A. The rumenotomy incision was made on dorsal sac avoiding left ruminal vessel sufficiently above the left longitudinal furrow of rumen. 2/3 contents were removed. The ruminal PH was corrected accordingly with PH test. The reticular magnetize sweeping, omasal flushing were carried out as per the requirement before closure of rumen. After ruminal closure the surgical procedures like abomasotomy, abomasopexy, enterotomy, enteroecting & typhlectomy was carried out through the same laparotomy opening. Laparotomy incision was closed as per usual



procedure. Post-operative administration of antibiotic, NSAID, rumenotomy along with fluid therapy & gastric lavage were done in all the animals with NSS for 3 consecutive days. All the cases were recovered uneventfully with high success.

RUS-43 Comparison on various physiotherapy aids for treatment of downer animals (bovines) syndrome

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Twenty clinical cases of downed animals of 5 different etiological origins like 1) mutably nutritional deficiency 2) neurological disorder 3) musculoskeletal trauma 4) complex disease problem 5) management deficiency were subject to the study. The cases included were varying age groups from 6 months to 8 years & body weight from 40k.g to 400k.g. All the animals were given treatment for their primary conditions along with four different types of rehabilitation for preventing the effects of the pressure of the body weight on the lowest body surface and the underlying tissues. Four groups having 5 animals each were provided with rehabilitation viz. 1. Fixed sling with fixed sway support. 2. Fixed sling with fixed support. 3. Mobile sling with flatten bedded flexible support. & 4. Mobile sling with flatten bedded fixed frame. The patient was put in the sling 2-6 hours followed by rest & again put on sling & ten hours rest in the night. Physical parameters like, temperature, heart rate, respiration along with blood parameters recorded which did not exhibit any significant change. The survival rate with recovery was more in mobile sling with flatten bedded fixed frame as it prevented further deterioration which may ensue due to pressure of the body weight.

RUS-44 Study on Field Cases Requiring Surgical Intervention in Ghaziabad District

Rajneesh, Rajesh Singh, Yogender Kumar

Department of Animal Husbandry and Dairying, K D College Simbhaoli, Ghaziabad.

The present study was undertaken during 2008-2010 at four state veterinary hospitals of Ghaziabad district. For the purpose all 7963 cases registered in out-patient register were considered. Out of total 1286 (16.14%) were identified as cases required surgical intervention. Maximum cases 620 (48.21%) were of abscess opening followed by 128 (9.9%) amputation of tail, 120 (9.9%) horn cancer and fracture, 116 (9.02%) uterovaginal prolapse, 96 (7.46 %) upward fixation of patella, 82 (6.37%) castration by surgical method, 72 (5.59%) fracture of limbs, 37 (2.87%) milk fistula, 8 (0.62%) urolithiasis, 4 (0.31%) salivary fistula and 3 (0.23%) removal of penetrated bullet. The common surgical conditions, incidence, and successful management have been discussed.

RUS-45 Clinical Evaluation of *Argyrea Nervosa* Dry Leaves Husk for Wound Healing Properties in Animals

Snehal M. Patel, D.B. Patil, P V Parikh and A. H. Bhatt

Office of the Deputy Director of A.H., Veterinary Polyclinic, Vadodara, Gujarat

Dry leaves husk of *Argyrea nervosa* was used for the treatment of wounds at different locations in 10 dogs, 18 goats and one each of cow, buffalo, horse and crocodile. All wounds healed well. During clinical evaluation *Argyrea nervosa* dry leaves husk showed good anti-inflammatory properties with absorption of exudate and early establishment of granulation tissue. In clinical cases they helped in normalization of the healing process.

RUS-46 Therapeutic efficacy of seabuckthorn (*Hippophae sp.*) oil as a topical dressing agent for incisional cutaneous wounds in bovine.

Sukminder Singh, S K Sharma, S P Tyagi and Amit Kumar

Department of Surgery and Radiology, Dr. G C Negi College of Veterinary and Animal Sciences, CSK Himachal Pradesh Agricultural University, Palampur-176062, Himachal Pradesh, India

Seabuckthorn was compared with 5% povidone iodine and liquid paraffin for its efficacy in healing of full thickness incisional cutaneous wounds in calves by clinical and haematological parameters along



with gain in tensile strength of healed tissue at various intervals till 28 days. Nine male cow calves were randomly divided into 3 equal groups of 3 animals each for the present study. All animals were subjected to creation of six incisional wounds 2 inch in length and 2 inch apart, 3 on either side of the vertebral column on the dorsal aspect of the thoracolumbar region under local infiltration anaesthesia and are subjected to different treatments immediately. The paper includes comparison of various topical agents in detail indicating anti inflammatory and healing properties of seabuckthorn seed oil.

RUS-47

Successful Surgical Management of Persistent Urachus in Calves

N. Dhana Lakshmi, R. V. Suresh Kumar, P. Veena, P. Sankar and S. Kokila

Department of Veterinary Surgery and Radiology, College of Veterinary Science, Sri Venkateswara Veterinary University, Tirupati, (AP)

Four calves of below two months of age with persistent urachal abnormalities were reported to college hospital. Three male and one female calf were reported with abnormal urine passage from the umbilicus. One male calf with subcutaneous urine accumulation along with dribbling of urine from the umbilical opening was diagnosed by contrast radiography as persistent urachus and removal of urachal stock and separation of the bladder apex was done by extending umbilical opening. Other two male and one female calf were reported with swelling and abscess formation along with passage of urine at umbilicus. The abscess was treated routinely and further laparotomy was done and identified the infected urachal stock up to apex of the bladder and the infected stock was ligated and removed. Large umbilical vein abscess along with infected pervious urachal cyst communicating the bladder was identified and surgically excised and the bladder apex was closed in female calf. The laparotomy wound was closed routinely. All the four calves were successfully recovered on 10th post operative day.

RUS-48

Comparative Evaluation of *Corynebacterium Parvum* and Autogenous Vaccine for the Treatment of Squamous Cell Carcinoma of Horn in Bovine

Vikas Satpute, V. D. Aher and Mrunali Kamble

Department of Surgery and Radiology, COVAS, PARBHANI (MS).

The present clinical investigation was carried out on 10 horn cancer affected cases in bovines. The prevalence and incidence were recorded. The main etiological factors observed in affected cases was paring and painting of horn with synthetic paint and trauma at the base of horn. Various clinical symptoms observed by series of stages i.e. first (3), second (5) and third (2). Diagnosis of horn cancer was based upon clinical findings, typical signs and for confirmative diagnosis radiological evaluation of each case was done. The details of haematological study Hb, TEC and PCV were significant and TLC was not significant in horn cancer cases. In biochemical studies inorganic phosphorus and serum total protein were significant and serum calcium was not significant. In Group-A treated with flap method + autogenous vaccine having four cases cured without complications and in one case there is complication like bloody discharge from nostril and complete blindness of eye. In Group-B flap method + *Corynebacterium parvum* there is no recurrence observed in horn cancer cases. On histopathological studies formation of the pearls or tendency of formation of epithelial pearls with gradually increasing keratinization observed in first stage. Neoplastic epithelial cell and keratinization in the centre of pearl in changes and newly formed epithelial pearls was observed in third stage.

RUS-49

Evaluation of Wound Healing with the use of *Luffa Acutangula*, Roxb (Ridge Gourd)

Mrunali Kamble, M. S. Dhakate, B. M. Gahlod, B. M. Meshram and Manisha Donekar

Department of Surgery and Radiology, Nagpur Veterinary College, Seminary Hills, Nagpur-440 006 (M. S.)

Twenty clinical cases of contaminated wounds in buffalo calves were divided into two equal groups. One group was treated with leaves juice of *Luffa acutangula*, roxb (Ridge gourd) and other with Neosporin ointment. The healing property of the leaves juice was evaluated clinically and histomorphologically. Clinically colour, pain sensation, edema of wound, presence of pus, granulation tissue, wound size



were the factors observed till the complete healing, while histomorphological observation was recorded at 7th, 14th and 21st day. Clinically the results were comparable with both the groups. The histomorphological finding revealed better healing property of leaves juice of *Luffa acutangula* as compared to Neosporin ointment.

RUS-50 Surgical Management of Obstructive Urolithiasis with Tube Cystotomy in Bovine Calves

H.N. Singh

Professor and Dean, College of Veterinary Science, N.D.U.A.T., Kumarganj, Faizabad, U.P.

Urethrotomy and urethrostomy have been reported for removal of calculas and to maintain the flow of urine in ruminant with limited success due to stricture formation (Van metre, 2004). However, tube cystotomy had been used successfully in the treatment of urethral obstruction, urethral rupture or ruptured urinary bladder in small ruminants (Van metre *et al.*, 1996). The present study was based on the management of obstructive urolithiasis by technique of tube cystotomy. A total 5 male cow calves of 4 to 6 months of age and 50-60 kg. body weight were presented to college's polyclinic with history of dullness, depression, anuria, abdominal straining since 4-6 days. All the affected calves showed signs of dehydration and bilateral abdominal distension though it was mild in non ruptured animals. The abdominocentesis revealed straw coloured fluid with feeling of fluid thrill on abdominal palpation. Respiration rate and heart rate were slightly increased and Rectal temperature was normal in all the animals. The urinary bladder was ruptured in three animals where as intact in two animals. All the animals were restrained in lateral recumbancy and cystorrhapy with tube cystotomy and tube cystotomy by using foley's catheter was performed in animals with ruptured and non ruptured urinary bladder respectively as per standard surgical procedures to achieve urinary diversion. Post operatively all the animals were administered with Enrofloxacin, meloxicam, multivitamin for 5-7 days with ammonium chloride @ 40 gm orally daily for 15 days and tablet Cystone, 5 tablets orally bid for 15 days. The bladder was daily irrigated with 100 ml of 5% solution of Ammonium chloride followed by 50-60 ml normal saline solution containing 5% Enrofloxacin. The Foley's catheter was blocked with artery forceps for 4- 5 hour after 5th day and all the cow calves passed few drops of urine after 7-9 days of operation through urethral orifice. The flow of urine increased gradually and free flow of urine through urethral orifice was observed after 13- 14 days in all the animals. The Foley's catheter was blocked permanently after 16 days and removed by deflating its balloon. All the animals did not show signs of obstruction during 6 months of follow up period.

RUS-51 Conservative Technique for Management of Horn Core Infection in Bovines

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The present clinical trial is undertaken to conserve asthetic look of the animal, to design a non-traumatic and cost effective method and also to retain the resale value of animal. The basic etiology noted in field responsible for horn core infection is, excessive chipping of outer horn covering for asthetic purpose or to mask ageing of the animal. Excessive chipping leads to severe thinning of outer covering and sometimes exposure of inner tissue. Repeated exposure of tissue to environment leads to either suppuration or even maggot infestation leading to horn core infection. Early presentation of cases with just thinning of outer covering is successfully treated by application of 40% formalin to the thin bark for a period of 3 weeks. Chronic cases with suppuration and maggot infestation are primarily treated as open wounds to control infection and then the damaged horn core is filled with PMMA (poly methyl methacrylate) solution in dough form which sets into a hard cement like material. PMMA is inert, does not liquefy with water and sets early without damaging the tissues. All the cases have been treated successfully by this cost effective, non-traumatic and easy technique.



RUS-52 Diaphragmatic hernioplasty in buffaloes

Ramesh Chaudhary and B.R. Chaudhary

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Five buffaloes aged between 8-10 years were brought in clinic with the history of recurrent tympany after calving at various intervals. Animals were off feed, there was sharp drop in milk yield. The rectal temperature, respiratory rate and pulse were normal. Animals showed general weakness and loss of condition. A left flank laparotomy was performed under local infiltration anesthesia 2% lignocaine hydrochloride. Foreign bodies were not recovered in the rumen or reticulum in 2 cases but it was recovered in 3 cases, however, right sided diaphragmatic hernia was diagnosed in all the cases. The hernial ring size was mini football size to slightly bigger than it. Diaphragmatic hernioplasty was performed after 24 hrs. under local infiltration anesthesia 2% lignocaine hydrochloride while securing the buffaloes in dorsal recumbency. A 30 cm long crescent shaped incision was given on right post-xiphoid region. After performing laparotomy the hernial ring was explored, adhesions of reticulum with hernial ring and thoracic organs were gently broken. The reticulum was reposed into the abdominal cavity. Hernioplasty with nylon mesh was done. A pre-sterilized nylon mesh conforming to the size of hernia ring was applied over the hernial ring and was sutured with tissues of hernial ring by a two layer of simple continuous suture pattern using thick silk. The preoperative and postoperative treatments given are discussed and the animals did not show tympany for 6 months during post operative period.

RUS-53 Study of Magnet Feeding in Prevention of Foreign Body Syndrome in Bovine

N. R. Shaikh and V. D. Aher

Department of Vet. Surgery & Radiology, College of Veterinary & Animal Sciences, Parbhani (M.S.)

Screening was carried out for foreign body syndrome suspected Gir cows on organized farm on the basis of clinical examination and metal detector examination. Twenty cows positive for metallic foreign body but did not show symptoms of foreign body syndrome were selected and magnet feeding was done. From overall investigation it is observed that magnet feeding does not alter any physiological, hematological or biochemical parameter in animals. Cow magnet was effective in prevention of traumatic reticuloperitonitis and traumatic pericarditis by means of its power of holding metallic foreign bodies and preventing progressive migration of foreign body and its sequelae. Oral feeding or administration of magnet is easy and cheap method of prevention of TRP as cost of one cow magnet is Rs. 125 only.

RUS-54 Newer Concepts in Ocular Surgical Techniques in Farm and Companion Animal Practice

V. D. Aher

Department of Vet. Surgery & Radiology, College of Veterinary & Animal Sciences, Parbhani (M.S.)

The cases of affections of eye in farm and companion animals presented in Teaching Veterinary Clinical Complex, College of Veterinary & Animal Sciences, Parbhani were treated with different surgical techniques. Affections of eye viz subconjunctival abscess, dermoid, eye cancer, rupture of cornea, ocular foreign bodies, hypopyon, occlusion of lacrimal duct (dacrocystitis), proctosis were treated successfully with surgical treatment in farm animal and cataract, cherry eye in companion animal. The details will be discussed in technical session.

RUS-55 Invention of a simple electrocautery and its use in docking, castration and interdigital hyperplasia

John Abraham

Ph.D Scholar, Dept. of L.P.M, Veterinary College and Research Institute, Namakkal, Tamil Nadu-637002

A simple electrocautery scalpel was designed. The instrument consists of a 65 watt, 230-volt soldering iron with its tip carved to resemble like a Bard parker handle No.4. Commercial disposable B.P blades



of size 20-24 can be easily attached to this. The passage of electric current through a high resistance wire heats the tip of this instrument. While making incision with this scalpel, the heat generated by the scalpel removes water from the tissue causing the tissue to shrink and blood vessels to contract. The denatured proteins form a coagulum resulting in haemostasis and thereby a bloodless surgery. After attaching the blade to the handle of the electrocautery instrument it is plugged to a convenient socket and switched on. The site of operation is prepared according to the breed standards. Local infiltration 'ring' anaesthesia is performed using 2% Lignocaine hydrochloride solution. The skin over the tail is pulled towards the base and the tail is severed by cutting through the intervertebral space. A perfect haemostasis is effected by the cauterization of the middle and lateral coccygeal vessels. This instrument was successfully used in 72 cases of docking in various breeds of dogs, for the castration of 112 piglets and 11 cases of interdigital hyperplasia. It is concluded that this simple instrument had several advantages over the conventional surgical techniques. The instrument is very safe and can be easily replicated in field conditions economically.

RUS-56 Congenital anomalies in veterinary neonates and their management

P.Veena, R.V.Suresh Kumar, N.Dhanalakshmi, P.Sankar and S.Kokila

Department of Veterinary Surgery and Radiology, College of Veterinary Science, Tirupati-517 502 (A.P), Sri Venkateswara Veterinary University, Tirupati

Incidence of congenital problems was studied during the last 10 years. Most common congenital anomalies recorded were atresia ani and atresia ani et recti in both large and small ruminants. Followed by umbilical hernia, congenital ankylosis of joints, contracted flexor tendons, eventration of abdominal viscera, atresia ani at recti et coli, arthrogryposis, conformational defects, polymyelia, athelia, amyelia, meningocele, recto vaginal fistula, pervious urachus, dicephalic fetus, congenital goiter, hypospadias, hermaphrodite, conjoined twins, prognathism, sternophagus, double head foetus etc. Surgical management of atresia ani, umbilical hernia, pervious urachus, eventration of viscera, contracted flexor tendon yielded good results. Surgery could not be attempted for arthrogryposis, polymyelia and hermaphrodite.

RUS-57 Intussusception in Bovine- A Retrospective Study of 5 Years

S.Dharmaceelan, S.Kathirvel, A.Kumaresan, K.Jayakumar, S.Senthilkumar and N.Rajendran

Veterinary College and Research Institute, Namakkal, Tamilnadu- 637 002

A 5 year (1.4.2005 to 31.3.2010) retrospective study of cases admitted and treated for intussusception at Veterinary Teaching Hospital, Veterinary College and Research Institute, Namakkal was taken up for this study. A total of 29 cases were treated during the reporting period. The study revealed that the incidence was 93.10 (27) and 6.90 (2) per cent in cattle and buffaloes respectively. Among 27 cattle the male (3), female (24) were 11.11 and 88.89 per cent respectively. Among 24 female cattle 33.33 per cent were Holstein Friesian cross (8) and 66.67 per cent were Jersey cross (16). Among female cattle 33.33 per cent were pregnant (8) and 66.67 (16) per cent were non pregnant. The 2 buffaloes were non descript and also non pregnant. About 90 per cent of the history revealed colic signs and complete cessation of defecation. Rectal examination revealed empty rectum with mucus coating on the examination gloves. On careful examination a sausage shaped mass with intestinal distension cranial to the mass was detected in all the cases except in cases of advanced stages of pregnancy. The diagnosis of intussusception was done by based on history, clinical signs, rectal examination and right flank exploratory laparotomy. Enterotomy and end to end anastomosis was done 79.31 per cent (23) animals under right paravertebral nerve block with visceral blockade and 20.68 (6) per cent animals under general anaesthesia with a premedication of 5 per cent glyceryl gualacolate @ 50 mg / kg i.v., induction with ketamine 4 mg per kg i.v. and maintained with isoflurane. Enteroanastomosis was performed with No. 2-0 polyglactin 910 (Vicryl) by simple interrupted suture. The laparotomy wound was closed as per the standard procedure. Post operatively all the animals were maintained with i.v. fluids and antibiotics. Feed and water was introduced from the third day onwards. All the animals recovered uneventfully. The success and goals for the treatment of intussusception will be discussed.



RUS-58 Caecal Dilatation in Cattle - A Report of 3 Cases

S.Dharmaceelan, K.Jayakumar, S.Senthilkumar, S.Kathirvel, A.Kumaresan and N.Rajendran
Veterinary College and Research Institute, Namakkal, Tamilnadu- 637 002

Three cattle presented with the history of not passing dung and anorectic for the past five days admitted to the Veterinary Teaching Hospital, Veterinary College and Research Institute, Namakkal were examined clinically. The clinical examination revealed empty rectum with dilated gas filled viscus occupying the entire right quadrant suggestive of caecal dilatation. Right flank exploratory laparotomy was done under right paravertebral nerve block in two animals and under general anaesthesia in one animal. Typhlotomy was performed after exploration and exteriorization of the caecum and about 20 to 30 litres of liquid intestinal contents were removed. The Typhlotomy wound was closed by two layer closure of inversion suture with polyglactin 910 (Vicryl). The laparotomy wound was closed as per the standard procedure. Post operatively all the animals were maintained with i.v. fluids and antibiotics. Feed and water was introduced from the third day onwards. All the animals recovered uneventfully.

RUS-59 Better survivability in Traumatic Pericarditis in cattle by pericardiocentesis rather than by thoracopericardiotomy.

A.K. Bishnoi and T.K. Gahlot

Department of Veterinary Surgery & Radiology, RAJUVAS, Bikaner, Rajasthan

Traumatic pericarditis was studied in 25 cases of cows and bull. These cases were diagnosed on the basis of history, clinical signs, haematological test, radiography or ultrasonography - wherever feasible and glutaraldehyde test. Regular pericardiocentesis was done in 12 cases of present study. The pericardial fluid recovered varied from 100 ml to 8.5 litres. Thoraco-pericardiotomy by 5th rib resection and through 5th intercostal space was done in 2 cases each. A set of therapeutic treatment was administered to all the animals for a period. It included antibiotic(s), NSAIDs, B-complex and liver extract, diuretic and fluid therapy. In animals of present study, the survival following pericardiocentesis was from 3 days to 7 week, whereas the survival following thoracopericardiotomy was from 6 to 10 days only. The therapeutic treatment was common to both the surgical procedures hence it is concluded from the present study that pericardiocentesis together with therapeutic treatment provides a better survival period as compared to thoracotomies.

RUS-60 Studies on Incidence and Management of Various Neoplasms in Cattle: A Review of 104 Cases

A. S. Patil and B. R. Balappanavar

Veterinary Hospital, College of Agriculture, University of Agricultural Sciences, Dharwad-580 005, Karnataka

A total of 104 cases suffering with different neoplasms were presented to the hospital for treatment during the period 2006-2008. Analysis of 104 cases revealed 89 cases were found in males and 15 in female cases comprising of 20% cross bred and 80% of indigenous animals. Incidence of eye cancer was highest followed by Horn cancer, Melanoma, Osseous tissue tumors, Papillomas, Interdigital fibromas, Lymphoid tumors, Testicular tumors, Fibromatous tissue tumors, Perianal tumors, Tumor neck, Parotid gland tumors and keloids. Their recorded incidence was classified based on Sex, Age and Breed of the animal affected; system affected, malignancy and treatment opted is discussed. Most of the neoplasms were treated surgically (72%), some by additional chemotherapy (16%) and few with poor prognosis were advised culling (12%). Samples were sent for histopathology and results were classified accordingly. Death occurred in 3 cases during the course of treatment. Recurrence was reported in a total of 8 cases after a few months.



WILD & ZOO ANIMAL SURGERY SESSION

Date : 09.12.2010 Time : 2.00 pm

Venue : Committee Room

Chairman : Dr. M.S. Vasanth

Rapporteur : Dr. Aithal

LEAD PAPER

Management of Surgical Disorders of Camels (*Camelus dromedarius*)

Dr. T.K. Gahlot,

Head, Department of Veterinary Surgery and Radiology, College of Veterinary and Animal Science, Rajasthan University of Veterinary and Animal Sciences, Bikaner 334001

Camels suffer with a variety of surgical disorders which causes severe production losses to the farmers. These affections have been classified region wise. Camels have different surgical anatomy as compared to large ruminants; hence their surgical procedures are either modified or are altogether new. The affections of head and neck include mandibular fractures, soft palate injuries, eye injuries, nostril lacerations and salivary fistulas. Mandibular fractures are treated by interdental wiring technique under Xylazine sedation. Soft palate is excised under Xylazine sedation using a deep per-oral approach. Lacerated eyelids are repaired by blepharoplasty techniques. Corneal lacerations are repaired appropriately and tarsorrhaphy is done. Enucleation of eye ball is done to remove a panophthalmus eye ball.

The affections of thorax, abdomen, pelvis, perineal region were saddle gall, chest pad injuries, foreign body syndrome, hernias, impaction, intestinal obstruction, Rupture of urethra and subcutaneous infiltration of urine, preputial proplase and tail gangrene etc. The affections of limbs were fractures, dislocations, arthritis, upward fixation of patella, hernia of digital cushion, punctured foot etc. Management of surgical disorders of gastrointestinal diseases needs a thorough knowledge of surgical anatomy. A prescrotal sigmoid flexure, highly placed testicles, small flank area, and absence of medial patellar ligament and presence of a prominent digital cushion make the surgeries peculiar and need experience with this species. The diagnosis and treatment of these important affections will be discussed.



ZWS-1

Rehabilitation of injured Mongoose

M.O. Kalim, S. K. Tiwari, P. Vishwakarma, B.A. Moulvi, R. Sharda and J. D. Parrah

Division of Veterinary Surgery & Radiology, Faculty of Veterinary Science & A. H. Suhama, Alusteing, Srinagar (J&K)

An adult mongoose met with an automobile accident was presented for the treatment 2-3 hrs following the accident. The mongoose was dull severely shivering, twitching of head (epileptic condition) and shock condition at the time of presentation. Clinical examination of mongoose revealed no bleeding from head region and there were no signs of fracture of limbs or ribs. The mongoose was unable to stand and walk at the time of admission. Therefore, approximately 20gm of glucose powder dissolve in 30 ml of water was given orally by dropper and injection of dexamethasone 1ml, 0.5 ml melonex and inj. Gentamicine 0.5 ml was administered into the thigh muscle for 2 days. Post treatment Glucon-D powder 20 gm dissolved in 15 ml of water was given orally 4 times a day. On 3rd day mongoose recovered uneventfully and then released into its own area.

ZWS-2

Chemical Immobilization and Field Translocation of Indian Rhinoceros (*Rhinoceros unicornis*) In Assam

K. K. Sarma and Bijoy Dutta

Department of Surgery & Radiology, College of Veterinary Science, AAU, Khanapara, Guwahati-781 022.

In the entire world the only viable population of the Great one horned Indian Rhinoceros (*Rhinoceros unicornis*) exists in the Kaziranga National Park (KNP). Some small satellite populations of the highly endangered animal exist in the Pobitora wildlife sanctuary and Orang National park in Assam and few protected areas of North Bengal and Nepal. Attempts are being made to raise rhino populations in some other important protected areas within Assam under an ambitious programme nick named IRV-2020 to boost the rhino population to 3000 from the existing 2200. To achieve this, programmes are



underway to move healthy wild rhinos from KNP and Pobitora WLS to Manas National Park and Laokhowa Wildlife Sanctuary. For carrying out this operation rhinos are chemically immobilized in the source area and released in the destination area. The entire operation is performed under strict veterinary care and supervision. In the ongoing operation, after readying all the required items, the selected rhinos were cornered with the help of koonkies (trained elephants) and darted with a hard nozzle metal dart from the back of an elephant or from the ground, taking the cover of an elephant. Etorphine Hcl was used @ 1mg/500 Kg body weight (Immobilon LA containing 2.45mg of etorphine and 10mg of Acepromazine per ml) for immobilization of the animals. The average down time recorded was 5.5 minutes and the animals remained immobilized during the entire process of morphometry, radiocollaring, microchip implantation, loading onto the sledge, sledging to the cage, and into the cage which took an average of 45 minutes. Once safely placed inside the cage, closed and the animal was revived from narcosis using diprenorphine Hcl (Revivon) @ 1mg/500kg body weight. Cool water was sprinkled over the body of the animal and the cage was covered with an agri-net shade till the beginning of the journey to the destination. Struggling of the animal on holding period or *en route* was controlled by sprinkling of cool water and administration of acepromazine with the help of a jab stick. The trucks carrying the rhinos moved at a maximum of 40 km per hour on the plains and 20-30 km per hour on the hills. All the animals were safely released in the destination area and there were no post release complications in the animals.

ZWS-3 **Management of a Recurrent Sub-mandibular Abscess in a Rescued Elephant Calf**

Manav Sharma, K.K. Sarma and S. Kynjing

Alembic Limited, Veterinary Division, Department of Surgery and Radiology, College of Veterinary Science, AAU, Khanapara, Guwahati – 781 022.

A Rescued male elephant calf of one and half years old was reported with a swelling on the ventral aspect of the mandibular area. After careful examination it was diagnosed to be a matured abscess projecting downward. The animal was restrained physically holding it down to the ground with the help of soft jute ropes and 4-5 people. The abscess was drained and dressed in routine manner. Antibiotic injection of Enrofloxacin 10ml intramuscularly for 5 days was given. With regular dressing and antibiotic therapy the abscess was healed. However, recurrence of the abscess was reported after 2 month. The animal was restrained again by physical method. The abscess was opened, drained and dressed with 0.1% KMnO₄ after which it was packed with sterile gauge impregnated in tincture of Iodine. Blood sample for haematological study was collected in EDTA and pus sample for culture and sensitivity test was collected in sterile swab. The seton was removed after 36 hours and the cavity dressed in a routine manner. Blood sample depicted leucocytosis with increased lymphocytes and slight anaemia. Culture and sensitivity test revealed both Gram positive and Gram negative organisms, which were sensitive to Ceftiofur. Accordingly treatment was given with Xceft⁴ for 7 days and Antihistaminic for 5 days. Satisfactory result was achieved after 15 days without recurrence.

ZWS-4 **Surgical removal of fibromatous growth in a white tiger (*Panthera tigris*) : A case report**

B.P.Shukla, S.S.Pandey, R. Jain and S. Shukla

College of Veterinary Sciences & A.H.Mhow (M.P.)

Indore Zoo authorities contacted Dept. Of Surgery & Radiology, Mhow with a complaint that a white Tiger had a growth on caudo-lateral aspect of upper thigh. A team of doctors visited Zoo and taken out a biopsy sample which proved to be a rare case of fibromatosis (Nodular fasciitis). The surgery was planned and after anaesthetizing the tiger with Inj. Xylazine+ Inj. Ketamine, hind legs of the tiger were taken out of the cage and remaining portion of the body like head and body were kept inside the cage well secured. A 13 inch long incision was given directly over the growth and the growth was removed from all the sides of the skin edges. The growth was firm and adhered to the skin edges and it consumed lot of time to separate it out completely. There was a weak patch of skin because of licking habit of tiger and that was also joined to the line of incision by incising it. The muscles were brought closer by giving



continuous sutures with the help of # 2 vicryl thread. Mean while 2 ml of ketamine was again injected looking to reflexes of the tiger. The skin incision was closed by interrupted cross mattress sutures with the help of black braided silk# 2. The wound was monitored on daily basis and Inj. Ceftriaxone 6 gm and Inj. Melonex 10 ml were given intramuscularly for 6 days. The tiger had broken the stitches on 4th day by licking and so the wound was re-stitched, however the stitches were again broken by the tiger himself. Then it was decided to go for open wound healing without suturing it again. The spray of betadine was used on the wound 3 times a day. Laser machine was also used for 10 minutes at 20 frequency for 10 days on the wound to promote healing and the result was very good in the sense that wound completely healed and the pink colored scar was only left.

ZWS-5 Surgical Management of Various Affections in Rhesus Monkeys (*Macaca mulatta*)

Pallavi Verma, Tarunbir Singh, M. Raghunath, Navdeep Singh and J. Mohindroo
Department of Veterinary Surgery and Radiology, GADVASU, Ludhiana-141004

Three Rhesus monkeys (*Macaca mulatta*) were presented in the department over a period of 6 months, with different surgical conditions. The first case was of ear haematoma in a 6 month old male monkey. The second case was of automobile hit in a 2 year old, female monkey with lacerations on the left thigh, alongwith avulsion of vulvar lips. The third one was supracondylar fracture of right femur in a 7 month old, male monkey. All the cases were operated under general anaesthesia. Ear haematoma was operated as per the standard method in canines. In the second case the lacerated wounds were treated surgically and avulsed vulvar lips were reconstructed after catheterization of urethra. In case of femoral fracture cross pinning with 3 pins from distal to proximal fragment, crossing the cortices and 1 pin intra medullary upto proximal metaphysis was done. All 3 cases were given parenteral antibiotics for 5 days and analgesics for 3 days. The femur fracture case showed complete weight bearing on the 3rd post operative day and full limb usage by 10th day. The rest 2 monkeys also showed uneventful recovery.

ZWS-6 Treatment of multiple lacerated wounds in Pangolin.

S.S. Bawaskar, R.D. Tembhurne, Surjeet Singh and M.S. Bawaskar
Maharajbag Zoo, College of Agriculture, Nagpur

A pangolin (*Manis crassicaudata*) was brought to zoo with various wounds on the ventral aspect of the abdomen. The wounds were irrigated with luke warm potassium permanganate lotion and mopped with clean absorbent cotton swab. Povidine iodine (Betadine 5%) ointment was applied on the wounds and dressing continued. Intra muscular injection of Taxim 250mg bid was also administered for five days. The wound healed completely within a fortnight and the pangolin was released back in the forest after 20 days of treatment.

ZWS-7 A Case of Massive Abscess in Leopard-surgical Intervention

S.S. Bawaskar, M.S. Dhakate, S.V. Upadhye and R.D. Tembhurne,
Maharajbag Zoo, College of Agriculture, Nagpur

A male leopard aging 11 yrs and weighing 45 kg showed signs of discomfort, pain, redness and swelling on the right side of the neck covering from base of ear extending upto the throat. On examination it was diagnosed as ripened abscess. Surgical drainage carried out from the ventral approach. 400 ml of pus and debris was drained from the abscess. The cavity was cleaned by using H₂O₂ and povidine iodine and the wound was kept open to continue the drainage of the remaining pus. Parentally Inj. Monocef 1 gm IM BID for 7 days & Inj. Melonex 2 ml BID for 3 days was given. Cleaning and dressing of the wound continued for 15 day. The Abscess got cured uneventfully.



ZWS-8

Management of Paw Pad Injury in Tiger Cub

S.S. Bawaskar, R.D. Tembhurne, M.S. Bawaskar and Surjeet Singh

Maharajbag Zoo, College of Agriculture, Nagpur

An orphan female tiger cub about 9 month of age was in treatment cage for one month. The paw pad got injured due to discomfort caused by injury and irritation in the small size treatment cage. Four paw pads were treated for paw ulcers due to pacing in the cage. Combination of Mox 500 mg and acepromazine administration to dominate the pacing activity, daily application of Povodine iodine ointment and turmeric power spread in the cage resulted in complete recovery in all foot pad lesion.

ZWS-9

Surgical Management of Wing Fracture in Two Honey Buzzard (*Pernis Apivorus*) and A Kite to Release those to Nature

A. K. Maji, Debaki Ghosh, S. Halder and Shivaji Bhattacharya

Department of Surgery & Radiology, Faculty of veterinary & Animal Sciences, West Bengal University of Animal & Fishery Sciences.

Pe-Lu calling two honey buzzard with humerus, radius and ulna fracture rescued by W. B. State Forest Department were treated in University Clinics. Both the birds were anaesthetized with Ketamine (@ 20 mg l/m) and diazepam (1 mg/Kg l/m) combination. Through a nick in propatagium intramedullary (I/M) pins were introduced in humerus & ulna for fractures at proximal 1/3rd of humerus, mid-shaft of radius and ulna in the first bird. In the 2nd bird distracted distal humerus fracture was retained by l/m pin and circlage wire. The kite with incomplete fracture at distal humerus was kept on cage-rest for 3 weeks followed by physiotherapy to relieve temporary ankylosis and was released to nature at its normalcy. The 2nd honey buzzard died 3 days post-immobilization for starvation. The first "pern" was examined radiologically at 15 days interval upto two months when l/m pins were removed. It resumed to use its healed up wing and was released after few days of care.

ZWS-10

Surgical Repair of Multiple Oesophageal Tears in an Indian Python (*Python morulus*)

George Chandy, Arun Mohammed, Gaddafi K.P., Joju Johns, Anoopkumar T. and John Martin K.D.

Dept. of Surgery and Radiology, COVAS, Pookot, Wayanad, Kerala

A 16 kg Indian Python was presented with wounds on either side of the proximal part of the body. The reptile had been found with the horns of a half swallowed barking deer projecting out through the wounds. On physical examination multiple full thickness tears of different lengths were found in the oesophagus extending to the skin wounds. The reptile was weak and dull. Under local infiltration and surface analgesia with 2.5% lignocaine the oesophageal tears were sutured with no. 1-0 catgut applied in a simple interrupted fashion. The lacerations in the body wall were sutured with no. 1-0 catgut and the skin sutured with no. 1 nylon. Post-operatively, ceftazidime was administered thrice at the rate of 20 mg/kg body weight IM at an interval of 72 hours. Though no post-operative complications were seen and the reptile appeared to be stable, it died suddenly on the 16th post-operative day.

ZWS-11

Caudectomy and Castration in Spectacle Cobra

V. Mahesh, D. R. Manjunatha, Ramesh Rathod, K. Md Arif Basha, B. Devraj and L. Ranganath

Department of Veterinary Surgery and Radiology, Veterinary College, Bangalore-24

A spectacle Indian cobra was presented to Department of Veterinary Surgery and Radiology Veterinary College Bangalore with the history of trauma, on physical examination revealed the ulcerated testis were hanging out with broken tail. The snake was anaesthetized with Ketamine hydrochloride 50mg per kg body weight intramuscularly and subjected for radiography, it was confirmed complete fracture and dislocation of coccygeal vertebra. Then under same anaesthesia castration and caudectomy were performed and course of antibiotic was administered. Snake made an uneventful recovery.



- ZWS-12 Management of an Extensively Traumatized Black Buck (*Antelope Cervicapra*)**
Madhu. D. N., J. Singh, Irawati Sarode, S. W. Monsang, A. M. Pawde & M. M. S. Zama
Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122

A 2 months old black buck was presented to Referral Veterinary Polyclinic, IVRI by forest officials with the history of dog bite wound injury 4 days back. Anamnesis revealed that the animal was completely anorectic and unable to stand up on its limbs thereby attaining a prostatic posture. Clinical examination revealed open mouth respiration along with bite injury on left thigh and left lumbar region. Clinicophysiological parameters were recorded which revealed a shock like condition. Aggressive fluid therapy was initiated with fluid administration along with corticosteroids. The various wounds at different sites were dressed properly with povidone iodine. The treatment continued for 3 days and the animal made an uneventful recovery.

- ZWS-13 Surgical Removal of a Turkey Towel from the G.I. Tract of an Indian Cobra**
Indramani Nath, Subharaj Samantara, Ratnakar Rout, Saroj Kumar Sahoo
Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Orissa University of Agriculture and Technology, Bhubaneswar – 751 003, Orissa, India.

An Indian cobra (*Naja naja*) was presented to the Surgery Department by the members of Snake Help Line with a complaint of distended abdomen. History revealed that the snake was rescued from the campus of Venkateshwar English Medium School, Bhubaneswar in dull and depressed condition. After proper physical restraint of the snake by the member of Snake Help Line, palpation revealed a hard mass inside the abdomen. A translucent mass was found on examination by IITV. The snake was anaesthetized with 25mg of ketamine hydrochloride. After aseptic preparation of the site the Turkish towel was removed and the site was closed by usual surgical procedures. The snake revived from the anaesthesia eight hours post-operatively. This is a rare report of removal of foreign body like Turkish towel from the stomach of a snake. The snake recovered uneventfully.

- ZWS-14 Recurrence of Endometriosis Externa in a Lioness**
R.V Suresh kumar, P.Veena, N.Dhana Lakshmi, P.Sankar, Ch Srilatha, S.Kokila, Thioaba Singh and Arun
College of veterinary science S VVU Tirupathi 517502 (A.P)

A lioness aged about 14 years belongs to S.V Zoological Park Tirupati was presented to the college clinic with swelling on the ventral aspect of the abdomen. Two years back very big mass at the same location was excised and it was diagnosed as endometriosis externa histologically. Again soft fluctuating swelling with the same features was observed in the same location. The animal was active and normal in habits. The growth was continuously growing and causing inconvenience to the animal. Hence it was decided to perform surgery to remove the mass by taking necessary precautions. The lioness was anaesthetized with xylazine hydrochloride and ketamine hydrochloride. A linear incision was taken exactly over the swelling and blunt dissection was done to remove the masses by carefully controlling the bleeding. The entire mass was excised. sub cuticular sutures were applied to avoid the dead space using chromic catgut and cutaneous incision was closed using braided silk. Routine dressing, administration of antibiotics, anti inflammatory drugs were given post operatively. Skin wound healing took place in 13 days. Clinical symptomatology, and other details were discussed.

- ZWS-15 Surgical Management of Two Tumours in a Lioness**
R.V. Suresh kumar, N.Dhana lakshmi, P.Veena P.Sankar, Ch Srilatha, S.Kokila, Thioaba Singh and Arun
College of veterinary science S VVU Tirupathi 517502 (A.P)

A lioness aged about 22 years belongs to S.V Zoological Park Tirupati was presented to the college clinic with swelling on the left and right lateral aspect of the abdomen. The animal was active and normal in habits. The growth was continuously growing and causing inconvenience to the animal. Fine needle aspiration cytology examination confirmed the mass as tumor, Hence it was decided to perform



surgery to remove the mass by taking necessary precautions. the lioness was anaesthetized with xylazine hydrochloride and ketamine hydrochloride. An elliptical incision was taken exactly around the mass and blunt dissection was done to excise the masses by carefully controlling the bleeding. The entire mass was excised after detaching the base from the muscle. Surrounding healthy tissue was also excised and sub cuticular sutures were applied to avoid the dead space using chromic catgut. cutaneous incision was closed using braided silk. Routine dressing, administration of antibiotics, anti inflammatory drugs were given post operatively. Skin wound healing took place in 13 days. Clinical symptomatology, and other histopathological findings were discussed.

ZWS-16 Correction of Piercing Injuries in Common Cobras

Chaudhary, P. S., Varshney J.P. and Deshmukh, V. V.

Shri Surat Panjarapole Prerit, "Nandini" Veterinary Hospital, Surat - 395 001 (Gujarat)

Present report describes about the surgical correction of injured common cobras rescued by the animal activist that were presented to the Nandini veterinary hospital with the piercing injuries at the abdominal region. Protrusion of stomach (ruptured at two places), intestines and pancreas were found in one cobra where as only small intestines were noted in other two cobras. The injuries were corrected surgically by suturing the stomach with 4-0 catgut and the musculature with 3-0 cat gut. Fluid therapy was continued for 5-6 days. All the snakes showed normal recovery within ten day.

ZWS-17 Sterilization operation of a mongoose - a case report

Jayakrushna Das, R.K. Rout, A.K. Mishra, S.K. Samal

Department of Veterinary Surgery & Radiology, Orissa Veterinary College, BBSR.

A 3 years old male mongoose was presented at the TVCC of Orissa vety college seeking for sterilization operation. The scrotal sac was cleaned shaved and prepared for surgery under GA of injection ketamine HCL + injection xylazine. On apex of scrotum, one 1 cm incision was made and one testicle was squeezed out. After incising the tunica vaginalis propria spermatic cord with blood vessel was ligated with chromic catgut no 2/0 and the testicle was cut and removed. At the same time, the other testicle was also squeezed out and excision was done by the same method. The cutaneous incision lines were sutured with mersilk suture no 1/0. Post operatively oral antibiotic with NSAID was given and sutures were removed on 10th day. It is concluded that open method of castration remains a viable option for sterilization.

ZWS-18 Successful treatment of deep wound at inter digital space of a lion- a case report .

Jayakrushna Das, R. K. Rout, A. K. Mishra

Department of Veterinary Surgery & Radiology, Orissa Veterinary College, BBSR.

A 14 year old African lion weighing 200kg bwt of Nandankanan zoo, Barang, Orissa was suffered from lameness before 15 days of examination. The anesthetic protocol involved inj. Xylazine + ketamine combination keeping the animal for 14 hour of fasting. The appendages were closely examined for any injury/ fracture and it was found that there was one deep punctured wound in inter digital paw region of left foreleg. The site was first washed, cleaned, shaved, and prepared for operation. Under strict aseptic conditions debridement was done and it was of two inches long and 2/3 inch dia deep wound. The wound was then cleaned with NSS and applied with sterilized gauze soaked in Glycerine + chloramphenicol powder paste. Along with these 3 stay sutures were applied and bandaged. This type of treatment was continued for 3 times at three days interval under GA inside the cage. There after it was applied with antibiotic spray inside the squeezed cage without GA. After 18-20 days of operation the gap was filled with granulation tissue and the lion was recovered uneventfully.

ZWS-19 Successful Surgical Management of Multiple Deep Injuries in A Deer

Jayakrushna Das

Orissa Veterinary College ,Bhubaneswar

A deer of 8 years old belonging to the Chandaka reserve forest, Bhubaneswar was found injury by the forest personnel due to infighting among them & presented at the surgery department by trying the



animal. It was first anesthetized with the combination of atropine sulphate + xylazine + ketamine (mild dose) & united the rope. The deer was examined & found 3 deep injuries of 1 to 1.5 inches deep, two at thigh region & one at groin region. The area was shaved & cleaned with NSS and painted with povidone iodine lotion. It was then applied with terramycin topical lotion at the site and sutured with mersilk suture no 1. Externally it was painted with skin heal spray and kept under observation for 15 days with post operative medication. On 12th day the suture was removed and limited movement was allowed. After recovery the deer was left loose to the deep forest by the forest personnel.

ZWS-20

Management of Clinical Wounds in Camels (*Camelus dromedarius*)

Arun Sanadhya, Jitendra Garhwal, Omendra Singh, Mahendra Nagar, K.Kachwaha, M.Parashar, T.K.Gahlot

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Camel suffers from a variety of clinical wounds at different body areas and these wounds need special management and care. In head and neck region, these wounds are usually lacerated in nature and occur at lower eye lid, cornea and nostrils. These wounds are contaminated in nature and are sutured after debridement. The wound occurring at thoracoabdominal region are usually infected in nature and occur as saddle gail and chest pad wounds. These wounds need a through debridement and protection of area from pressure of saddle and soiling particularly in the chest pad wounds. Wounds occurring at mammary gland and tail are gangrenous in nature and need amputation of the affected part. Wounds occurring in the sole region are usually punctured in nature and a cone shaped drainage opening is made. Care should be taken not to allow prolapse of digital cushion and the wound is always kept covered with sterile bandages and gunny bags.

ZWS-21

Rescue of Leopard

Sanjay J. Gaikwad

Asst Commissioner Animal Husb. Nashik.

Wild animals are member of forest and are the property of forest department. As due to deforesting these animals they are losing their shelter and food so they are migrating. They come and settle near human settlement where they get food, water and shelter easily. As the natural habitat of the wild animal has become scare. The wild animal like leopard wander anywhere for their food, water requirement which results into man leopard conflict at various levels. Leopard is very much adaptable and can live close to human habitation. Leopards are known to feed on domestic animal like dog live stock like goats, pigs & poultry. Occasionally when leopard enters in human locality the people afraid of them and due to fear they wanted to get rid of leopard.

Scared people take various steps

1. To make them to run
2. They try to injure them by beating with stick or stones or with sharp weapon
3. They may spray poison on dead animal and try to kill them.

Human leopard conflict is a complex issue. Leopard is very clever, alert and active species. Human attack by leopard warrant immediate action on part of the forest department. This invariably begins with the trapping and capture of the problem animal. Stress is critical in affecting the well being of leopard in emergency situation. Chemical restraint is effective measures by which stress can be reduce significantly. We have used Inj.Xylazine Hcl @1mg/Kg B.Wt & Inj.Ketamin @ 4mg /Kg B.Wt. For safety of people it is important to control the furious human crowd crowding around the animal to prevent further agitation of the animal. Emergency rescue team requires sufficient space to operate effectively. The forest department, field staff, public and media are aware of the complexities of the conflict issue. Rescue team rescued 36 Leopard from various places like Hut, Flat, Well, Farm, Hotel & Bungalow.

Immobilization plays a key role in most procedure pertaining to capture and post capture management of leopards. Simple equipment used in remote drug delivery system

- 1 It works within 10 to12 feet from the targeted animal.



2. Air pressure and any obstacle reduces the efficacy of dart syringe
3. Position of animal
4. Animal should located properly
5. Constant change in the position by animal will disturb the shooter.
6. Non delivery of the drug, leaking of drug, low air pressure will also reduce the efficacy.

ZWS-22 Oesophagotomy in an Indian Flap-Shelled Turtle (*Lissemys punctata*)

Syam K. Venugopal, Feroz A. Dar, S. Anoop and T. Sarada Amma
College of Veterinary and Animal Sciences, Mannuthy, Thrissur, Kerala- 680 651

An Indian Flap-shelled turtle (*Lissemys punctata*) was presented to the Veterinary College Hospital, Mannuthy, with a nylon thread stuck in its mouth. Radiography confirmed a steel fishing hook entrapped in its oesophagus. Under ketamine anaesthesia, oesophagotomy was performed on the left lateral aspect of the neck. The hook was removed. Surgical wound was sutured with 3/0 chromic catgut. Postoperatively Ceftriaxone, to a total dose of 25mg daily, was administration parenterally for five days. The patient was maintained under captive shelter during the treatment period. The turtle made an uneventful recovery and was released to its natural habitat by the forest officials.

ZWS-23 Surgical excision of Vaginal Growth in a Female Elephant (*Elephas maximus*)

Powar, K.V., Tripathi, S.A., Anjankar, A.M., Karavale, M.S.
Veer mata Jijabai Bhosale Udyan-Zoo, Byculla, Mumbai-27,

A forty-six year old female elephant had recurrent episodes of maggot wound on a small growth located in the vaginal passage. The growth grew considerably large in a period of 2 years and hence decision of tumor excision was taken to avoid further maggot infestation. Food and water was withheld for 16 hrs prior to surgery. Xylazine 600 mg total dose was administered intramuscularly for obtaining standing sedation. Surgical site was prepared aseptically. Blood vessels supplying the growth were double ligated with chromic catgut no. 0 and a double circumferential ligature was also taken around the growth. The growth was excised with Reimers emasculator and was cauterized with a electro cautery. Anti-fly repellent cream was applied around the vaginal passage. Ceftraixone (20 mg/kg bdwt) and multivitamins were administered intramuscularly for 3 consecutive days followed by oral medications for 3 days. Histopathological examination revealed the growth as chronic granulation tissue. It was concluded that growth was a result of injury caused by continuous hitting of the tail on the vaginal and chronic irritation due to maggot infestation.

ZWS-24 Dystocia and its complications in a spotted deer

M.K.Narayanan, S. Pramod and M.P Unnikrishnan
College of Veterinary and Animal Sciences, Mannuthy.

A case of dystocia in a spotted deer and its complications is recorded and presented. The foetus was in the posterior presentation with lateral deviation of the hip joint. After manual correction a live fetus was delivered. On the third day, animal started straining and resulted in complete prolapse of the uterus and vagina. Immobilized the animal using xylazine-ketamine anaesthesia and reduced the prolapsed uterus back and sutured the vulval lips. Routine antibiotics and other supportive treatments were given. The animal was found to be apparently normal on the first day but died on the second day. A detailed post-mortem examination was carried out including histopathological examination and recorded the results.

ZWS-25 Urethrostomy in a Langur (*Presbytis entellus*)

V. P. Chandrapuria, Apra Shahi, Shobha Jawre, Navneet , Farah De Souza

An adult male langur (*Presbytis entellus*) was presented to TVCC with the history of having been attacked by stray dogs. Physical examination revealed severed testicles following the bite with ruptured scrotal sac exposing the spermatic cord. The preputial sheath was ripped open leaving the badly injured penile body hanging. There were multiple injuries over the head exposing the superficial muscles. Following ligation of the spermatic cord, lacerated structures were repaired. Since the urethra was



located in the pre-scrotal region, urethrostomy was performed following amputation of the penis. Postoperative antibiotic and analgesic were administered and the langur was handed over to Forest Offices of Jabalpur. However, the Langur passed away approximately 18 hours postoperative.

ZWS-26 Surgical management of squamous cell carcinoma of tail in a ferret- A case report

T.P. Balagopalan, N.Arul Jothi, R.M.D.Alphonse, B.Ramesh Kumar and P.Thiruselvame
Department of Veterinary Surgery and Radiology, Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry

A 3 year old female, ferret with body weight of 500 g was presented at Teaching Hospital, RAGACOVAS, Pondicherry with the history of a lemon sized growth in the mid tail region since 4 months. The growth was found moist and ulcerated. Punch biopsy was collected from the site and whole blood and smear was collected for examination. Since the biopsy result was suggestive of squamous cell carcinoma, amputation of the tail including the growth was recommended. The animal was anaesthetised using Inj. Ketamine @ of 10-30 mg/kg and Xylazine 1-2 mg/kg given IM and amputation of the tail was performed under aseptic conditions as per the standard procedure. Ampicillin 100 mg was administered orally for 6 days post-operatively and sutures were removed on 9th post-operative day. The animal recovered uneventfully. The case of squamous cell carcinoma which was not common in ferrets.

ZWS-27 Surgical management of crush wounds in rescued snakes

T.P. Balagopalan., N. Arul jothi., R.M.D.Alphonse., B.Ramesh Kumar and A. Rakesh
Department of Veterinary Surgery and Radiology, Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry

Three cases of female cobra and a female Russell viper were rescued by the Forest Department, Tamil Nadu and presented at Teaching Hospital, RAGACOVAS, Pondicherry with the following symptoms. Case 1, was a female Cobra with a dog bitten wound at the ventral aspect above the cloaca, Case 2 and 3 were female cobras with crush injury and open wound on the ventral aspect. Russell viper was presented with fracture of the spine near the tail as a result of strangulation. All the reptiles were sedated with Ketamine administered IM @ dose rate of 20 mg /kg body weight. Heart rate and respiratory rate was recorded, Blood was collected for hematology, fecal samples were examined and treatment was given accordingly. Snake No 1 female cobra was intubated for artificial respiration. After recovery all the reptiles were handed over to the forest department.

ZWS-28 Tranquilization and Vasectomy in Captive Deer and Antelopes

Dhanalakshmi S, C.Suresh kumar and K.A.Nanjappa
Sri Chamarajendra Zoological Gardens, Mysore, Karnataka.

Inbreeding and overcrowding of deer and antelopes is a major problem in most of the zoos. Vasectomy is preferred to castration in deers and antelope, as they are sexually dimorphic. Animals above 1 year old were selected for vasectomy and was successfully conducted in 24 black bucks, 17nilgais, 63 spotted deers and 7sambar deers. Chemical restraining was done by darting xylazine hydrochloride + ketamine hydrochloride combination in black buck and spotted deer. In nilgais and sambar deers Immobilon LA + xylazine hydrochloride combination was used. Surgical approach was through separate incision on caudo-dorsal aspect of scrotum. After ligation and incision of vas-deference the wounds were closed with absorbable sutures like catgut and Vicryl. Antidotes were administered for smooth and complete recovery from anesthesia. Long acting antibiotics were administered and animals were isolated in a separate enclosure for observation. No post-operative complications and causalities were seen.



ZWS-29 Surgical Affections of Musculo-Skeletal System of Camels (*Camelus dromedarius*): Head, neck and thoracic region

J.A.Quazi

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Present study was done in the Clinics of department of Veterinary Surgery and Radiology and 32 cases of musculo-skeletal affections of head, neck and thorax which were diagnosed on the basis of history and clinical examination. These were treated on the general principle of management which included application of plaster of Paris cast using iron or wooden splint, interdental wiring using copper wire, operative procedures, wherever, required and medicinal or surgicotherapeutic treatment. The occurrence of surgical affections of musculo-skeletal system of head/ neck and thoracic region was 53.13% and 46.87%. The Ca, P, Vitamin A and Vitamin E values in all cases were found lower than the reference values for their parameters in camels. However, the values of CPK and ALP were found higher than the reference values for their parameters in camels.



AVIAN SURGERY SESSION

Date : 10.12.2010 Time : 9.00 am

Venue : Committee Room

Chairman : Dr. Deepak Patil

Rapporteur : Dr. Dilip Kumar

LEAD PAPER

Diagnostic Aids and Anaesthetic Management in Avian Surgery

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The immense growth in the pet bird industry and the increased interest and advances in captive breeding and aviculture have placed immense pressure on the Veterinary profession to keep up with the demand for services. To meet the needs currently there is demand for expertise in avian medicine and surgery. Avian surgery is still in its infancy and hence it is highly fitting to have a separate scientific session on this demanding field.

Apart from routine clinical examination, a avian surgeon uses number of aids to diagnosis, like Haematology, Blood Chemistry, Serology examination, Microbiological investigations, diagnostic cytology, Histopathology, and other important diagnostic tools like radiography, Laparoscopy, ultrasonography, CT and MRI.

Radiography

As birds tend to show hardly any specific clinical symptoms and as the number of diagnostic methods is limited in most pet birds, radiography is even more important than in mammalian medicine. It is a fast and useful, routinely performed aid to diagnose abnormalities of the skeleton, but also of the inner organs.

Restraint

Although often performed under isoflurane anaesthesia, radiography may be routinely carried out without anaesthesia without problems in most birds, having the conscious bird restrained on a radiolucent plate. The head is fixed with a special head clamp positioned over the bird's neck; the feet are fixed by foot straps; the wings are restrained with tapes or weights.

Sedation or general anaesthesia may be necessary in very excited birds, for example wild birds; however, this is not required for routine radiography in birds accustomed to human contact.

Manual restraint is required in very sick birds likely to suffer from shock and in large birds weighing more than 2kg.

Positioning

Radiographs, to be of maximum diagnostic value, a true ventro-dorsal and exact latero-lateral position of the patient should be obtained. This is tedious and needs meticulous assessment by the operator to judge by sight and touch that in the VD position the sternum overlies the vertebral column. Furthermore, in order to avoid superimposition, the legs should be stretched as far as possible caudally and the wings stretched outwards away from the body. In the true latero-lateral position the two hip joints and the two shoulder joints should overlap. The wings must be held dorsally above the body using tapes or weights and the legs need to be stretched caudally as far as possible.

Films and exposure factors

One of the greatest problems in the radiological examination of birds is the loss of sharpness due to movement and high respiratory rates. Therefore the maximum exposure times should be 0.015-0.05 seconds or less. In radiography of most pet birds the kVp 45-55, FFD 100 cm, mAs 8-10, high definition film / screen combination should be used.

Interpretation

Many diseases are multi systemic, so that it is a good policy to get into the habit of examining whole body radiographs in a systemic manner. One should start with the external outline and work inwards,



so that each organ system can thus be considered in detail. A common fault is to fix attention on an obvious lesion and to miss less apparent abnormalities.

The use of contrast media

There are positive (Barium or iodine compounds) and negative (air) contrast media. The most common are barium compounds for demonstration of the GI tract. No anaesthesia should be used. When perforations are suspected, organic non-ionic iodine compounds (10mg/kg B.wt of a 250 mg iodine/ml solution) may be administered, transit time being much faster in this instance. Barium sulphate suspension (20 ml/Kg B.wt of a 25.45% suspension) is infused into the crop by an oesophageal tube. After the administration, the bird should be held in an upright position for a few minutes in order to avoid regurgitation of the suspension. On an average the barium will reach the proventriculus and gizzard within 5 minutes, be in the small intestine within 30 minutes and will reach the cloaca in about 3 hours.

Barium sulphate suspension or iohexol or iopamidol can also be used retrograde to outline the cloaca and rectum.

Furthermore the double contrast technique (10 ml/kg air followed by 10 ml/kg positive contrast medium orally or cloacally) is useful for the examination of the wall of the GI tract.

Laparoscopy

This technique was first used in birds to determine the sex (Surgical sexing). However, apart from direct usual inspection of avian gonads, it is also possible to evaluate the state of many of the other organs. It is possible to see much of the kidneys, the adrenal glands, and the posterior surface of the lungs, the heart, the liver, the proventriculus, the gizzard and the intestines. It is also easy to see parts of the air sac system. It is therefore a useful tool to aid in diagnosis of many conditions.

Ultrasonography

This is especially useful in complementing imaging information gained by radiography. The ultrasonographic examination of birds requires electronic probes with small coupling surfaces (micro curved or phased array probes) with examination frequencies of at least 7.5 MHz. Best results are obtained using scanners developed for human paediatric medicine as well as for operative or gynaecological use. The birds should have a more or less empty GI tract and anaesthesia is commonly not necessary. The patient may be held manually in dorsal or lateral recumbency or better in an upright position. Despite limiting factors (small size, limiting coupling possibilities) it has become a valuable and important diagnostic tool.

Computed Tomography

It is a quick method for the examination of the avian skeleton particularly spine and skull, but also of soft tissues and the lungs. A Computed Tomography examination may be indicated in patients with CNS symptoms, respiratory diseases or with swellings of tissues of unclear aetiology. Urography, sinography and angiocardiology using iodine contrast media are also possible.

Magnetic Resonance Imaging

MRI is best used for the visualization of different structures of the CNS, abnormalities in soft tissues and tumours. It needs anaesthesia in every case. In very sick patients CT may be superior.

Anaesthesia

Before selecting an anaesthetic the practitioner should take into account the reasons for its use. Perhaps the main indication is to produce chemical restraint (Hypnosis and restraint) or for abolition of painful stimuli (Analgesia) or to achieve muscle relaxation required during surgery or for relief of fear and anxiety in the bird. Hence an anaesthetic technique should be chosen which goes some way in combining all the above mentioned requirements of anaesthesia and often this can only be achieved by using a balanced combination of drugs.



Suggested precautionary measures

1. Whether employing an injectable or volatile anaesthetic agent, always administer oxygen.
2. It is safer to have too high a rate of flow of oxygen than one that is too low.
3. Make sure the respiratory rate is not reduced too much and maintain as light a plane of anaesthesia as is possible.
4. It is safer to use IPPV either manually or with mechanical ventilator.
5. If possible use lateral recumbency
6. Use some means of maintaining body temperature
7. Do not make the bird too wet during pre-operative preparation. Keep the operating table top dry. Maintain a comfortable high operating room ambient temperature.
8. Have a long piece of capillary tubing or a syringe with an attached piece of catheter ready to aspirate any mucus blocking the air way.
9. Avoid using atropine for premedication since it has a tendency to increase the viscosity of mucus, it may inhibit the PaCO_2 chemoreceptors and it may lead to respiratory depression.
10. Do not stretch the wings out too tightly
11. If the bird is in light anaesthesia movement of thorax may be restricted.
12. Use fluid therapy if the bird is anaesthetised for any period longer than, ten minutes. Use 0.1 ml of lactated Ringers i.m. every ten minutes or for larger birds 1ml/kg per hour given i.v. or intraosseously.
13. For birds weighing more than 1 kg withhold food for 12 hours before anaesthesia. For those between 300 G and 1 Kg - 6 hours and 100-300 G 3-4 hours. For birds below 100 G do not withhold food at all.

Whenever possible and when practical the anaesthetised bird should be monitored and the operator should not rely entirely on human senses, which may not detect subtle changes in the patient's physiological state rapidly enough.

Local analgesia

Indications for the use of local analgesia as a local nerve block, together with a sedative, are most often likely to be used in the field for treating the larger birds where GA may not be very practical. When combined with low dose butorphanol (0.5 mg/kg) it is even more effective.

Lignocaine hydrochloride 2% is quite safe in all but very small birds, which are easily over-dosed. For a 30g bird 0.3 ml would be fatal. It is always safer to dilute the 2% solution to produce a 0.5% solution and the injection should always include adrenaline to limit the rate of absorption. In birds over two kg, 1-3 ml and in a pigeon sized bird (400 mg) up to 1 ml can be safely used. Maximum dosage rates are 1.0 – 4.0 mg/kg administered s.c. or i.m. Lignocaine ointment may be used sparingly around the vent after a cloacal prolapse.

Procaine hydrochloride 2%. It has narrow safety margin. Hence the 2% preparation is best diluted to produce a 0.2% solution when 1-2 ml /kg can safely be used.

General anaesthesia

In most cases, butorphanol (1mg/kg) is a useful pre-anaesthetic. It reduces the doses of anaesthetic used and provides good post-operative pain relief.

Assessing the depth of GA can be difficult and although it is convenient to classify GA into light, medium and deep planes, the response of the individual bird to the stimulation of various reflexes shows considerable variation.

The anaesthetist should diligently observe the depth rate and pattern of respiration, noting any sudden changes. The aim should be to maintain the patient in light to medium depth anaesthesia in which the response to stimulation of the cerebrum, possibly the wattles or the comb and the cloaca together with the surrounding skin is just abolished or is sluggish. Punching the inter digital web of the foot or the under surface of the foot produces a variable and unreliable response. The eyelids may be closed but the corneal reflex, indicated by the nictitating membrane sliding obliquely across the eye, should be



sluggish but never entirely lost. If there is no corneal reflex the bird is too deep. Obviously, if righting reflexes are not completely abolished the plane of anaesthesia is too light.

Injectable general anaesthetics : It is mandatory that the bird must first be weighed accurately to enable precise computation of the dose.

Alphaxolone / alphadolone: It is used widely both by i.v. and i.m. and also intraperitoneally. The drug is safe for most raptors when given at the rate of 10 mg/kg i.v.

Propofol: It is rapidly metabolised and gives a very short period of anaesthesia having a narrow safety margin. Hence, its use in birds even as an induction agent is not very practical.

Ketamine: It produces a cataleptic state and has been widely used in birds both by itself and in combination with synergistic drugs. It has no analgesic effect. It is both a cardiac and respiratory depressant. In almost all species when given i.m. it produces anaesthesia in approximately 3-5 minutes and lasts about 10-35 minutes. It is now rarely used as the sole anaesthetic agent.

Ketamine and acepromazine : Add 1 ml of ACP containing 10 mg to a 10 ml vial of Ketamine containing 100 mg / ml. The dose of ketamine is then calculated at 25-50 mg/kg without taking into account the ACP in the vial. The bird is therefore receiving a dose of ACP of 0.5-1.0 mg/kg. However like ketamine ACP induces bradycardia and is not recommended.

Ketamine and diazepam (or midazolam) : Ketamine 20-40 mg/kg with 1.0 – 2.0 mg/kg of diazepam i.m. ostrich: Ketamine (2-5 mg/kg i.v.) with diazepam (0.2 – 0.3 mg/kg i.v.)

Ketamine and xylazine : This combination is best used on a wide range of species and it to be safe and effective.

The dose is 20 mg/kg of ketamine and 4 mg/kg of xylazine i.m. Induction is complete in 5-7 minutes and anaesthesia lasts 10-20 minutes and birds are usually standing and able to perch in 1-2 hours. There is in coordination and sometimes a little excitement during recovery so that it is best to roll the bird loosely in a sheet of paper towel.

Xylazine : When used by itself in doses of 10 mg/kg i.m. produces narcosis but not true anaesthesia. It is not a particularly safe drug to use by itself. The effects can be reversed by yohimbine.

Medetomidine : It is more potent, but it has wider margin of safety than xylazine. Like xylazine it is best used in combination with ketamine and is given i.m. It is useful in swans and other waterfowl (Medetomidine 100- 200 µg/kg i.m. and ketamine 10 mg/kg i.m.). After induction of anaesthesia with the above combination, anaesthesia can be maintained with very low doses (0.5 – 1%) of isoflurane.

Antipamezole : It is a selective alpha 2 adrenergic receptor antagonist which reverses all the sedative, analgesic cardiovascular and respiratory effects of both medetomidine and xylazine at the same dose as the previously administered medetomidine.

GA using volatile anaesthetics: Volatile anaesthesia can be induced using an anaesthetic chamber or directly from a mask, with an anaesthetic machine. It is safer to use a non rebreathing semi- open circuit, such as an Ayre's T-piece, modified Rees or a mini-Bain.

The use of a mask may be the only practical way of maintaining small birds on volatile anaesthesia. Suitable masks can be made by cutting the base of a small plastic bottle or by adapting various sizes (10-60 ml) of plastic syringe case. If the plastic is transparent then the bird's eye can be seen during anaesthesia. To make a better fit the open end of the face mask can be covered with a latex surgical glove held in place by an elastic band and this can then be pierced for insertion of the birds head / beaks.

Isoflurane

It is by far the safest anaesthetic to use in avian practice. The method generally used for most birds is to induce with 5% isoflurane in a flow of oxygen of just over 2 litres. When light anaesthesia is achieved (usually 2-3 minutes or less) the level is maintained at 1.5 – 3%.



Anaesthetic emergencies

Apnoea

Doxapram at the rate of 7 mg / kg (0.3 ml / kg) is indicated. This can be diluted 1:3 and given to a large bird by slow i.v. injection or i.m. injection. In small or medium sized birds it can be dropped into the mouth so that it is absorbed through the mucous membrane. Have the syringe already loaded before starting anaesthesia in case an emergency occurs.

Depression of the respiratory rate during a long period of anaesthesia

Stop the operative procedure. There may be build up of PaCO₂. Increase the oxygen flow rate and gently artificially ventilate to wash out anaesthetic from the air sacs.

Cardiac arrest

Cardiac arrest usually occurs sometime after respiratory arrest. The practitioner can try intermittent digital pressure on the sternum or intracardiac injections of adrenaline (0.1 mg/kg) or adrenaline i.v or intraosseously. Direct cardiac massage may be tried but is not usually successful.

Suggested anaesthetic routines

Short procedures (10 minutes)

Isoflurane administered in a gas flow of 100% oxygen is the best for all species. In large birds always consider whether local anaesthesia plus sedation (low dose ketamine + Midazolam + Xylazine or medetomidine) may be more applicable. To control post operative pain give butorphanol (1mg/kg) before administering the anaesthetic.

Prolonged anaesthesia (up to an hour or more)

Before induction give butorphanol (1mg/kg). Anaesthesia is then induced with a mixture of ketamine and medetomidine (or midazolam) given i.m. and the bird is maintained on 0.5 – 1% isoflurane given in 100% oxygen.

Always flush out the anaesthetic circuit with oxygen every 5 minutes. Have a drip line inserted into a vein or better intraosseously once anaesthesia has been induced and before the operation is started. Give Lactated Ringer's solution 10 ml / kg/hr.

Recovery

Do not disconnect the bird from the oxygen supply before there are signs of recovery with slight jaw movement. During the whole recovery period it is best if the bird is gently held upright, wrapped in towel.

Some useful websites

www.ecams-online.org

www.aawv.net

www.eaav.org

www.harrisonsbirdfoods.com

www.karlstorz.com

www.endoscopy.com

www.dremel.com

www.pathology.med.miami.edu

www.ifeber.com

www.vetark.co.uk

www.f10biocare.co.uk

www.homeslead.com

www.plos.org

www.ijis.sgmjournals.org

www.toxsci.oxfordjournals.org

www.vts.intute.ac.uk

www.en.wikipedia.org

There is no completely safe anaesthetic method for birds and it is always risky whatever may be the species of bird.



AVS-1**Successful surgical management of crop injury in a pigeon****Amita Singh and Shive Prasad**

Department of Animal Husbandry, UP Rural Institute of Medical Sciences and Research, Saifai, Etawah-206301(U.P)

A young pet pigeon weighing 300 Gms was presented with a history of mongoose bite over the crop region last night. Clinical examination revealed extensive rupture of the crop resulting in the stored feed (barley) coming outside. There was also skin laceration over the neck area. The pigeon was anaesthetized using ketamine @30mg/kg IM (Neal, L.A. 1981) in pectoral muscles of the bird using tuberculin syringe. No salivation or excitement was recorded. The operative site was prepared by clipping feathers and swabbing with povidone iodine. Inner surface of crop was washed thoroughly with the help of normal saline for removal of feed to prevent contamination. The edges of torn crop were freshened with the help of surgical blade. Double rows of Cushing suture were applied for closure of wound in the crop. Then simple interrupted suture was applied on the skin over the top of the crop as well as over the neck area. Antibiotic powder sprinkled in the wound while suturing. The surgery was completed within half an hour. Inj. Meloxicam 0.2 ml IM was administered just after completion of operation. Antiseptic dressing was done with povidone iodine. Post operatively fluid therapy, antibiotic, antihistaminic, analgesic and Multivitamin for 5 days was given. Feeding was withheld for 24 hrs. Liquid diet was started after 24 hrs. and semisolid diet after 36 hrs. The animal took feed and passed faeces normally. After 5th day the animal was given Syp. Vimeral 1 drop PO once daily for 15 days. On 8th day, the skin sutures over the neck and on 10th day the skin sutures over the crop region were cut after complete healing. An uneventful recovery was seen and the bird returned to normal health.

AVS-2**Surgical management of Necrosed wing in a peacock****A. Kumaresan, S. Dharmaceelan, S. Kathirvel, K.K. Ponnuswamy, R. Ezakieal Napoleon and N. Rajendran**

Department of Clinics, Veterinary College and Research Institute, Namakkal

A Peacock weighing 1 kg rescued by the forest department, Namakkal was brought to the Veterinary College and Research Institute teaching hospital with the history of broken left wing. Clinical examination of the left wing revealed open fracture of distal shaft of humerus with septic wound. Since the wound was septic and foul smelling at the fracture site, it was decided to perform the amputation of the wing. The cocktail administration of diazepam (1mg) and Ketamine (10mg) intramuscularly was found effective throughout the procedure of amputation of wing. The bird was recovered uneventfully.

AVS-3**Surgical Management of Tarso-metatarsal Fracture in an Emu Bird****Indramani Nath, Subharaj Samantara and Biranchi Narayan Mishra**

Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Orissa University of Agriculture and Technology, Bhubaneswar - 751 003, Orissa, India.

An Emu bird of 3 months old with tarso-metatarsal fracture was presented to the Surgery department. The bird was tranquilized with 5mg of xylazine hydrochloride and 50mg of ketamine hydrochloride by *iv* m administration. IITV examination revealed oblique incomplete fracture of right tarso-meta tarsal. The fracture was reduced with 4mm K-wire under the guidance of IITV. Betadine solution was poured over the fractured site. The limb was additionally supported with 4 bamboo splints adhered with micropore and cotton with sufficient padding. 50ml of DNS was administered *ivly* in the jugular vein and was revived with 0.1ml of yohimbine hydrochloride. Post-surgically the bird was administered with Orcal-P granules and meloxicam suspension and Ceff solution orally. The bird showed normal ambulence after 15days.

AVS-4**Role of Alternative Medicines in Avian Wound Management Surjit Singh Makker, Veterinary Officer, PAHS-1**

The majority of avian wounds are older than 4-8 hours and/or contaminated by the time they present for treatment. Most soft tissue healing is therefore by second intention. Here rapid rehabilitation back to the wild is our key objective. Topical use of Calendula has been shown to stimulate epithelialisation



and collagen synthesis for wounds in granulating avian wounds to further speed healing. During the period from 1-04-2009 to 31-03-2010, we are presented with following no of cases and given treatment.

AVS-5

Surgical management of Cloacal Prolapse and laceration of Urodeum in an adult Goose

S.Thilagar and Nor Alimah

Tamilnadu Veterinary and Animal Sciences University, Madhavaram Milk Colony Chennai-7

A 6 month old Goose weighing 4.2 kg was presented to the University Hospital with a protruding mass

Condition & Cases Presented	Homeopathic Remedy	Comments
Beak Injuries(8)	Arnica30 + Ruta grav.30	Arnica suits particularly injuries to soft parts, such as accompany fractures, dislocations, bruises, ecchymoses. Ruta is for Injury to periosteum and bones
Head and Scalp injuries (12)	Arnica 30 +Bellis p30	Bellis p30; is for Injury of deeper tissues; sprains and bruises, Given every 2 hours for the first 2-3 days will help heal shock, bruising, trauma, and swelling.
Barbed wire injuries(11)	Arnica30 + Ruta 30	The wound was closed with simple interrupted absorbable sutures (3/0) and Calendula lotion Applied. Ruta is given for old sprains, bruised pains in bones.
Caught-by-Cat Flesh Wounds-9	Calendula 30 + Hypericum 30	Bite wounds are cleaned and flushed with hypericum lotion. Flushing may need to be repeated. Puncture wounds can be left open to drain but lacerations be dressed.
Dog Bite wounds, (14)	Arnica30 + Ruta 30	Arnica helps stop bleeding, aids the healing of wounds, reduces bruising and muscular pain from sprains, It should be given for a day before and after surgery..
Power Cable Injuries (11)	Arnica + Urtica .u + Carbolic 30	Arnica has a great power of delaying and preventing upuration, urtica urens30 is for burns confined to skin and carbolic acid 30 is for burns tend to ulcerate.
Keel Wounds (3)	Arnica30	Treatment will only be successful if the underlying problem is properly addressed. Arnica aids the healing of wounds, reduces bruising and muscular sprains.
Carpal Injury (7)	Arnica30+Rhus Tox30	Rhus tox is especially to injuries of the ligaments; it is probably our best remedy in sprains due to over-exertion. Sprains of single or groups of muscles.
Foot Injuries (4)	Arnica30 + Ledum pal 200	Ledum pal is best for Punctured wounds, also wounds of parts where the cellular tissue is involved. It has proved useful in mosquito bites, insects bites and stings
Bumblefoot (2)	Arnica30 + Staphisagria 30	Staphisagria remedy suits clean cut wounds and symptoms traceable to surgical operations, Calendula lotion applied, sutures were removed after 12 days.

from the Vent. The problems was persistent since three days and managed by local veterinarian. The bird was active and alert. On examination of the vent area it revealed that protruded mass was part of Urodeum and Proctodeum of the Cloaca. Lacerations were also observed in the dorsal roof of the Urodeum, near the oviduct opening and in-between the opening of the ureters. The laceration were 0.5.cm to 1.0 cm in length .Severe inflammation of the cloacal mass noticed. On cloacal examination and palpation of the Oviduct , no retained egg could be palpable. The bird was induced with Face mask inhalation of 3.0% Halothane and surgical anesthesia was maintained by 1.5% Halothane anesthesia.



The lacerated area was cleaned aseptically and the openings of Ureters , Proctodeum and Oviduct were protected by inserting a tube in-order avoid continuous leakage on the surgical field. After the suturing the lacerated wound using Vicryl 2-0 and the prolapsed mass was repositioned. The surgical time was 40 minutes approximately. The animal made an un-eventful recovery with-out any complication to the outlet of both ureters, oviduct. The physical examinations findings, radiographic findings and the surgical management will be discussed.

AVS-6 **Surgical correction of myxoma in a goose**

R.M.D. Alphonse, Balagopalan, T.P., Arul Jothi. N., Ramesh Kumar, B and R.Kumar
Department of Veterinary Surgery and Radiology, RAGACOVAS, Pondicherry

An adult male goose weighing around 5 kg body wt was presented at teaching hospital RAGACOVAS, Pondicherry with growth in the right leg . Clinical examination revealed extensive growth with ulceration at the ventral aspect of the first toe and the bird was showing difficulty in walking. Surgical excision of the mass was recommended. The bird was sedated by administering ketamine @ 50 mg/ kg body weight and excised mass through an elliptical incision. The skin was sutured with 2/0 cat gut. Histopathological examination of the excised growth was suggestive of myxoma. 100mg of Cephalaxine powder was given orally for 5 days and the sutures were removed on 10th post-operative day. The bird had an uneventful recovery.

AVS-7 **Successful surgical management of pericloacal hernia in a duck**

Ashwani Kumar, Shashi Kant Mahajan, Vandana Sangwan, Kiranjeet Singh and Narinder Singh Saini

Department of Veterinary Surgery and Radiology, College of Veterinary Sciences
Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana-141004, Punjab, India

A female duck aged 2 years, weighing 3.75 Kg was presented with a primary complaint of swelling in the pericloacal region, ventrally, since more than three months otherwise the bird was clinically normal. Palpation revealed hernial ring of about 5 cm rent with reducible contents. Radiographic examination done in lateral and dorso-ventral recumbency revealed calcified oval mass in the hernia sac. Bird was anesthetized with xylazine @ 1mg/kg and ketamine @ 15 mg/kg combination IM. Bird was anesthetized within 15 minutes. Endotracheal intubation was done and it was connected to oxygen and isoflurane mixture for maintenance of general anesthesia. The operative site was prepared aseptically. An elliptical incision was given on the swelling and careful dissection of the herniated tissue (rectum with fecal contents) was done to expose hernial ring which was closed by interrupted suture pattern using vicryl No. 1-0. Postoperatively, the bird was prescribed cephalixin for 7 days and nimusilide for 3 days along with antiseptic dressing daily for 10 days. Bird recovered uneventfully and sutures were removed after 10 days. On the telephonic follow up of nine months bird is apparently healthy.



LARGE ANIMAL POSTER SESSION

Date : 09.12.2010 Time : 10.00 am

Venue : Corridor

- LAP-1 Uncommon case of Horn Cancer with Nasal Polyp - A Case Study**
Raulkar R.V., Mehesare S.P., Khan K.M., and Mool P.A.
 Department of Suregry & radiology, Post Graduate Institute of Veterinary & Animal Sciences, Murtizapur Road, Akola.
- LAP-2 Hypospadias and atresia ani in a cow calf : A Case report**
Aubid Hussain, Anuradha Gupta, Raj Kumari and Kumar Kaushal
 G.B.Pant University of Agriculture & Technology, Pantnagar-263145 (Uttarakhand)
- LAP-3 Management of Corneal Ulcer in a Calf**
S. K. Jhala, V. S. Dabas, D. N. Suthar, C. F. Chaudhari and R. H. Bhatt
 Department of Surgery & Radiology, College of Veterinary Science & Animal Husbandry, Navsari Agricultural University, Navsari - 396 450
- LAP-4 Management of Intussusception in a Cow**
V. S. Dabas, S. K. Jhala, D. N. Suthar, C. F. Chaudhari, J. R. Ukani and Loveleen Vaz
 Veterinary Clinical Research and Experiential Learning Complex, College of Veterinary Science and Animal Husbandry, Navsari Agricultural University, Navsari – 396 450, Gujarat (INDIA)
- LAP-5 Successful Management of a Chip Fracture of the Mandible in a Desi Cattle**
Tripathi S.D., Lokhande D.U., Adsul P.B., Sarkate L.B., Jodumoni Kachari, Satyawani Agivale, Zenobia Chinoy
 Department of Surgery and Radiology, Bombay Veterinary College, Parel, Mumbai.
- LAP-6 Surgical Management of Congenital Contracted Flexor Tendon in a Cow Calves - A Report of Three Cases**
B.M. Gahlod, S.B. Akhara, V.S. Panchbhai, M.G. Thorat & Shalaka Salvekar
 Department of Veterinary Surgery & Radiology, Nagpur Veterinary College, Nagpur (M.S.)
- LAP-7 A Clinical Case of Histiocytoma of Lower Jaw in a Cross bred Cow**
B.M. Gahlod, S.B. Akhara, V.S. Panchbhai, B.P. Dandge, M.G. Thorat & Shalaka Salvekar
 Department of Veterinary Surgery & Radiology, Nagpur Veterinary College, Nagpur (M.S.)
- LAP-8 Innovative Tube Cystostomy for the Management of Bovine Clinical Cases of Obstructive Urolithiasis.**
J D. Parrah, B A Moulvi, S S Hussain, S Bilal, H Athar, M Singh FH Dedmari.
 Division of Veterinary Surgery and Radiology, Fisheries and Veterinary Science & AH, Shuhama, SKUAST-K
- LAP-9 Rhabdomyosarcoma of the Tongue in a Bullock**
A.K. Gangwar and Kh. Sangeeta Devi
 Teaching Veterinary Clinical Complex, C.V.Sc.&A.H., N.D.U.A.&T., Kumarganj, Faizabad-224 229 (UP)
- LAP-10 Surgical Management of Vulvar Squamous cell carcinoma in a Murrah buffalo**
M.O.Kalim, S. K.Tiwari, P. vishwakarma, B.A. Moulvi, R. Sharda and J. D. Parrah
 Division of Veterinary Surgery & Radiology, Faculty of Veterinary Science & A. H. Suhama, Alusteing, Srinagar (J&K)
- LAP-11 Management of Corneal Ulcer Using Third Eyelid Flap Technique in a Horse**
D. B. Patil, P. V. Parikh, Nisha Joy, S. K. Jhala, K. R. Mistry, Mehraj u din Dar, B. G. Prajapati and A. H. Pitroda
 Department of Veterinary Surgery & Radiology, College of Veterinary Science & Animal Husbandry, Anand Agricultural University, Anand - 388001



- LAP-12 Tubectomy as A Method to Prevent Future Conception and Dystocia in Goat**
S. Raja, T. Sathiamoorthy, S. Balasubramanian, S.A. Asokan, C. Veerapandian
 Department of Animal Reproduction Gynaecology and Obstetrics
 Madras Veterinary College Chennai -600 007
- LAP-13 Hyperplasia of Third Eyelid and its Surgical Management in a Buffalo**
Pallavi Verma, Tarunbir Singh, M. Raghunath, Navdeep Singh and J.Mohindroo
 Department of Veterinary Surgery and Radiology, GADVASU, Ludhiana-141004
- LAP-14 Successful management of omasocutaneous fistula with enteroepiplocele in a cow calf**
M. Raghunath, Navdeep Singh, J. Mohindroo, Pallavi Verma and T. Singh
 Department of Veterinary Surgery & Radiology, GADVASU, Ludhiana
- LAP-15 Successful Surgical Management of Avulsion Fracture of Tuber calcis in a Bullock**
S.K.Mahajan, K.Singh, M. Raghunath, V.Sangwan, A.Kumar and N.S.Saini
 Department of Veterinary Surgery & Radiology, GADVASU, Ludhiana
- LAP-16 Hard Fibroma in a Cow**
G. Vani.
 Veterinary Assistant Surgeon, Veterinary poly clinic, Chittoor-517001
- LAP-17 Clinical evaluation of prolene and silk for oesophageal mucosal suturing in buffaloes affected with choke(2007 to 2010)**
D.Dilipkumar and B.V.Shivaprakash
 Department of Surgery and Radiology, Veterinary College ,KVAFSU,Bidar-585 401
- LAP-18 A clinical case of Nasal polyps in a non-descript bullock**
Dr Hemant Kumar, Dr Dipti kiran, Dr Sanjit Kumar
 Dist Vety Hospital, Dist- Jashpur (C.G.) Veterinary Asst. Surgeon(VAS), Deputy Director of Veterinary Services, Jashpur (Dist), Chattisgarh)
- LAP-19 Surgical Correction of A Huge Ventral Hernia in an aged Holstein-Friesian Cow using Prosthetic Mesh**
M. P. Baishya, K. K. Sarma, Sanju Kynjing and Manav Sharma
 Department of Surgery & Radiology, CVSc, AAU, Khanapara, Guwahati-781 022
- LAP-20 Surgical Correction of Oesophgeal Dilatation in a Pregnant Cow : Cinical Case Report**
Vikash Kumar
 KVK, Kaimur, Bihar
- LAP-21 Use of Foley's Catheter During Treatment of Urinary Fistula in a Cow: A Case Report**
Vikash Kumar and S.P. Sharma
 KVK, Kaimur, Bihar,
- LAP-22 Treatment of Atresia ani et Recto-Vaginal Fistula in a Crossbred Calf: A Clinical Case Report**
Vikash Kumar and S.P. Sharma
 KVK, Kaimur, Bihar,



- LAP-23 Perineal Urethrostomy for the Management of Urethral Rupture in a Kid**
George Chandy, Dinesh P.T., Sooryadas S., Indu B., Panicker Sneha Surendra, Meera Ben Vackachan, Rincy Theresa and Devanand C.B., Dept. of Surgery and Radiology, COVAS, Pookot, Wayanad, Kerala
- LAP-24 Rehabilitation of a Cow with a Partially Severed Forelimb with an Acrylic Prosthetic**
George Chandy, Arun Mohammed and John Martin K.D.
 Dept. of Surgery and Radiology, COVAS, Pookot, Wayanad, Kerala
- LAP-25 Surgical Management of Atresia ani and Polymelia in a Buffalo Calf**
Nagaraja, B.N. and Ramesh Rathod
 Department of Veterinary Surgery and Radiology, Veterinary College, Bangalore-24
- LAP-26 Vulvar neoplasm in a crossbred H.F. cow**
Amit A. Patil, Shashank C. Kulkarni, J. C. Pathak, Kadarhbai
 K.N.P.College of Veterinary Sciences, Shirwal, Dist-Satara, Maharashtra
- LAP-27 Surgical Management of Enterolith in a Horse: A Case Report**
Ramesh Rathod, Mahesh V, Vishal B.N. and L. Ranganath
 Department of Veterinary Surgery and Radiology, Veterinary College, Bangalore
- LAP-28 Surgical Management of Thoracic Oesophageal Choke in A Calf**
K.M. Srinivasa Murthy, Ramesh Rathod and L. Ranganath
 Department of Veterinary Surgery and Radiology, Veterinary College, Bangalore
- LAP-29 Surgical Management of Tibial Fracture in Gir Calf By Typeii External Skeletal Fixation**
V. Mahesh, K. M. Srinivasamurthy, D. R. Manjunatha, N. Nagaraju and L. Ranganath.
 Department of Veterinary Surgery and Radiology, Veterinary College, Bangalore- 24
- LAP-30 Stainless steel wiring for management of bilateral mandibular fracture in a buffalo**
Madhu. D. N., Irawati Sarode, S. W. Monsang, J. Singh, A.C. Saxena and A. M. Pawde
 Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122
- LAP-31 A clinical survey on wound affections in animals and its therapeutic management**
Madhu. D. N., Irawati Sarode, J. Singh, S.W. Monsang, A. M. Pawde, Amarpal, P. Kinjavdekar and H. P. Aithal
 Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122
- LAP-32 Successful surgico-chemotherapeutic management of basal cell carcinoma involving neck in a bullock**
Raju Sharda, Narendra Naik, Neelu Gupta, Deepak K Kashyap and Dilip Kumar
 Department of Veterinary Surgery & Radiology, College of Veterinary Sciences & Animal Husbandry, Anjora, Durg (C.G)
- LAP-33 Rupture of Prepubic Tendon In a Cow- A Case Report**
S. Kokila, R.V.Suresh Kumar, P.Veena, N.Dhanalakshmi and P.Sankar
 Department of veterinary surgery and radiology, College of Veterinary Science, Sri Venkateswara Veterinary University, Tirupati - 517 502 (A.P), India
- LAP-34 Non Penetrating Foreign Body Syndrome in Stray Cattle**
Chaudhary, P. S., Varshney J.P. and Deshmukh, V. V.
 Shri Surat Panjarapole Prerit, "Nandini" Veterinary Hospital, Surat – 395 001 (Gujarat)



- LAP-35 Traumatic Reticulopericarditis in a Cow and its Surgical Management**
Shiju Simon, M. B. Justin William, R. Sivashanker, S. Thilagar and R. Suresh Kumar
Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai -7.
- LAP-36 Cranial Meningocele in a Calf and its Surgical Management**
Shiju Simon, M., B. Justin William, S. Ayyappan, C. Ramani, Velavan and R. Suresh Kumar
Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai -7.
- LAP-37 Management of Multiple Tibial Fracture in a Cow Under field Conditions**
K. Shyam Prasad,
Veterinary Asst. Surgeon, Mantralayam, Kurnool Dt. Andhra Pradesh.
- LAP-38 Umbilical Hernia and Its Correction with Hernioplasty by using Nylon Mesh in a Cow Calf**
A. N. Zope, V.D. Kale, A.H. Ulemale, P.C. Zambre, S.V. Gaikwad
Department of Veterinary Surgery, KNP College of Veterinary Sciences, Shirwal, Maharashtra
- LAP-39 Unusual Complication of Castration in a Khillar Bull**
A.H. Ulemale, S.V. Gaikwad, A. N. Zope, S.C. Kulkarni, Y.B. Jadhav
Department of Veterinary Surgery, KNP College of Veterinary Sciences, Shirwal, Maharashtra
- LAP-40 Congenital disorders in dead calves delivered via caesarean section**
Jasmeet Singh, Madhu D. N., A. C. Saxena, A. M. Pawde and M. M. S. Zama
Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122
- LAP-41 Rectal prolapse in farm animals and its successful surgical management**
Jasmeet Singh, Madhu D. N., A. C. Saxena, A. M. Pawde and M. M. S. Zama
Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122
- LAP-42 Electrocardiographic values in crossbred Jersey neonatal calves with external congenital abnormalities**
M.R. Fazili, B.A. Buchoo, H.K. Bhattacharyya, Imran Khan and D.M. Makhdoomi
Sher-i-Kashmir University of Agricultural Sciences and Technology of Kashmir (SKUAST-K), Shuhama, Srinagar, Kashmir, 190006.
- LAP-43 Perineal hernioplasty using nylon mesh in a buffalo: A case report**
V. Malik, S. Purohit, D. Kumar, G. Kumar, P. Katiyar, R.P. Pandey, B. Singh and T. Singh
Department of Surgery and Radiology, College of Veterinary Science and Animal Husbandry, DUVASU, Mathura, U.P.
- LAP-44 Closed Metatarsal Fracture repair with Rush Nail in a Cattle Calf**
Deepesh Kumar, Gulshan Kumar, R.P. Pandey, Sanjay Purohit, Vivak Malik, Prabha Katiyar, P. Kumar
College of Veterinary Science and Animal Husbandry, UP Pt. Deen Dayal Upadhyaya Pashuchikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sanshan, Mathura
- LAP-45 Marsupialisation for the Treatment of Hydrometra in Bovins**
Jayakrushna Das, S. Nayak, I. Nath, T.K. Pattanaik, S. Das
Department of surgery, Orissa Veterinary College, Bhubaneswar-3
- LAP-46 Surgical Management of Salivary Fistula in Murrah Buffalo**
Rajneesh
Veterinary Officer, Government Veterinary Hospital, Garhmukteswar Ghaziabad



- LAP-47 Cervicotomy Approach for Dystocia Due to Imperfect Cervical Dilatation (ICD) In a Cow**
T.Sathiamoorthy, S.Balasubramanian, S.Rangasamy, S.Raja, S.A.Asokan, R.C. Sundara rajan
 Dept. of Argo, Madras Veterinary College, Chennai-600 007
- LAP-48 Laparo-rumenotomy for removal of Polythene mass in a male goat: A clinical case report**
Archana Kumari, Mithilesh Kumar, S.P. Sharma and Sucheta Sinha
 Dept. of Veterinary Surgery and Radiology, Bihar Veterinary College, Patna-800014, Bihar Agricultural University, Sabour Bhagalpur, Bihar
- LAP-49 Role of Ultrasonography in Diagnosis of Pericarditis in Cows**
S. Imran, S. P. Tyagi, Amit Kumar and Shivali
 Department of Veterinary Surgery and Radiology, DGCN College of Veterinary and Animal Sciences, CSK HP Agricultural University, Palampur, India
- LAP-50 Management of Osteomyelitis of Metatarsal in a Filly**
Mahendra Nagar, Lakhvinder Singh, Arun Sanadhya, B.R.Choudhary, M.Parashar, K.Kachwaha and T.K. Gahlot
 Department of Veterinary Surgery and Radiology, College of Veterinary and Animal Science, Rajasthan University of Veterinary and Animal Science, Bikaner-334001, Rajasthan
- LAP-51 Surgical Management of Proud Flesh on Medial Aspect of Thigh in a Mare**
Lakhvinder Singh, Arun Sanadhya, Jitendra Garhwal, Omendra Singh, Mahendra Nagar, K.Kachwaha, M.C.Parashar and T.K.Gahlot
 Department of Veterinary Surgery and Radiology, College of Veterinary and Animal Science, Rajasthan University of Veterinary and Animal Science, Bikaner-334001, Rajasthan
- LAP-52 Fibroma of Flank Region in a Bull**
Mrunali Kamble, S. U. Raut, A. D. Aher and B. N. Meshram
 Department of Surgery and Radiology, TVCC of College of Veterinary and Animal Sciences, Parbhani, MAFSU, (MS).
- LAP-53 Dystokia in a Buffalo : A Case Report**
B. M. Meshram, Mrunali Kamble, and Manisha Donekar
 Nagpur Municipal Corporation Dispensary, Mahal, Nagpur
- LAP-54 Surgical Removal of a Stone in Urinary Obstruction in a Bull : A Case Report**
Mrunali Kamble, S. U. Raut and B. N. Meshram
 Department of Surgery and Radiology, Nagpur Veterinary College, Nagpur, MAFSU, (MS).
- LAP-55 Darting Problems in Hippopotamus (*Hippopotamus amphibius*): A Case Report**
Indramani Nath, Subharaj Samantara
 Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Orissa University of Agriculture and Technology, Bhubaneswar - 751 003, Orissa, India.
- LAP-56 Deep Gluteal Abscess in a Zebra (*Equus burchellii bohmi*)**
Indramani Nath, Subharaj Samantara and Susen Kumar Panda
 Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Orissa University of Agriculture and Technology, Bhubaneswar - 751 003, Orissa, India.
- LAP-57 Management of Congenital Commissural Cleft in a Calf**
Satya Narayan Kar, Saroj Kumar Sahoo, Subharaj Samantara
 Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Orissa University of Agriculture and Technology, Bhubaneswar - 751 003, Orissa, India.



- LAP-58 Surgical correction of paraphymosis in an intact *Axis axis* male (Spotted deer)**
Powar, K.V., Tripathi S A
 Veermata Jijabai Bhosale Udyan-Zoo, Byculla, Mumbai-27
- LAP-59 Repositioning of pre and post partum utero-vaginal prolapse in cows and buffaloes**
Khante, G.S., Ganorkar.A.G., Gahlod, B.M., Salvekar, S.P.
 Nagpur Veterinary College, Seminary Hills, Nagpur
- LAP-60 Incidence of traumatic Injuries in the herbivores of Thrissur Zoo**
M.K.Narayanan
 College of Veterinary and Animal Sciences, Mannuthy
- LAP-61 Surgical correction of Descemetocoele with conjunctival flap in a cow**
Arul Jothi, N., T.P.Balagopalan, R.M.D. Alphonse and B. Ramesh Kumar
 Department of Veterinary Surgery and Radiology
 Rajiv Gandhi College of Veterinary and Animal Sciences, Pondicherry
- LAP-62 Rectovaginal Fistula in a Mare**
S.Dharmaceelan, S.Senthilkumar, A.Kumaresan, S.Kathirvel, K.Jayakumar and N.Rajendran
 Department of Veterinary Surgery and Radiology, Veterinary College and Research Institute,
 Namakkal, Tamilnadu - 637 002
- LAP-63 Surgical Correction of the Perineal Hernia in a Buffalo**
Anil S. Patil and B. R. Balappanavar
 Veterinary Hospital, College of Agriculture, University of Agricultural Sciences, Dharwad-580 005,
 Karnataka
- LAP-64 Management of oral ulcer in an Elephant (*Elephas maximus*)**
K. Coumarane and M. Dominic Savio Jegam
 Department of Animal Husbandry and Animal Welfare, Puducherry – 605 001.



SMALL ANIMAL POSTER SESSION

Date : 09.12.2010 Time : 2.00 pm

Venue : Corridor

- SAP-1 Colopexy for the treatment of recurrent complete rectal prolapse in a male Pug dog**
Amarpal, Jasmit Singh, Abhishek Chandra Saxena, P. Kinjavdekar, H.P. Aithal, A.M. Pawde and D. Madhu
 Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122 (UP)
- SAP-2 Recovery of a non-metallic foreign body from shoulder region of a dog**
R N Chaudhary, Kuldeep Singh, A K Pandey, Satpal and Vikash singh
 TVCC (COVS), CCS HAU, Hisar
- SAP-3 Basal cell carcinoma in a dog**
R N Chaudhary, Deepika Lather, Vikash singh and Satpal*
 COVS, CCS HAU, Hisar
- SAP-4 Clinical and surgical evaluation of the connective tissue neoplasm in dogs.**
Pooja Arya, B.P.Shukla & Rayes Ahmed
 Department of Veterinary Surgery and Radiology, College of Veterinary Sciences & A.H Mhow.
- SAP-5 Surgical Excision of Hemangioma of Spleen with Electro-cautery in a Dog.**
B.P Shukla, Rayees Ahmad and Pooja Arya¹
 Department of Veterinary Surgery and Radiology, College of Veterinary Sciences & A.H Mhow - 453446.
- SAP-6 Adult type rhabdomyoma in a male albino rat**
Amita Singh, Shive Prasad and H.H.Sipai
 UP Rural Institute of Medical Sciences and Research, Saifai, Etawah-206301(U.P)
- SAP-7 Surgical Management of an Extensive Case of pyometra in a Boxer Bitch**
S.K.Tiwari, S.Roy, K.K.Gurmita, Dilip Kumar, Narendra Naik & Deepak Kashyap
 College of Veterinary Science & A.H. Anjora, Durg (Chhattisgarh) (I.G.K.V, Raipur)
- SAP-8 Canine Rheumatoid Arthritis in Lucknow - A Case Report**
A.K. Srivastava¹; Vineet Kumar Yadav²; Saurabh Chaturvedi³; Sangeeta Srivastava⁴; Ashish Srivastava⁵ and Neeraj Sinha⁶
 Director¹, Surgeons^{2,3,4}, Physician⁵, Pet Aid Center, Indiranagar, ⁶Deputy Director, Central Drug Research Institute, Lucknow, U.P., India.
- SAP-9 Free-Radical Status of Aqueous Humour of dogs with Co-Existent Cataract and Ocular Hypertension**
Sooryadas, S., V. Leela, C. Ramani, B. Justin William, Geetha Ramesh and R. SureshKumar
 Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai - 7.
- SAP-10 Observations on the Phacoemulsification Parameters of Cataractous Hypertensive Eyes of Dogs**
Sooryadas, S., C. Ramani, B. Justin William, Geetha Ramesh and R. SureshKumar
 Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai - 7.
- SAP-11 Visual Function Scores for Assessing Vision in Dogs Following Phacoemulsification Cataract Extraction**
Sooryadas, S., C. Ramani, B. Justin William, Geetha Ramesh and R. SureshKumar
 Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai - 7.
- SAP-12 Splenic haematoma and its surgical management in a bitch: A case report**
R.S.Bisla, Harpreet Singh and S.S. Chaudhri
 Veterinary Unit Substation TVCC, CCS, Haryana Agricultural University, Regional Research Station, Karnal-132001



- SAP-13 Surgical Management of Chondrosarcoma in a German Shepherd Dog – A Case Report**
S.B. Akhare, B.M. Gahlot, M.G. Thorat, V.S. Panchbhai, B.P. Dandge, S.V. Upadhye & M.S. Dhakate
 Department of Veterinary Surgery & Radiology, Nagpur Veterinary College, Nagpur (M.S.)
- SAP-14 Surgical and Chemotherapeutic Management of Malignant Melanoma in Dogs - A Case Report**
B.P.Shukla, Pooja Arya and Rayes Ahmed
 Department of Veterinary Surgery and Radiology, College of Veterinary Sciences & A.H Mhow
- SAP-15 Treatment of Bilateral Inguinal Hernia in a bitch**
Deepshikha Das, Mridupawan Baishya and K. K. Sarma
 Department of Surgery & Radiology, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati 781 022, Assam
- SAP-16 Surgical removal of multiple cystic calculi in a Spitz dog**
M.O.Kalim, S. K.Tiwari, P. vishwakarma, B.A. Moulvi, R. Sharda and J.D.Parrak
 Division of Veterinary Surgery & Radiology, Faculty of Veterinary Science & A. H. Suhama, Alusteing, Srinagar (J&K)
- SAP-17 Cadaveric Canine Femur Fractures and their Stabilization with Tie-in Configuration Technique: An Ideal Training Model**
H. S. Vedpathak, P. H. Tank, A. S. Karle, Ami Bhatia and B. D. Desai
 Department of Veterinary Surgery and Radiology, College of Veterinary Sciences and Animal Husbandry, Anand Agricultural University, Anand-388 001, Gujarat, India.
- SAP-18 Cadaveric Canine Tibial Fractures and their Stabilization with Ilizarov Technique: An Ideal Training Model**
Ami Bhatia, P. H. Tank, C.C.Wakenkar, H. S. Vedpathak, A. S. Karle, and B. D. Desai
 Department of Veterinary Surgery and Radiology, College of Veterinary Sciences and Animal Husbandry, Anand Agricultural University, Anand-388 001, Gujarat, India.
- SAP-19 Diagnosis and Surgical Management of Ovarian Bursal Haematoma in a Female Dog**
Tarunbir Singh M. Raghunath, Navdeep Singh, J. Mohindroo and Pallavi Verma
 Department of Veterinary Surgery & Radiology, GADVASU, Ludhiana
- SAP-20 An unusual case of Myxoid stromal ovarian tumor in a dog - A case report**
B.P.Shukla, Pooja Arya and Rayes Ahmed
 College of Veterinary Sciences & A.H., Mhow
- SAP-21 Surgical management of an unusual case of mesenteric tumour in a dog**
A.Kumaresan, S.Dharmaceelan, S.Senthil Kumar, S.Kathirvel, K.Jayakumar and N.Rajendran
 Department of Clinics, Veterinary College and Research Institute, Namakkal.
- SAP-22 Surgical Management of Tibial Fracture Using Intramedullary Pinning in a Rabbit**
D. K. Tiwari, Mehraj u din Dar, Nisha Joy, S. K. Jhala, P. V. Parikh and D. B. Patil Department of Veterinary Surgery & Radiology, College of Veterinary Science & Animal Husbandry, Anand Agricultural University, Anand - 388001



- SAP-23 Ophthalmic and Dental Camps: An Innovative Approach**
P. V. Parikh, D. B. Patil, D. K. Tiwari, Mehraj u din dar, B. G. Prajapati, S. K. Jhala, Nisha Joy and Ashwini Alase
 Department of Veterinary Surgery & Radiology, College of Veterinary Science & Animal Husbandry, Anand Agricultural University, Anand - 388001
- SAP-24 Lipid Keratopathy in a Rottweiler Dog - Case Report**
D. B. Patil, P. V. Parikh, Nisha Joy, S. K. Jhala, Mehraj u din Dar, D. K. Tiwari and Deepika Dev Rishi
 Department of Veterinary Surgery & Radiology, College of Veterinary Science & Animal Husbandry, Anand Agricultural University, Anand - 388001
- SAP-25 Electron Microscopy of Cataractous Lens of a Dog**
Bharathi.S, K.B.P.Raghavender, and Gireesh Kumar.V
 Department of Surgery and Radiology, College of Veterinary Science, Rajendranagar, Hyderabad - 30
- SAP-26 Conjunctivocalostomy for Nonresponsive Epiphora in Canine**
V.P.Chandrapuria and Ankush Maini
 College of Veterinary Science & A.H., M.P.P.C.V.V.V, Jabalpur (M.P.)
- SAP-27 An Unusual Case of Chronic Prostatitis in a Dog**
V.P. Chandrapuria, Apra Shahi, Randhir Singh, Madhu Swami, Satyendra Gupta, Neelu Thakur and Gaurav Dwivedi
 College of Veterinary Science & A.H., M.P.P.C.V.V, Jabalpur (M.P.), Department of Clinics, Veterinary College and Research Institute, Namakkal
- SAP-28 Surgical management of urolithiasis (cystine calculi) in an Alsatian dog**
Hemant Kumar and Dipti kiran
 O/o Deputy Director Vety Services, Dist- Jashpur(C.G.), M.V.Sc Scholar, Dept of Vety pathology, Ranchi Vety College, Ranchi (Jharkhand)
- SAP-29 Successful management of diphyis oblique femur fracture in a non descript dog**
S.S. Pitlawar, V.M. salunke, S.G. Shinde and N.A. Shingate
 Veterinary Polyclinic, Latur
- SAP-30 Unusal gastric foreign body - Sewing needle as gastric foreign body in a non descript dog**
S.S. Pitlawar, V.M. salunke, S.G. Shinde and N.A. Shingate
 Veterinary Polyclinic, Latur
- SAP-31 An Unusual Case of "Gastric Latex-cast Foreign Body" in a Dog**
George Chandy, Arun Mohammed, Gaddafi K.P. and John Martin K.D.
 Dept. of Surgery and Radiology, COVAS, Pookot, Wayanad, Kerala
- SAP-32 Amputation of Limbs for Treatment of Electrocutation Injuries in a Baby Bonnet Macaque (*Macaca radiata*)**
George Chandy, Vineesh N. and Balakrishnan P.P.
 Department of Surgery and Radiology, COVAS, Pookot, Wayanad, Kerala
- SAP-33 Management of Mandibular Fracture By Interdental Wiring in a Dog**
George Chandy, Dinesh P.T., Sooryadas S., Meera S. N., Divek V.T., Rony Sunny and Devanand C.B.
 Dept. of Surgery and Radiology, COVAS, Pookot, Wayanad, Kerala



- SAP-34 Acrylic External Skeletal Fixation for the Treatment of Mandibular Fracture in a Dog**
George Chandy, Dinesh P.T., Sooryadas S., Gaddafi K.P. and Devanand C.B.
 Dept. of Surgery and Radiology, COVAS, Pookot, Wayanad, Kerala
- SAP-35 A Case of An Unusual Foreign Body in the Thoracic Oesophagus in a Dog - A Radiographic Report**
George Chandy, Arun Mohammed, Gaddafi K.P. and John Martin K.D.
 Dept. of Surgery and Radiology, COVAS, Pookot, Wayanad, Kerala
- SAP-36 Intestinal obstruction in a dog due to obstipated faeces and its surgical treatment**
Ankur Sharma, H.R.Bhardwaj, Ashok Kumar, A.K.Gupta, D.K.Dwivedi, R.B.Kushwaha, Pankaj Gupta and Nasir Altaf
 Division of Veterinary Surgery & Radiology, Faculty of Veterinary Sciences & Animal Husbandry, Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu, R.S.Pura - 181102.
- SAP-37 Removal of foreign body from stomach in a dog**
Pankaj Gupta, A.K.Gupta, R.B.Kushwaha, H.R.Bhardwaj, Ankur Sharma, D.K.Dwivedi and Ashok Kumar
 Division of Veterinary Surgery & Radiology, Faculty of Veterinary Sciences & Animal Husbandry, Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu, R.S.Pura - 181 102.
- SAP-38 A case of TVT, pyometra and mammary tumour in a dog**
Dayamon D. Mathew, Gokuldas P. P.
 Private Pet Practitioner, Kochi, Kerala. Registered Veterinary Practitioner, Kerala
- SAP-39 An Unusual Case of Massive Ovarian Tumor in a German Shepherd Dog - A Case Report**
B. Vishwanatha, V. Mahesh, H. V. Veerabhadraiah and L. Ranganath
 Department of Veterinary Surgery and Radiology, Veterinary College, KVAFSU, Bangalore
- SAP-40 An Unusual Case of Pyometra in a Cat**
V. Mahesh, Holey S Ashish, H. V. Veerabhadraiah and L. Ranganath
 Department of Surgery and Radiology, Veterinary College, KVAFSU, Bangalore-24
- SAP-41 Piroxicam Therapy for a Carcinoma of Urinary Bladder**
B. N. Vishal, V. Mahesh, H. V. Veerabhadraiah and L. Ranganath
 Department of Surgery and Radiology, Veterinary College, KVAFSU, Bangalore-24
- SAP-42 A Case of Large Benign Mixed Mammary Tumour in a Female Dog**
Md. Arif Basha K., Vishwanatha B., Mohankumar Shettar and L.Ranganath
 Department of Veterinary Surgery and Radiology, Veterinary College, Bangalore-24
- SAP-43 Successful Management of Egg Bound (Dystocia) Condition in an Indian Cobra**
Indramani Nath, Subharaj Samantara, Satya Narayan Kar, Biranchi Narayan Mishra
 Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Orissa University of Agriculture and Technology, Bhubaneswar - 751 003, Orissa, India.
- SAP-44 Seminoma in a non descript dog - A case report**
M. U. Shivakumar, J. V. Lokesh, D. T. Kaarthick, D. N. Madhu, Dileep Kumar, K.M., S. K. Maiti and N. P. Kurade
 Surgery Division, Indian Veterinary Research Institute, Izatnagar, Bareilly-243 122 (UP)



- SAP-45 Squamous cell carcinoma of skin in a crossbred dog**
M. U. Shivakumar, J. V. Lokesh, S. W. Monsang, Ahmad. R. A, Dileep Kumar K.M, S. K. Maiti and N. P. Kurade
 Surgery Division, Indian Veterinary Research Institute, Izatnagar, Bareilly-243 122 (UP)
- SAP-46 Avian Surgery: A Clinical Preview**
Chaudhary, P. S., Varshney J.P. and Deshmukh, V. V.
 Shri Surat Panjarapole Prerit, "Nandini" Veterinary Hospital, Surat - 395 001 (Gujarat)
- SAP-47 Diaphragmatic Hernia in a Non Descript Dog**
Chaudhary, P. S., Varshney J.P. and Deshmukh, V. V.
 Shri Surat Panjarapole Prerit, "Nandini" Veterinary Hospital, Surat - 395 001 (Gujarat)
- SAP-48 Correction of accidentally severed urethra in a Pug bitch**
Upadhye, S.V., B.P.Dandge, M.S.Dhakate, B.M.Gahlod, S.B.Akhare, Mrunal Kamble, V.M.Dhoot, G.R.Bhojne and D.S.Raghuwanshi
 TVCC, Nagpur Veterinary College, Nagpur
- SAP-49 Cystic calculi in a Golden retriever**
Upadhye, S.V., B.P.Dandge, M.S.Dhakate, Mrunal Kamble, Shalaka Salvekar, Farheen Fani, and Gauri Fiske
 TVCC, Nagpur Veterinary College, Nagpur
- SAP-50 Diaphragmatic Hernia in a Pug and its Surgical Management**
Mohd. Shafiuzama, Ravi Sunder George, M. Shiju Simon and S. Thilagar
 Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai -7.
- SAP-51 A Large Size Mammary Tumour in Bitch**
Shahi. A., Dwivedi G., Singh R., Jawre S., Bhargava M.K., Chandrapuria V.P.
 College of Vety. Sci. & A. H., Jabalpur, Madhya Pradesh Pashu Chikitsa Vigyan Vishwavidyalaya
- SAP-52 A case of mandibular fracture repair in a Rottweiler**
Dayamon D. Mathew and Kiren Menon
 Private Pet Practioners, Kochi, Keral
- SAP-53 Surgical management of recurrence of ventral hernia by hernioplasty using prolene mesh in a spitz dog**
A K Gupta, R B Kushwaha, M S Bhadwal, Ashok Kumar, Ankur Sharma, Utsav Sharma and J S Soodan
 Division of Veterinary Clinic and Teaching Hospital, FVSc&AH, SKUAST-J, R S Pura-Jammu-181102
- SAP-54 Intrathoracic oesophageal diverticulum in a German shepherd dog**
D.K.Dwivedi, H.R.Bhardwaj, Ankur Sharma, Pankaj Gupta, Ashok Kumar, R.B.Kushwaha and A.K.Tripathi*
 Division of Veterinary Surgery and Radiology, Faculty of Veterinary Sciences and Animal Husbandry, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu-R.S Pura-181102
- SAP-55 Surgical Corrections of Traumatic Thoracic Puncture In Dog**
S.V.Gaikwad, S.B.Swami, S.C. Kulkarni, A.A. Patil, A.H. Ulemale, R.R. Shelar
 Department of Veterinary Surgery, KNP College of Veterinary Sciences Shirwal, Maharashtra
- SAP-56 Management of Necrosed Tail And Fractured Tibio-tarsal Joint In Albino Rat**
Varuna Singh, Rajkumar Jain and Reshma Jain
 College of Veterinary Science, Mhow, MP



- SAP-57 Rhabdomyosarcoma in a boxer dog and its surgical treatment**
Jasmeet Singh, Madhu D. N., A. C. Saxena, A. M. Pawde, Amarpal, P.Kinjavdekar, H. P. Aithal & R. Singh
 Division of Surgery and *Division of Pathology, Indian Veterinary Research Institute, Izatnagar-243122
- SAP-58 Bilateral aural hematoma in a rabbit and its surgical management**
Jasmeet Singh, Rauof Ahmad, Amit Kumar and A. M. Pawde
 Division of Surgery, Indian Veterinary Research Institute, Izatnagar-243122
- SAP-59 Adverse Drug reaction in a Labrador and its management**
Christie Aguiar, Milind Hatekar, Uddhav P.S
 PET AID, Veterinary Clinic & Diagnostics, Pune
- SAP-60 Unusual Eyelid Cyst in a Bitch – A Report**
S. Purohit, V. Malik, Sanjiv Kumar, G. Kumar, D. Kumar, P.Katiyar R.P. Pandey and B. Singh
 Department of Surgery and Radiology, *Assistant professor, Department of Pathology, College of Veterinary Science and Animal Husbandry, DUVASU, Mathura, U.P.
- SAP-61 Endoscopic retrieval of Pharyngeal Foreign Body (Fish Hook) in a Dog**
Gulshan Kumar, Depesh Kumar and R.P.Pandey, Sanjay Purohit, Vivak Malik, Prabha Katiyar, S.Bansal
 Department of Surgery & Radiology, COVSc & AH, UP Pt. Deen Dayal Upadhyaya Pashuchikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura
- SAP-62 Surgical Removal of Perineal Tumour in Dog**
Deepesh Kumar, Gulshan Kumar, R.P. Pandey, Sanjay Purohit, Vivak Malik, Prabha Katiyar
 College of Veterinary Science and Animal Husbandry, UP Pt. Deen Dayal Upadhyaya Pashuchikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan, Mathura.
- SAP-63 Fracture immobilization of humerus in a crossbred rabbit**
Jayakrishna Das, I.nath, S.Nayak, R.K.Roul, T.K.Patnaik, S.Kar
- SAP-64 Open Reduction and Internal Fixation of an Unstable Comminuted Tibial Fracture in a Dog - A Case Report**
S. Ayyappan, R. Ganesh, R.Ramesh, A. Anirudh and R. Suresh kumar
 Small animal-orthopaedic unit, Dept of Veterinary surgery and Radiology, Madras Veterinary College, Chennai-7
- SAP-65 Management of an Invasive Ischial Shaft Sarcoma with Total Hemipelvectomy- A Case Report**
S. Ayyappan, R. Ramesh, Pradnya Kantak, V. Arun and S. Thilagar
 Small animal Orthopaedic Unit, Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai-7
- SAP-66 Fracture Management by External Fixation in Sea Turtle – A Case Report**
S.Ayyappan, R.Ramesh, Bhajan Chandra Das, Kailash Parihar, Bharathi Niveditha P.S and S.Thilagar
 Small animal orthopaedic unit, Dept of Veterinary surgery and Radiology, Madras Veterinary College, Chennai-7
- SAP-67 A Retrospective Study on Bone Diseases in Dogs at the Madras Veterinary College Teaching Hospital**
S. Ayyappan, R. Ramesh, B.C. Das, Pradnya Kantak, R. Ganesh and S. Thilagar
 Small animal Orthopaedic Unit, Department of Veterinary Surgery and Radiology, Madras veterinary College, Chennai-7



- SAP-68 Congenital Skeletal Deformities in Dogs – A Review of Twelve Cases**
S. Ayyappan, R. Jayaprakash, S. Balasubramaniam, R. Ramesh, S. H. Naina, and R. Suresh Kumar
 Small animal Orthopaedic Unit, Department of Veterinary Surgery and Radiology,
 Madras veterinary College, Chennai-7
- SAP-69 An 'Over the Top with Tibial Tunnel' Technique for Repair of Cranial Cruciate Ligament Rupture in a Neapolitan Mastiff**
Mehraj u din Dar, D. B. Patil, P. V. Parikh, S. K. Jhala, Nisha joy, D. K. Tiwari and P. S. Chaudhary
 Department of Veterinary Surgery & Radiology, College of Veterinary Science & Animal Husbandry,
 Anand Agricultural University, Anand – 388 001
- SAP-70 Successful Surgical Excision of Lipoma in a Mouse - Two Cases**
Jayakrushna Das, Adarsh mishra, S. Kar, S. Samantara
 Orissa Veterinary College, OUAT, Bhubaneswar
- SAP-71 Successful Operation of a Neck Tumour in a 40 Days old Pug Pup**
Jayakrushna das
 Orissa Veterinary College, OUAT, Bhubaneswar
- SAP-72 Surgical Correction of Intussusception in a Dog**
John Martin, K. D., Narayanan, M. K., Rajankutty, K. and Dar, F. A.
 College of Veterinary and Animal Sciences, Mannuthy, Kerala.
- SAP-73 Chemical Composition of Dental Tartar**
Piyush Prajapati, B. G. Prajapati, Dharmendra Kumar, S. Parnerkar, D. K. Tiwari, Mehraj u din Dar, Snehal M. Patel, Ashwini Alase, P. V. Parikh and D. B. Patil
 Department of Veterinary Surgery & Radiology, College of Veterinary Science & Animal Husbandry,
 Anand Agricultural University, Anand – 388 001.
- SAP-74 Diagnoses of splenic affections in six dogs following ultrasound guided or laparoscopic biopsy**
Ajay K. Gupta, M. S. Bhadwal, R. B. Kushwaha, N. K. Sood, Ankur Sharma, Pankaj Gupta, and H. R. Bhardwaj
 Division of Veterinary Clinic and Teaching Hospital, Faculty of Veterinary Sciences and Animal Husbandry, SKUAST-J, R S Pura-181102, Jammu (J&K)
- SAP-75 Surgical Management of Fibrosarcoma in a Spitz Dog – A Case Report**
M.S. Dhakate, S.V. Upadhye, S.B. Akhare, B.M. Gahlod, M.G. Thorat & Shalaka Salvekar
 Department of Veterinary Surgery & Radiology, Nagpur Veterinary College, Nagpur (M.S.)
- SAP-76 Endoscopic Evaluation of Spirocerca lupi nodule in Pomeranian Dog**
Ravi Suryawanshi, K.B.P.Raghavender and V.Gireesh Kumar
 Department Of Veterinary Surgery and Radiology College of Veterinary Science, Rajendranagar,
 Hyderabad-500030
- SAP-77 Endoscopic Images of normal esophagus and duodenum in healthy dogs**
Lokhande, D. U., Sarkate, L. B., Adsul, P. B. and Khandekar, G. S.
 Department of Veterinary Surgery and Radiology, Mumbai Veterinary College, Parel, Mumbai -400 012., (Maharashtra Animal and Fishery Sciences University, Nagpur)
- SAP-78 Endoscopic Images of stomach in healthy dogs**
Lokhande, D. U., Sarkate, L. B. Adsul, P. B. and Tripathi, S. D.
 Department of Veterinary Surgery and Radiology, Mumbai Veterinary College, Parel, Mumbai - 400 012. (Maharashtra Animal and Fishery Sciences University, Nagpur)



- SAP-79 Ventral Abdominal Hernia in a Pup**
Mrunali Kamble, S. V. Upadhey, M. S. Dhakate, B. M. Meshram and Manisha Donekar
 Department of Surgery and Radiology, Nagpur Veterinary College, Nagpur, MAFSU, (MS).
- SAP-80 Retrieval of Sewing Needle from a Young Pug : A Case Report**
M.S. Dhakate, S. V. Upadhye, Mrunali Kamble and B. N. Meshram
 TVCC, Nagpur Veterinary College, MAFSU, Nagpur – 06.
- SAP-81 Intussusception and its Surgical Management in a Dog**
S. V. Upadhye, M.S. Dhakate, Mrunali Kamble and B. N. Meshram
 Teaching Veterinary Clinical Complex, Nagpur Veterinary College, (MAFSU) Nagpur – 06.
- SAP-82 Surgical Management of Intestinal Intussusception in two Puppies - A Veterinary Field Perspective**
P. Thiruseelvame, P. Thamodaran and Dominic Savio Jegam
 24 Hours Emergency Veterinary Clinic, Department of Animal Husbandry and Animal Welfare, Puducherry 605 001 India
- SAP-83 Surgical Management of Intractable Glaucoma in a Dog**
C. Ramani, M. Shiju Simon, Pradnya kantak S.Naina, and R. Suresh Kumar
 Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University, Chennai -7.
- SAP-84 Occurrence of wounds in domestic animals**
A M Pawde, Amarpal, P Kinjavdekar, H P Aithal, D Kumar, S W Monsang, Irawati Sarode And D N Madhu
 Indian Veterinary Research Institute, Izatnagar, Bareilly-243122 (UP)
- SAP-85 Dental Fistula an a Cat - A Case Report**
B. Venkateswaralu and G. Balakrishnan
 Lyka Pet Clinic and Surgical Centre, Dindigul - 624001 (TN)
- SAP-86 Tonic cap as foreign body in the stomach of a GSD pup - A Case Report**
B. Venkateswaralu and G. Balakrishnan
 Lyka Pet Clinic and Surgical Centre, Dindigul - 624001 (TN)
- SAP-87 Gastric dilatation and volvulus in a Great Dane Dog - A Case Report**
B. Venkateswaralu and G. Balakrishnan
 Lyka Pet Clinic and Surgical Centre, Dindigul - 624001 (TN)
- SAP-88 Repair of Inguinal Hernia in a Dalmatian pup - A Case Report**
B. Venkateswaralu and G. Balakrishnan
 Lyka Pet Clinic and Surgical Centre, Dindigul - 624001 (TN)
- SAP-89 Repair of Perineal Hernia in a Spitz - A Case Report**
B. Venkateswaralu and G. Balakrishnan
 Lyka Pet Clinic and Surgical Centre, Dindigul - 624001 (TN)
- SAP-90 Vertical Ear Canal Resection in a Dog involving Sebaceous Epithelioma - A Case Report**
B. Venkateswaralu and G. Balakrishnan
 Lyka Pet Clinic and Surgical Centre, Dindigul - 624001 (TN)
- SAP-91 Isolation of micro-organisms from various types of wounds in dog**
A M Pawde, Amarpal, P Kinjavdekar, H P Aithal, R Rathore, D Kumar, S W Monsang, D N Madhu and Irawati Sarode
 Indian Veterinary Research Institute, Izatnagar, Bareilly-243122 (UP)



- SAP-92** **Certain accidental emergencies and its Surgical Management in dogs**
M.K.Narayanan, K.D. John Martin, C.B.Devanad and K.Rajankutty
 College of Veterinary and Animal Sciences, Mannuthy, Thrissur.
- SAP-93** **Unusual case of gastric foreign body in a pup and its surgical management**
M.K.Narayanan, K D John Martin and K Rajankutty
 College of Veterinary and Animal sciences, Mannuthy
- SAP-94** **Surgical Management of Uroliths in a dog**
G. Vani
 Veterinary Assistant Surgeon, Veterinary poly clinic, Chittoor-517001 Email.vanigaddam@gmail.com
- SAP-95** **Surgical Management of Femoral and Perineal Hernia in a Dog**
Natasha .R. Coutinho, Mugdha Kulkarni, Dharmaraj Raibole, Lokhnde . D.U.
 Department of Surgery and Radiology, Mumbai Veterinary College, Parel, Mumbai- 400 012
- SAP-96** **Management of Cataract by Phacoemulsification in Cat**
Mohamed Shafiuzama, C. Ramani, Bharathi Niveditha. P. S, Pradnya Anand Kantak
 Small Animal Ophthalmology Unit, Department of Veterinary Surgery and Radiology,
 Madras Veterinary College, Chennai-600007.



AWARDS SESSION

Date : 10.12.2010 Time : 10.15 am

Venue : Conference Hall

Chairman : I.S. Chandra

Rapporteur : R.V. Suresh Kumar

**Best Field Veterinarian - M.R.Patel Award
List of Papers**

S.No	Name of the delegate	Title
1.	Dr.Sashi Vikram Singh Veterinary Surgeon Shri Mata Prasad Vet.Hospital and Trauma Centre Lucknow UP	Retrieval of bullet form the Cardiac lobe of lung in a dog
2	Dr.Balappanavar B.R. Veterinary Officer Veterinary Hospital DAHVS Karnataka	Balu's technique for decompensation of urinary bladder in bullocks to prevent urinary bladder rupture
3	Dr.G.Vani Vet.Asst.Surgeon Veterinary Polyclinic Chittoor AP	Surgical management of various clinical conditions in Bovines presented to VPC, Chittoor during the period 2008-10
4	Dr. Shiju Simon Madras Veterinary College Chennai.	Surgical management of evisceration under xylazine and ketamine Anesthesia in an Indian Guaz

**Young Surgeon Award
List of Papers**

S.No	Name of the delegate	Title
1.	Dr.R.N Chaudhary Asst.Prof,TVCC COVS, Hisar	Incidence and surgical management of tumors in buffaloes
2.	Dr.P.Sankar Dept. VSR College of Veterinary Science SVVU Tirupathi	Incidence, Diagnosis and Management of different types of tumors in dogs -A retrospective study
3	Dr.G.Vani Vet.Asst.Surgeon Veterinary Polyclinic Chittoor AP	Surgical management of various clinical conditions in Bovines presented to VPC, Chittoor during the period 2008-10
4	Dr. Shiju Simon Madras Veterinary College Chennai-7	A rare case of Cranial Meningocele in a calf and its surgical correction



ROUND TABLE ON SURGICAL AFFECTIONS IN FIELD CONDITIONS

Courtesy - INTAS PHARMACEUTICALS

Date : 09.12.2010 Time : 5.00 pm

Venue : Conference Hall



ROUND TABLE ON SURGICAL AFFECTIONS IN FIELD CONDITIONS

- 1. Urogenital Surgery of Farm Animals in field conditions**
B.V.Shivaprakash,
Professor & Head, Dept. of Veterinary Surgery, Veterinary College, Bidar.
- 2. Surgical Management of Tendon Rupture in Seven Bullocks**
V.M. Salunke, K.S. Chaudhari, S.S. Pitlawar and A.D. Sangame,
Department of Surgery and Radiology, College of Veterinary and Animal Sciences,
Udgir Dist- Latur (Maharashtra)
- 3. Incidence and Management of Hoof Disorders in Dairy Animals - A Retrospective Study**
J. K. Mahla, P. V. Parikh, D. B. Patil, D. K. Tiwari, Mehraj u din Dar and S. K. Jhala
Department of Veterinary Surgery and Radiology, College of Veterinary Science and Animal Husbandry, Anand(Gujarat).
- 4. Minimally Invasive Tube Cystotomy Technique for Obstructive Urolithiasis in Male Ruminants**
M.R.Fazili,
Associate Professor, Teaching Veterinary Clinical Complex, Sher-e-Kashmir University of Agricultural Sciences and Technology- Kashmir, Shuhama, Srinagar (Jammu and Kashmir)
- 5. Management of Burns - A Clinical Study of 30 Animals**
P.S. Chaudhary,
J.P. Varshney and V.V. Deshmukh,
"Nandini" Veterinary Hospital, Surat(Gujarat)
- 6. Imperative Role of Contemporary Imaging Techniques in Pet Animal Practice**
S.V.Vishwasrao,
Officer in Charge, Teaching Veterinary Clinical Complex, Bombay Veterinary College, Mumbai.
- 7. A Field Study of Canine Neoplasms - A review of 318 cases**
Arvind Sharma,
Officer in Charge, Teaching Veterinary Clinical Complex, Bombay Veterinary College, Mumbai.
- 8. Caprine Surgical Affections - A Clinical Study of 28 Cases**
P.S. Chaudhary, J.P. Varshney and V.V. Deshmukh,
"Nandini" Veterinary Hospital, Surat (Gujarat)
- 9. Surgical Repair of Third Degree Perineal Laceration in Mares**
R.A.Vale,
Deputy Director of Animal Husbandry, Govt. Veterinary Polyclinics, Amreli (Gujarat)
- 10. Wounds in Working Elephants and their Management**
Kushal Konwar Sarma,
Professor, Department of Surgery & Radiology, College of Veterinary Science, Khanapara,
Guwahati (Assam)



- 11. Surgical Management of Wounds in Captive Wild Animals**
S. Dhanalakshmi, C. Suresh Kumar and K.A. Nanjappa,
Sri Chamarajendra Zoological Gardens, Mysore (Karnataka)
- 12. Mastectomy in a Bitch**
G Vani,
Veterinary Assistant Surgeon, Veterinary Polyclinics, Chittoor (Andhra Pradesh)
- 13. Role of Xenograft in the Management of Lacerated Cutaneous Wound in a Dog**
Nasir Altaf Zarger and H.R. Bhardwaj,
Department of Veterinary Surgery and Radiology, Sher-a-Kashmir University of Agricultural Sciences and Technology-Jammu, Jammu (J&K)
- 14. Reduction of Rectal Prolapse in a Captive Lioness**
Suresh Kumar, H.S. Prayag and Dharma Veer Shetty,
Sri Chamarajendra Zoological Gardens, Mysore (Karnataka)
- 15. Surgical management of tail gangrene in a West Bengal White Tigress**
V.M. Salunke, S.S. Pittlawar, K.S. Chaudhari and A.D. Sangame,
Department of Surgery and Radiology, College of Veterinary and Animal Sciences, Udgir Dist-
Latur (Maharashtra)
- 16. Extraction of lower Canine Tooth in a Asiatic Black Bear**
Suresh Kumar, H.S. Prayag and Dharma Veer Shetty,
Sri Chamarajendra Zoological Gardens, Mysore (Karnataka)
- 17. Cloacal Prolapse in a Parrot**
Shatrughn Singh and Hitendra Soni,
Veterinary Assistant Surgeons, District Veterinary Hospital, Raigarh (Chattisgarh)
- 18. Treatment of Salivary Fistula in a Bullock**
A.K. Maji¹ and Arindam Samanta²,
Department of Veterinary Surgery & Radiology, West Bengal University of Animal & Fishery
Sciences, Kolkata (West Bengal)

