THE INDIAN SOCIETY FOR VETERINARY SURGERY

FOURTH ALL INDIA SYMPOSIUM

Nov. 15-17, 1980

Technical Bulletin and Souvenir

DEPARTMENT OF VETERINARY SURGERY & RADIOLOGY

RANCHI VETERINARY COLLEGE
RANCHI

RAJENDRA AGRICULTURAL UNIVERSITY, BIHAR

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15 — 17 November, 1980

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PROGRAMME

SATURDAY THE 15th NOVEMBER, 1980

9 to 11 am	Registration (Main Gate, Ranchi Veterinary College)
11 to 1 pm	Inaugural Function (Auditorium, Ranchi Veterinary College)
1 to 2-30 pm	Lunch

Inauguration of Technical Sessions
by
Dr. A. AHMAD
Director Resident Instruction-cum-Dean, Post-Graduate Studies
Rajendra Agricultural University, Bihar
Pusa (Samastipur)

3 to 4-30 pm — TECHNICAL SESSION-I
(Large Animal Surgery)

Chairman : Dr. M. R. Patel
Rapporteur : Dr. D. Krishnamurthy

1.	Biochemical Alterations in Buffaloes with Diaphragmatic Hernia, Effects of Herniation, Laparo-Rumenotomy and Herniorrhaphy	V. K. Sobti, Rama Kumar V., and R. N. Kohli Department of Veterinary Surgery and Radiology, P. A. U., Ludhiana.
2.	An investigation into the effects of some Osteogenic Agents on Fracture Healing in Buffalo Calves	A. K. Khanna Department of Veterinary Surgery and Radiology, P. A. U., Ludhiana.
3.	Haemoglobin-oxygen affinity in Bovines in Normal and Stress situations	Jit Singh and R. N. Kohli Department of Veterinary Surgery and Radiology, P. A. U., Ludhiana.

4.	Some immobilization techniques for fracture repair in Cattle and Buffaloes	Rama Kumar V., B. Prasad, Jit Singh and R. N. Kohli Department of Veterinary Surgery and Radiology, P. A. U., Ludhiana.
5.	A technique for the Management of Frontal Sinusitis in Zebu Cattle	S. S. Mishra and S. J. Angelo C. S. Azad University of Agriculture and Tech., College of Veterinary Sci. and A. H., Mathura (U. P.).
6.	An Improvised Technique for Radical Ocular Exenteration in Bovines	S. S. Mishra and S. J. Angelo Mathura (U. P.).
7.	Studies on uterine healing—Comparison of single and double layer suturing pattern in cows	I. V. Mogha, G. R. Singh, A. K. Bharagava and R. Somvanshi, IVRI., Izatnagar (U. P.).
8.	Intestinal Disorders in Cattle	O. Ramakrishna College of Veterinary Science, Tirupati (A. P.).
9.	Surgical Treatment of Tumours in the Nasal Cavity and Paranasal Area in Bovine.	J. Mohanty, A. K. Mitra and A. K. Roy, Department of Surgery, Orissa Veterinary College, Bhubaneshwar.
10.	Studies on Clinico-biochemical Changes in Experimental Abomasal Torsion in Buffalo Calves.	L. L. Dass, A. A. Khan and P. N. Sahay, Department of Surgery, College of Veterinary Science and A. H., Jabalpur (M. P.).

4.30 to 4.40 pm. Tea.

4-40 to 5-40 pm **TECHNICAL SESSION — II**
(Large Animal Surgery.. ....contd.)

Chairman : Dr. J. S. D. Poulsen
Rapporteur : Dr. O. Ramakrishna

1.	Preliminary Survey on the Incidence of the Eye Tumours in Bovines	S. K. Pandey, V. P. Chandrapuria, M. K. Bhargava, L. L. Dass and G. N. Kolte, Deptt. of Surgery, Jabalpur, M. P.

2.	Declawing in Bovine	Dr. K. N. Deka, Dr. D. K. Lahon and Dr. S. C. Pathak A. A. U., Gauhati, Assam
3.	Influence of Certain Local Medicaments on Biochemical Changes during Wound Healing in Male Cow Calves	A. Ghani, S. K. Pandey and V. P. Chandrapuria, Jabalpur, M. P.
4.	A Clinical Case of Rectal Tumour in Bull	A. S. Bose, O. Ramakrishna, N. T. Krishnamurthy and K. Ravi Kumar
5.	The Use of Sanitary Towels and Condoms as Subatitutes for Surgical Dressing in Veterinary Practice	Dr. S. M. Jayadevappa, Dr. V. Srinivas and Dr. P. H. T. Reddy Bangalore, Mysore
6.	Intestinal Obstruction due to Intussusception and Hernia in Ruminants	H. V. S. Chauhan and G. J. Jha Deptt. of Vety. Pathology, R. V. C., Ranchi
7.	Technique of Novel Method of Using Polythelene Tube with Rubber Balloon within the Teat Canal for Post Operative Draining of Milk Open Teat Surgery	S. N. Pande and P. E. Kulkarni Punjabrao Krishi Vidyapeeth, Akola
8.	Clinical and Clinicopathological Observations in Traumatic Pericarditis in Bovines	D. B. Pawshe and P. E. Kulkarni Punjabrao Krishi Vidyapeeth, Akola

SUNDAY THE 16th NOVEMBER, 1980

8 am to 10 am

TECHNICAL SESSION — III
(Large Animal Surgery ..... contd.)

Chairman : Dr. R. N. Kohli
Rapporteur : Dr. A. K. Mitra

1.	Intra-abdominal Surgical Disorders in Cattle	Guest Lecture by Dr. J. S. D. Poulsen, Royal Veterinary & Agricultural University, Copenhagen (Denmark)

2.	A New Technique of Using Modified Halls Triffin Knife and Lamllear Tent or Surgical Pin for Correcting Blind Teat and Stricture of Sphincter	S. V. Pande and P. E. Kulkarni Punjabrao Krishi Vidyapeeth, Akola.
3.	Studies on Horn Cancer-Preliminary Trials of Immunotherapy	H. V. S. Chauhan, D. S. Kalra and S. K. Mahajan, HAU, Hissar (Haryana)
4.	Evaluation of Single-Layer Inverted and Everted End-to-End Entero-Anastomosis in Bovine	S. C. P. Gupta, A. A. Khan, Md. Ehsan and U. K. Deokiouliyar R. V. C., Ranchi (Bihar)
5.	Experimental Production of Traumatic Reticulitis and its Surgical Correction in Buffalo Calves	S. Prasad, A. A. Khan, D. P. Singh and S. P. Sharma, RAU, Bihar.
6.	Effect of Suture Materials and Patterns of Anastomosis on Intestinal Healing in Calves	A. P. Singh, K. Singh and J. M. Nigam H. A. U., Hissar (Haryana)
7.	Free Full Thickness Autogenous Skin Grafting in Bovine - An Experimental Study	D. P. Singh, A. A. Khan, P. N. Sahay and S. P. Sharma R. A. U, (Bihar)
8.	Brief Introduction to Cryosurgery & its Prospects	H. M. Saxena and G. N. Mathur, College of Veterinary & Animal Science, Bikaner (Rajasthan)
9.	A Comparative Study of Intestinal Anastomosis by Inversion and Eversion Techniques in Buffalo-Calves	S. C. P. Gupta, A. A. Khan and G. J. Jha, Deptts. of Surgery and Pathology, R. V. C., Ranchi
10.	Transosseous Phlebography in Matatarsal Fracture in Bovine	A. P. Singh, J. M. Nigam and D. S. Vijaya Kumar Deptt. of Surgery, HAU, Hissar (Haryana)
11.	Ceramic as Substitute for Bone Grafts in Cases of Bone Deficits	Dr. Y. N. Sinha Chief Medical Officer Bihar Alloy Steels Ltd., Patratu, Hazaribagh (Bihar)
12.	Hydrocel in a Ongole Bull	K. Bhaskar Singh Veterinary Officer, Veterinary Hospital, Guntur (A. P.)

10-15 to 11-30 am **TECHNICAL SESSION-IV**
(Large Animal Surgery... contd.)

Chairman : Dr. E. I. Rajendran
Rapporteur : Dr. Rama Kumar, V.

1. Internal Fixation : An Experimental Evaluation of Various Methods in Fracture of Femur in small Ruminants	Gaj Raj Singh, I. V. Mogha and A. K. Bhargava Div. of Exptl. Medicine and Surgery, IVRI., Izatnagar (U. P.).
2. Congenital Flexion of the Carpus in a Cow Calf—A Case Report	B. R. Patil and G. R. Iyer Department of Animal Husbandry (Maharashtra).
3. Muzzleprintometry in Bovines	S. N. Pandey, T. V. O., Jharia. Dhanbad (Bihar).
4. Dystocia in a Cow Elephant (Elephas maximas) — ACase Report	P. O. George, V. K. Ramakrishna Pillai and Kuriachen Thomas Department of Surgery, Veterinary College Trichur (Kerala).
5. Congenital Urethral Diverticulum and its Surgical Treatment in the Male Goats	T. K. Gahlot, A. K. Ranka, D. S. Chouhan and R. J. Choudhary College of Veterinary and Animal Sciences, Bikaner (Rajasthan).
6. Acid-Base Status in a Calf following Drenching Aspiration	A. K. Mitra and J. Mohanty Orissa Veterinary College, Bhubaneswar (Orissa).
7. Bovine Diaphragmatic Hernia—An Analysis of 110 Clinical Cases	D, Krishnamurthy, J. M. Nigam, K. S. Deshpande and D. N. Sharma Department of Veterinary Surgery, H. A. U., Hissar (Haryana).
8. Anatomical Basis of the Diaphragmatic Hernia in Buffaloes	D. Krishnamurthy, J. M. Nigam and D. N. Sharma Department of Veterinary Surgery, H. A. U., Hissar (Haryana).
9. An Approach for the Deep Oral Surgery in Calves	V. S. C. Bose, S. Nayak and J. Mo Department of Surgery, Orissa Veterinary College, Bhubaneswar (Orissa).

11-40 to 1 pm **TECHNICAL SESSION-V**
(Large Animal Surgery.. ....contd.)

Chairman : Dr. M. N. Mannari
Rapporteur : Dr. S. K. Pandey

1.	Caudal Phlebactasia in Buffaloes	Godfrey David and E. I. Rajendran Department of Surgery, Madras Veterinary College (Tamil Nandu).
2.	Study on the Efficacy of Ultrasonic Massage on the Udder in case of Bovine Mastitis.	Dr. E. I. Rajendran Department of Surgery, Madras Veterinary College (Tamil Nandu).
3.	Estimation of Serum Alkaline Phosphatase in Different Stage of Healing of Fracture in Large Animals	A. A. Khan, R. K. Sinha and Md. Ehsan Department of Surgery, B. V. C , Patna (Bihar).
4.	Surgical Management of Horn Cancer in Bovine (A report of twentysix cases).	S. P. Sharma, D. P. Singh and J. G. Singh Department of Surgery, B. V. C., Patna (Bihar).
5.	Cellular Changes in Normal and Solar Irradiated Wounds in Buffaloes.	S. S. Marudwar, Amresh Kumar and HarpalSingh Deptt. of Surgery, College of Vety. Science, Pantnagar (U. P.)
6.	Partial Amputation of Uterus in She-buffalo.	M. N. Mannari, D. M. Tadkod and R. R. Parsunia Gujrat Veterinary College, Anand (Gujrat).
7.	Comparative Studies of Techniques for Closure of Laparotomy Incision in Bubalus-Bubalis.	M. N. Nassimi, A. A. Khan, Md. Ehsan and J. Prasad Director of Clinics Kabul (Afghanistan), Deptt. of Surgery, Assoc. Prof. Anatomy, R. V. C., Ranchi.
8.	Partial Ablation of Udder in Cows.	D. M. Tadkod, M. N. Mannari and R. R. Parsania Deptt. of Surgery & Radiology Gujrat Vety. College, Anand (Gujrat).

9.	Experimental Oesophageal Anastomosis by Eversion Technique in Buffalo Calves (Bubalus Bubalis): A Histomorphological and Histochemical Study.	G. R. Palel and M. N. Mannari Deptt. of Surgery and Radiology Gujrat Vety. College, Anand (Gujrat).
10.	Caesarian Section in Goats — A report on 53 clinical Cases.	P. J. Philip, K. N. Muraleedharan Nayar S. Ravindran Nayar, C. Abraham Varke T. Sarada Amma and K. Rajankutty Deptt. of Surgery, College of Vety. Mannuthy, Trichur (Kerala).

3-00 to 4-00 pm — TECHNICAL SESSION-VI
(Small Animal Surgery)

Chairman : Dr. S. J. Angelo

Rapporteur : Dr. G. David

1.	Tissue Reaction to Surgical Sutures in Infected Canine Wounds.	S. Verma Deptt. of Clinical Studies, Faculty of Vety. Medicine, P. O. Box 29053, Kabete (Kenya).
2.	A Note on Indigenous Cardiac — Pacemaker Implantation in Experimental Dogs.	S. M. Jayadevappa, P. H. T. Reddy, B. N. Ranganath Department of Surgery, and P. N. Kamalapur Deptt. of Medicine, Vety. College, Bangalore (Mysore).
3.	Healing of Everted Colonic Anastomosis following Scalpel Surgery and Electrosurgery in Dogs.	N. K. Khianey and B. Prasad Deptt. of Vety. Surgery & Radiology, P. A. U., Ludhiana.
4.	Chronic Vesico-Urethral Calculi in a Dog.	A. A. Khan, R. P. Sinha, U. K. Deokiouliyar and Md. Ehsan Deptt. of Surgery, R. V. C., Ranchi.
5.	A Technique of Total Pancreatectomy in Dogs.	B. J. Dare, S. Dravidamani, M. Mahadevan and L. Kameswaran Animal Exptl. Lab. and Institute of Pharmacology, Madras Medical College, Madras.

6.	Partial Hepatectomy and Parabiosis in Rats.	S. Dravidamani, B. J. Dare, S. Mahadevan and A. A. Namasivayan Animal Exptl. Lab., Madras Medical College, Madras and Deptt. of Physiology, Chenglepute Medical College, Chenglepute.
7.	Studies on the Effect of Diazepam & Meperidine Hydrochloride on Barbiturate Anaesthesia in Dogs.	Devendra Kumar, A. A. Khan, U. K. Deokiouliyar and Md. Ehsan Deptt. of Vety. Surgery, R. V. C., Ranchi.
8.	Mixed Mammary Tumour in a Male Dog.	S. K. Pandey, M. K. Bhargava, V. P. Chandrapuria, L. L. Dass and G. N. Kolta Deptt. of Surgery, Veterinary College, Jabalpur (M. P.).

4-00 to 4-10 P. M TEA.

4-10 to 5-00 pm **TECHNICAL SESSION — VII**
(Radiology)

Chairman : Dr. J. M. Nigam
Rapporteur : Dr. I. S. Chandna

1.	Radiographic, Angiographic, Macroscopic and Microscopic Studies in Aspirin Induced Gastritis in Dogs.	D. S. Vijaya Kumar, A. P. Singh and J. M. Nigam, Deptt. of Surgery, H. A. U., Hissar (Haryana)
2.	Radiography of Affections of Bovine Head and Neck	J. M. Nigam and A. P. Singh Deptt. of Surgery, H. A. U., Hissar (Haryana)
3.	Cerebral Contrast Ventriculography in Bovines	I. S. Chandna, K. S. Deshpande, J. M. Nigam and A. P. Singh Deptt. of Surgery, H. A. U., Hissar
4.	Radiological diagnosis of foreign body syndrome and allied lesions in buffaloes	R. N. Kohli, Rama Kumar V., B. Prasad, Jit Singh and S. N. Sharma, Deptt. of Surgery, P. A. U., Ludhiana

5.	Osteosclerosis in cattle : A clinical and radiological evaluation	Gaj Raj Singh, K. P. Mallick & S. B. Lal Deptt. of Exptl. Medicine & Surgery, IVRI., Izatnagar, U. P.
6.	Double Contrast Gastrography in Dogs	Rama Kumar V., K. P. Peshin and J. M. Nigam, Deptt. of Surgery, H. A. U. Hissar, (Haryana)

MONDAY THE 17th NOVEMBER, 1980

8-00 to 9-30 am TECHNICAL SESSION — VIII
(Anaesthesiology)

Chairman : Dr. P. O. George

Rapporteur : Dr. Amaresh Kumar

1.	Experimental Studies on Electroanaesthesia	D. K. Sharma and Hariwir Singh H. A. U., Hissar and P. I. M. E. R., Chandigarh
2.	Effects of Chloral Hydrate and its Combination with Thiopental Sodium in Buffalo Calves	Kuldip K. Mirakhur, Jit Singh, S. N. Sharma and R. N. Kohli, Deptt. of Surgery & Radiology P. A. U., Ludhiana, India
3.	Haemodynamics, Blood Gas and Metabolic Alterations During Thiopental Anaesthesia in Buffaloes	Jit Singh, Kuldip K. Mirakhur V. K. Sobti and R. N. Kohli Deptt. of Surgery, P. A. U., Ludhiana
4.	Intravenous Retrograde Anaesthesia in Cattle	G. B. Choudhari and P. E. Kulkarni Deptt. of Surgery & Cynaecology Punjabrao Krishi Vidyapeeth Akola (M. S.)
5.	Comparative Evaluation of Various Anaesthetic Techniques with Acupuncture Anaesthesia for Abdominal Herniorrhaphy in Cattle	G. V. Lakshmipathi College of Veterinary Science, Tirupati (A. P.)

6.	Anaesthetic Management of Surgical Repair of Diaphragmatic Hernia in Buffaloes	A. S. Bose and R. N. Kohli, College of Vety. Science, Tirupati (A. P.)
7.	Intravenous Procaine as Maintenance Agent in Thiopental Anaesthesia in Canine Surgery	Amresh Kumar, A. K. Sharma and Harpal Singh, College of Veterinary Science, G. B. Pant Univ. of Agric. & Tech., Pantnagar, Nainital (U. P.)
8.	A Note on Thoracic Novocaine Blockade in Bronchopneumonia in Calves	Amresh Kumar and Satyendra Pal Singh College of Vety. Sciences, G. B. Pant Univ. of Agric. & Tech. Pantnagar, Nainital (U. P.)
9.	Neuroleptanalgesia with Morphine and Largactil in Dogs	S. S. Marudwar, A. K. Sharma and Amresh Kumar G. B. Pant Univ. of Agric. & Tech. Pantnagar, Nainital (U. P.)
10.	An Experimental Study on Intravenous Regional Anaesthesia in Buffalo Calves	Md. Ehsan, A. A. Khan and U. K. Deokiouliyar Deptt. of Surgery & Radiology R. V. C., Ranchi
11.	A New Approach for the Bhachial Plexus Block in Cattle and Buffalo	S. A. Bhojani, R. R. Parsania, K. N. Vyas and M. N. Mannari
12.	Evaluation of Glyceryl Guaiacolate in Buffaloes	Jit Singh, V. K. Sobti, R. N. Kohli, Rama Kumar V., and A. K. Khanna, Department of Veterinary Surgery and Radiology, P. A. U., Ludhiana

9-30 to 9-40 am	TEA
9-40 to 11-00 am	Business Session
11-00 am	Proceed for Site Seeing
8-30 pm	Dinner

VICE - PRESIDENT
INDIA
NEW DELHI

October 16, 1980

Message

I send my best wishes for the success of the 4th Symposium of the Indian Society for Veterinary Surgery to be held at Ranchi College of Veterinary Science and Animal Husbandry, Ranchi from 15th to 17th November, 1980.

Sd/- M. Hidayatullah

A. R. Kidwai
GOVERNOR - BIHAR

RAJ BHAVAN
PATNA

November 1, 1980

Message

Animal Husbandry has great significance for the country, development of rural economy and improvement of nutritional standards. It is a profitable business and also a source of additional income for farmers and landless labour.

Bihar is endowed with natural resources based on agriculture for the development of Animal Husbandry including poultry and fishery. Therefore, there is great scope for supplementing income of agriculturists through Animal Husbandry. Today success in dairy, poultry and fishery depends on the adoption of new techniques and progress of their rearing.

I am happy to know that the 4th Symposium of the Indian Society for Veterinary Surgeons is going to be held at Ranchi College of Veterinary Science and Animal Husbandry. I hope, the exchange of scientific information and experience would help in the promotion of Animal Husbandry in the State.

I wish all success to the organizers and the participants of the Symposium.

Sd/- A. R. Kidwai

MINISTER FOR IRRIGATION
INDIA
NEW DELHI

24th October, 1980

Message

I am glad that Indian Society for Veterinary Surgery is holding the Fourth Symposium of the Indian Society for Veterinary Surgery (ISVS) at Ranchi during November, 1980.

The topics chosen in the Symposium are very vital in the present context of energy crisis. India is endowed with huge livestock which has to be protected properly so that the high cost of fuel may be minimised by substituting animal energy.

I am sure the deliberations of the Symposium will be meaningful and I wish your endeavour all success.

Sd/- Kedar Pandey

ललितेश्वर प्रसाद शाही
मंत्री कृषि
बिहार सरकार

४, देशरत्न मार्ग
पटना

8th October, 198

Message

I am glad to know that the 4th Symposium of the Ind Society for Veterinary Surgery is going to be held at Ranch November this year. This occasion will provide an opportu for mutual contacts and exchange of information and id pertaining to this particular field of science. The decision bring out a souvenir on this occasion adds to its purposefuln

I wish the Symposium every success.

Sd/- L. P. Shahi

टी० मुचि राय मुण्डा
मंत्री,
वन एवं जन-जाति कल्याण, बिहार

पटना

D. O. No. 267

दिनांक १०-१०-८०

Message

It gives me great pleasure to learn that the Indian Society for Veterinary Surgery has organised 4th All India Symposium at Ranchi. Such deliberations give an opportunity to the participants of exchanging views and demonstrating their modern method of surgical operations. I hope the proposed Symposium will give growth to the next higher skill and learning required for the benefit of the nation and the delegates attending the Symposium will get its advantage. I wish the Symposium a great success in this direction.

Sd/- T. Muchi Rai Munda

SHIVA PRASAD SAHU
Member of Parliament

Lohardaga Lodge
Hazaribagh Road
RANCHI

1-11-80

Message

I am very pleased to know that the 4th Symposium of th Indian Society for Veterinary Surgery (I S V S) is going to b held at Ranchi. Its main objective is to have mutual contac for exchange of scientific informations, demonstration of Su gical skills and co-ordination of research works. Cattle weal is the back bone of our economy and its importance hard needs any emphasis.

I wish the Symposium all success.

Sd/- Shiva Prasad Sah

K. K. JHA
Vice-Chancellor
Rajendra Agricultural University, Bihar

PUSA
(Samastipur)

5th Nov., 1980

Message

The Indian Society of Vety. Surgery has given to the Rajendra Agril. University a great privilege of hosting the 4th National Symposium on Vety. Surgery at Ranchi Campus where large number of distinguished Scientists from this country as well as abroad are going to participate in Scientific deliberations. Such a conference becomes more meaningful to this University and Ranchi Campus in particular which is fast developing facilities for an independent Agril. University being established shortly.

Livestock production has a great role to play in the Tribal belt of Chotanagpur and Santhalparganas in improving the economic conditions of the masses. I hope this conference will not only deliberate on the involved research problems but also attend to the need of the farming community.

Sd/- K. K. Jha

KARAM CHAND BHAGAT
Minister for Excise & Prohibition
Govt. of Bihar

PATNA

11-11-80

Message

I am very glad to know that the 4th All India Symposium of Indian Society for Veterinary Surgery is going to be held at Ranchi Veterinary College, Ranchi. I am sure that the delegates coming from different parts of the country will focus attention on the practical problems which are posed before the field veterinarians in the field of veterinary surgery in rendering services to the cattle owners in the villages. The participants may take this forum to have free discussions and share their views to improve and evolve new techniques and modern equipments in the veterinary surgery for developing this field to a higher standard. I hope the papers read in this Symposium will be of much use towards this end.

I take this opportunity to welcome all the delegates whole heartedly and wish the meet a grand success.

Sd/- Karam Chand Bhagat

R. C. ARORA
I. A. S.

COMMISSIONER
(Animal Husbandry, Dairy Farming and Fisheries)
and
PRINCIPAL SECRETARY
to
GOVERNMENT OF BIHAR

PATNA
5th November, 1980

Message

I am happy to learn that the Fourth Symposium of th Indian Society of Veterinary Surgery is being held at Ranc College of Veterinary Science and Animal Husbandry, Rajend Agricultural University campus from 15th to 17th Novembe 1980. This will provide a good forum for exchange of scientif information and co-ordination of research work in the vario institutions of the country.

I send my greetings to all the participants. The discussions will provide a guideline for the econom development of the tribal population of Chotanagpur. The Sta Government is fully conscious of the problems of Chotanagp We consider, this area will be suitable for cattle developme and other activities connected with Animal Husband Department. To highlight this importance, a new Univers namely Birsa Agricultural University is also being set at Ranchi.

I wish success to this meet.

Sd/- R. C. ARORA

A. K. PRASAD
Director, Animal Husbandry
Govt. of Bihar

PATNA
6-11-80

Message

It gives me great pleasure to know that the 4th All India Symposium of Indian Society for Veterinary Surgery is going to be held at Ranchi College of Veterinary Science and Animal Husbandry, Ranchi and that a Souvenir will be published on the occasion. The Cattle Wealth is the backbone of the Agricultural Community, specially in the Chotanagpur region. Animal Husbandry always has and will continue to have a place in the commanding heights in the Indian economic development. It is hoped that the members attending the Conference would be able to evolve some ways and means for the welfare of the Indian Cattle as well as the farmers of the country.

I wish the conference a grand success.

Sd/- A. K. Prasad

Dr. A. AHMAD
Director, Resident Instruction-cum-
Dean, Post-Graduate Studies
Rajendra Agricultural University, Bihar

PUSA - 848125
(Samastipur)

24th October, 1980

Message

I am very happy indeed to note that the Department of Veterinary Surgery, Ranchi Veterinary College, Rajendra Agricultural University, is organising the 4th All India Symposium of the Indian Society of Veterinary Surgery. I note further that the Symposium will be attended by Scientists from Veterinary Colleges all over the country and also from the National Institutes and Medical Colleges. I am sure the deliberations of the delegates to the Symposium will make a distinct contribution in the field of Veterinary Surgery, both clinical and experimental. Besides, the students and faculty members in the field of Veterinary Surgery and allied disciplines will avail this opportunity to benefit themselves from the deliberations and the presence of the distinguished scientists at Ranchi.

I congratulate Dr. A. A. Khan, Professor of Surgery and his colleagues for making this Symposium possible at the Ranchi Veterinary College, a campus of the Rajendra Agricultural University. I have no doubt that the success of the Symposium and the appreciation of the distinguished delegates will be their reward.

I have great pleasure to welcome the delegates to the 4th All India Symposium of the Indian Society for Veterinary Surgery and convey my best wishes for the success of the same.

S/d. A. Ahmad

Col. Dr. S. M. Ishaque
(Retired)
Principal, Bihar Veterinary College, Patna.
and
Director, Animal Husbandry, Education & Research
Rajendra Agricultural University, Bihar (India)

296, Patliputra Colon
PATNA - 80001

Dated : 15-10-8

Message

I am very pleased to learn that the 4th Symposium of th Indian Society for Veterinary Surgery (I. S. V. S.) is going to b held in our province at Ranchi College of Veterinary Science an Animal Husbandry from 15th to 17th November, 1980. Myse being an old veterinarian and as well as ex-Professor of Surger Bihar Veterinary College, Patna, feel very much delighted th this All India Society of Veterinary Surgery is going to be he in this State.

I wish all success to the Symposium.

Yours sincerely,

Sd./- S. M. Ishaqu

Dr. G. TRIVEDI
Director, Extension Education
Rajendra Agricultural
University, Bihar

PUSA - 848125
(Samastipur)
PATNA CAMP

1st Nov. '80

Message

I have been pleased to learn that the 4th All India Symposium of Indian Society for Veterinary Surgery is going to be held at the Ranchi Veterinary College, Kanke, Ranchi from 15th to 17th November, 1980. The role of Veterinary Surgery in the improvement of Animal health and Animal production is now well established. In course of transfer of Technology Programme as a part of extension education activities in the field of Animal Husbandry and Veterinary Science, it has been clearly established that farmers owning cattle have to be educated and given knowledge of preventive measures and first aid treatments so that surgical affection is minimised. For this purpose it is also necessary that Veterinary Surgeons may think of their role in this new direction of field programmes. I think the deliberation of the Symposium will give a new direction to this discipline.

I wish the conference a success.

Yours Sincerely,

Sd/- G. Trivedi

Dr. C. THAKUR, M. S., Ph. D. (Wis.)
SPECIAL OFFICER

Birsa Agriculture Universi
RANCHI (Bihar)
Camp, PATNA

October 25, 1980

Message

I am very happy to learn that Indian Society for Veterina Surgery has decided to hold 4th All India Symposium from 15 to 17th November, 1980 in the premises of Ranchi College Veterinary Science & Animal Husbandry. The progress made the field of Veterinary Science is outstanding and we find th the research students of Medical Faculty also take advantage the research results and make use of resources provided in t Veterinary Colleges. Surgery has occupied a very emine position by its achievements in the field of Veterinary Scienc Bihar had the privilege of outstanding College of Veterin Science at Patna which has also imparted veterinary educati to the students of neighbouring States.

With the establishment of Rajendra Agricultural Univers the postgraduate teaching and research have been transfer from Patna to Ranchi where Veterinary Surgery has distinct po tion among different subjects of teaching and research.

The 4th All India Symposium will provide an opportunity the scientists in the field of Veterinary Surgery for exchange scientific knowledge which may prove of immense benefits to young research workers. The research publication contribu by the scientists will undoubtedly prove to be the guideline future research work.

I wish great success.

Yours since

Sd./- C. Tha

Ranchi Veterinary College
RANCHI-7

7-11-80

H. R. MISHRA
Dean,
Faculty of Veterinary Science
& Animal Husbandry

Message

It gives me great satisfaction that the 4th All India Symposium on Veterinary Surgery is being held for the first time, in the State of Bihar. It is, indeed, a matter of privilege for the Rajendra Agricultural University to play host to the elite members of the Indian Society for Veterinary Surgery. it is encouraging that Department of Surgery at Ranchi Veterinary College has been able to make significant progress and has grown up both in size and qualities within such short period. Organisation of this Symposium is a testimony to it.

This Symposium is being held in this Tribal Belt on a day on which Sri Birsa Bhagwan was born. It is also on the eve of a new Agricultural University being established at Ranchi.

It is heartening to know that large number of eminent scientists would be discussing progress, problems and projections in Veterinary Surgery which would be shaping the profession for some time to come. While tremendous progress has been made in this subject, much still remains to be done so as to render more facilities to the farming community. Many of the surgical skills and procedures are required to be developed a fresh while some have to be modified and simplified so as to suit the requirements under field conditions for the farmers.

I wish the deliberations all success in making more effective the services to ameliorate the sufferings of the mute and the dumb at the cheapest cost, within the short period and most easily available.

Sd/- H. R. Mishra

Dr. P. B. KUPPUSWAMY
Retd. Dean & Director,
Animal Husbandry (Edn. & Res.), Bihar
Hony. Associate Editor, 'Pashudhan'

Branch : 33/1, 1st Flo
National High School Roa
Visveswarapura
Bangalore-56000

20-10-80

Message

I am very happy to learn that the 4th Symposium of the Indian Society for Veterinary Surgery (I S V S) will be held at Ranchi College of Veterinary Science and Animal Husbandry, Ranchi (Bihar) from 15th to 17th Nov. '80. In my opinion the venue, Ranchi, is ideally suited for such a Symposium as the delegates would enjoy staying at the campus and visiting the different departments of the College.

I am sure under your dedicated initiative and the dynamic leadership of Dr. H. R. Mishra, the Symposium would be a great success. We pray the discussions at the Symposium would be highly fruitful and of great benefit to the delegates.

We also pray that the souvenir which is going to be published would prove a very useful reference to all concerned. Once again, I heartily extend my blessings and good wishes for the success of the Symposium and wishing the delegates an enjoyable and useful stay at Ranchi.

With kind regards.

Sd/- P. B. Kuppuswamy

Dr. A. A. KHAN

I wish to utilize the opportunity to extend my thanks to all the Committee Members who helped to make the Symposium a success. I hasten forward to extend my heartfelt thanks to all the persons whoever helped in organizing the Symposium.

Dr. A. A. Khan
Vice President & Governor
I. S. V. S.

DEPARTMENT OF SURGERY AND RADIOLOGY
RAJENDRA AGRICULTURAL UNIVERSITY, BIHAR

A. A. Khan
University Professor & Head
Ranchi Veterinary College

Brief Introduction :

His excellency the Governor of Bihar, Sir Henry Wheeler, laid the foundation stone of Bihar and Orissa Veterinary College on April 2nd, 1927 at Patna. The first Professor of Veterinary Surgery was Dr. G. N. Roy Chaudhary who joined in 1930 and continued upto 1936. During his period, the department was quite in infancy. Subsequently, Dr. Pyara Singh Sahi took over and remained on this post till 1943. Dr. G. B. Singh was Professor of Surgery between 1943 to 1946 and added substantially to the practical and clinical aspects in Surgery. Col. Dr. S. M. Ishaque became Professor of Surgery in 1946 and during that period the subject of Surgery included Soundness, Obstretics and Gynaecology. After Dr. Ishaque, the post was held by Dr. S. A. Ahmed between 1953 to 1956. For a brief period Dr. Samuel D'cruz remained Professor between 1956 to 1957. Dr. S. A. Ahmed again took over in 1958 and continued upto 1966. During his period M. V. Sc. in Surgery was started in 1963 and the facilities were further developed with the installation of X-ray Plant, Operation Table and other sophisticated equipments. A new development took place in the meantime with the establishment of a second Veterinary College at Ranchi in 1961 to meet the growing needs of Veterinary graduates in the State. Dr. A. A. Khan took over as Professor of Surgery in the year 1969 and his efforts added to the number of surgical cases, increasing the same to more than 5000. A good number of students completed M. V. Sc. in Surgery and some of them are occupying high positions in India and abroad. With the inception of the Rajendra Agricultural University in 1970, teaching, research and extension activities were integrated. The Post-graduate teaching in Surgery was shifted from Bihar Veterinary College, Patna to Ranchi Veterinary College, Ranchi during the year 1978. A chair in Surgery was created and Dr. A. A. Khan joined as University Professor and Chairman on 17th July, 1978 with headquarters at Ranchi Veterinary College, Ranchi. Dr. S. K. Jha was the first Professor of Surgery to join in 1961 at Ranchi Veterinary College on which he continued till 1966. After Dr. Jha the post remained vacant for several years till Dr. Khan took over as University Professor and Chairman in 1978.

Some of the important achievements of the department are discussed below :

1. Teaching :

The Under-graduate courses in Surgery are offered at both the Colleges at Patna and Ranchi. There are six courses in the areas of General Surgery, Anaes-

thesiology, Radiology, Clinical Surgery and Soundness for 18 credits : 10 courses of 500 series for 30 credits are offered for M. V. Sc. students and 6 courses of 600 series for 18 credits to Ph. D. students. A one year Post-Graduate diploma course was also run in Veterinary Clinics for the benefit of Veterinary Officers of Animal Husb Department, Bihar. Up till now 2 dents have successfully comp Master's research in Veterinary Su and they completed work on the fo ing research projects :

Sl. no.	Name of Student	Year	Title of the research work
1.	S. C. Ojha	1965	Studies on cervical oesophageal end to end ana mosis in buffalo calves with different sutur materials.
2.	G. A. Bhatt	1967	Studies on the incidence of bovine urolithiasis its surgical approach under field conditions special reference to endwelling polythene cathe
3.	Benaras Prasad	1967	End to end intestinal anastomosis in canines.
4.	O. P. Gupta	1970	An experimental study of tendon repair employ different suturing technique in buffalo-calves a its application under field condition.
5.	D. P. Singh	1971	Studies on autogenous skin grafting in bovine.
6.	M. N. Nasimi (Afghanistan)	1971	Comparative study of techniques for closure laparotomy incisions by different suturing mater in bovines.
7.	P. K. Samanta	1971	An experimental study on supre public cystoto and catherisation in the treatment of urolithi in bovine.
8.	N. R. Joshi (Nepal)	1971	Studies on the use of different prosthetic mater in repair of abdominal hernia in buffallo calves.
9.	S. P. Sharma	1973	Studies on Colo and Caecocystoplasy for part substitution of the urinary bladder in buffa calves.
10.	Md. Ehsan	1973	Regional anaesthesia of bovine limbs.
11.	Sukhdeo Prasad	1973	Experimental production of traumatic reticuli in buffalo calves and its surgical correction.

Sl. no.	Name of Student	Year	Title of the research work
12.	R. K. Sinha	1973	Estimation of serum alkaline phosphatase in different stages of healing of fracture in large animals with special reference to matecarpal & metatarsal bones.
13.	P. N. Sahay	1975	Studies on percutaneous synthesis of long bones with special reference to metacarpal and matetarsal fractures in bovines.
14.	R. B. Singh	1975	Surgical studies on traumatic teat fistula in lactating animals with particular reference to experimental approach in caprine.
15.	S. Kumar	1975	Entero-anastomosis by different envagination techniques in buffalo calves — An experimental study.
16.	Laliteshwar Lall Das	1976	Studies on clinico-biochemical changes in experimental abomasal displacement and torsion in buffalo calves.
17.	Jai Gobind Singh	1977	Experimental studies on End-to-End arterial anastomosis and evaluation of different suturing techniques in bovine.
18.	Devendra Kumar	1978	Studies on the effect of diazepam and meperidine hydrochloride on barbiturate anaesthesia in dogs.
19.	S. C. P. Gupta	1980	Evaluation of single layer everted and inverted entero anastomosis in bovine.
20.	P. R. P. Verma	1980	An experimental study of autogenous tendon grafting in bovine.

Abstracts from M. V. Sc. thesis in Surgery at Bihar Veterinary College, Patna and Ranchi Veterinary College, Ranchi are given below :—

1. Studies on cervical oesophageal end to end anastomosis in buffalo calves with different suturing materials (1965) :

In the present study, an attempt has been made to evaluate the value of different suturing materials for oesophageal anastomosis in buffalo calves. The success of the anastomoses was assessed from the clinical observations made post-operatively upto a period of thirty days after which the animals were destroyed for the study of surgical pathology. Two techniques of end-to-end anastomosis have been adopted. Silk in two rows of sutures, chromic catgut in one row of suture and their combination using silk for the

mucosa and catgut for the muscular layer have been found to achieve encouraging results.

2. Studies on the incidence of bovine urolithiasis and its surgical approach under field conditions with special reference to indwelling polythene catheter (1967) :

Ischial urethrotomy was performed in 18 experimental buffalo calves and polythene catheter was indwelled successfully. The technique of operation and method of insertion, indwelling and anchoring catheter was discussed. It was found possible to close urethral and skin incision after indwelling catheter and this helped the wound to heal without usual complications, except in one animal. This proved to be the most important advantage of the method. The major quantity of urine drained through catheter also helped the wound to heal. 89% success was achieved by employing the modified technique of indwelling catheter. Ischial urethrotomy affords immediate relief by evacuation of the bladder, possibility to locate calculi and facility to flush urethra and bladder. By indwelling catheter, the operation becomes rational and readily acceptable. The polythene catheter was cheap, non-toxic, non-reactive, non-additive in urethral lumen and could be easily available for field conditions.

3. End to end intestinal anastomosis in Canines (1967) :

In this study, end-to-end enteroanastomosis as well as dynamics of intestinal wound cicatrisation in relation to the techniques and kind of suture materials have been studied. Three techniques namely, Parker-Kerr method, a modified method (Spink, 1966), and non-suture intestinal anastomosis have been stu in total number of 35 dogs. Two sutu materials, cotton 40 and chro catgut 3/0 were used. The results of anastomosis are based on their cli function, macroscopic and microsc appearance. The relative advant of the three techniques of anastom have been established. A modi method of intestinal anastomosis been proved efficient and better t Parker-Kerr method. Non-suture int nal anastomosis by invagination has b found superior to Parker-Kerr techni Results of the modified method of int nal anastomosis and non-suturing inv nation technique were found compar to each other. In terms of sutu material, it was concluded that co produced milder tissue reaction than gut and hence cotton can safely repl catgut in intestinal anastomosis.

4. An experimental study of tend repair employing different sutur technique in buffalo calves and application under field condit (1970) :

In the present study the differ techniques for suturing tendon-ends h been evaluated in 12 buffalo calves. Th techniques viz., Koch-Mason technique tendon suture, Bunnell-Mayer dou cross technique of tendon suture, a Mattress technique of tendon suture h been studied. Three different sutur materials viz., Braided Silk, Stainless st wire, mercerized cotton have been eva ated. The success of the tendon sut was assessed from the clinical obser tions made post-operatively upto a per of thirty days, macroscopic and micr copic appearances.

5. **Studies on autogenous skin grafting in bovine (1971) :**

In this study four types of skin grafts namely, pinch graft, split thickness graft, full thickness graft and pedicle graft were attempted on 32 surgically operated wounds in 16 male buffalo calves. The success of the skin grafts in different techniques were assessed from the results of observations, upto a period of 28 days post-operatively, particularly for viability, resistance to trauma hair growth, degree of contraction and pliability of the grafted skin. In addition to the gross observations, the histological changes at the grafted site were also studied. Out of the four techniques of grafting, the pinch graft was found very much easy to perform whereas in terms of success, pedicle graft was the most ideal where success rate was 100%.

6. **Comparative study of techniques for closure of laparotomy incisions by different suturing materials in bovines (1971) :**

The present work was undertaken to investigate the different techniques for closure of laparotomy wound by different suture materials. The wounds were closed with different techniques viz., one tier, two tier and three tier using three different suturing materials viz, Silk No. 4/0, Cotton No. 8 and Vetafil No. 0.20 mm. In one tier technique of suturing, silk, cotton and vetafil furnished satisfactory healing results in order of merit. In two tier technique, vetafil gave inferior results grossly and microscopically than one tier technique. In the three tier suturing technique, comparatively increased quantity of suturing materials were required and this technique did not offer satisfactory healing as seen in previous two techniques.

7. **An experimental study on supra public cystotomy and catheterisation in the treatment of urolithiasis in bovine (1971) :**

Experimental study of suprapubic cystotomy and total catheterization with polythene tube followed by its indwelling was done on 18 male buffalo calves. The indwelled polythene tubes were kept for a period from 7 to 10 days. Haematological and BUN studies revealed no significant deviation from normal values. No marked pathological changes were observed in the bladder or urethra by gross and histopathological study. Satisfactory response was found in 87.7% cases. The indwelled polythene tube acted as an ideal urinary prosthesis.

8. **Studied on the use of different prosthetic materials in repair of abdominal hernia in buffalo calves (1971) :**

The present work was undertaken to find out the suitability of the synthetic materials for the repair of hernia in bovines. Three different kinds of synthetic materials namely nylon mesh, plastic mesh and vetafil were used. All the three materials used as prosthesis were tolerated well by the body. Nylon mesh and plastic mesh were easier to employ as compared to the vetafil darn so far time and labour are concerned. Thus nylon and plastic mesh were the ideal prosthetic material for herniorrhaphy in bovines.

9. Studies on colo and caecocystoplasty for partial substitution of the urinary bladder in buffalo calves (1973) :

In the present study, colocystoplasty and caecocystoplasty were performed on 16 male buffalo calves using 8 animals for each technique for the repair of ruptured urinary bladder. To accomplish this type of grafting an intestinal segment was isolated and opened longitudinally to form an open sheet or flat patch from which mucosa was stripped off and the resulting seromuscular graft was sewn to partially cystectomised bladder. Success attained in caecocystoplasty was cent percent, but the viability of the graft and the process of repair was superior in colocystoplasty. The technique of caecocystoplasty was easier and safer than colocystoplasty. Both these seromuscular pedicle grafts from the colon and caecum served as satisfactory substituate for bladder reconstruction and they are worthy and feasible in buffalo calves, yet caecocystoplasty should be preferred due to its advantages over colocystoplasty.

10. Regional anaesthesia of bovine limbs (1973) :

The study was carried out in 18 buffalo calves to assess the efficiency and suitability of intravenous regional anaesthesia and brachial plexus block for limb surgery. The action of novocaine and lignocaine in 1 and 2% concentrations was also evaluated. The intravenous technique was proved to be superior to brachial plexus block as the technique was simple, safe and easy to carry out. Furthermore, the drug of low concentration seemed equally effective with adequate muscle relaxation.

11. Experimental production of traumatic reticulitis in buffalo calves and its surgical correction (1973) :

In the present study reticulitis was produced experimentally by feeding the nails of different sizes. Subsequently, the symptoms were observed to provide adequate and efficient treatment. Success in alleviating traumatic reticulitis by performing rumenotomy can be achieved untill it has not developed serious complications like cardiac perforation in animals. It has also been concluded that traumatic reticulitis can be prevented satisfactorily by the use of bar magnet.

12. Estimation of serum alkaline phosphatase in different stages of healing of fracture in large animals with special reference to metacarpal and metatarsal bones (1973) :

In the present study, the level of alkaline phosphatase in the serum during fracture healing was assessed. Experimentally induced fractures were created in buffalo calves, plaster casts were applied to immobilise the fractured bones and level of alkaline phosphatase was estimated during different periods of fracture healing. It was concluded that a slight rise in the level of serum alkaline phosphatase actively prolonged the healing period whereas non-significant rise resulted in non-union of the fractures. Hence the magnitude of increase in the level of serum alkaline phosphatase is an useful aid in assessing the prognosis of a fracture healing.

13. Studies on percutaneous osteosynthesis of long bones with special reference to metacarpal and metatarsal fractures in bovine (1975) :

In the present study, percutaneous osteosynthesis was done by means of transfixation of fractured bones in buffalo calves. Metacarpal and metatarsal bones were fractured by experimentally induced trauma and immobilisation was achieved by means of applying transfixation pins which were bridged by a template of polythene tube containing self polymerising acrylic agent. Two different acrylic agents were used in this study. This improved technique was compared by conventional method of immobilisation by plaster cast. Radiographic as well as gross findings proved that percutaneous transfixations with external immobilisation by self polymerising acrylic agent was far superior to conventional methods.

14. Surgical studies on traumatic teat fistula in lactating animals with particular reference to experimental approach in caprine (1975) :

In this study, experimentally induced and clinical cases of teat fistulae in lactating animals were repaired in two tier suturing technique, i. e. mucosal layer alone, muscle and skin together employing simple continuous and interrupted sutures respectively. Two types of suturing materials namely silk 3/0 and mercerised cotton no. 25 were used. Six lactating goats were selected for experimental production and correction of 12 teat fistule, whereas six clinical cases of teat fistulae in lactating cows and goats was corrected by the aforesaid technique and materials. Polythene tube was inserted in the teat canal in fifty percent cases to prevent leakage of milk through suture line. The technique used was quite suitable and the materials employed were satisfactory in all aspects.

15. Enteroanastomosis by different invagination techniques in buffalo calves — an experimental study (1975) :

Enteroanastomosis by two different invagination techniques were studied on 18 buffalo calves. In one technique, the mucosa of the descending loop of intestine was removed; while in the other group, it was kept intact. The anastomotic site was sutured by 3/0 black braided silk. Both these techniques of anastomosis were quite satisfactory and no anastomotic failure or leakage took place, neither there was any mortality. Radiological observations revealed no decrease in the size of effective lumen, whereas histopathology, evidenced uniform healing pattern in cases of anastomosis with stripped off mucosa.

16. Studies on clinico-biochemical changes in experimental abomasal displacement and torsion in buffalo calves (1975) :

Experiments were conducted on 12 male buffalo calves divided in two groups. In group I, right abomasal displacement was created experimentally, whereas in group II, only laprotomies were performed and acted as control group. There was non-significant fall in Hb% and serum sodium level. Total serum protein level showed significant changes ($P < 0.05$), serum potassium and serum chloride decrease was highly significant

($P < 0.01$). A highly significant ($P < 0.01$) rise in plasma bicarbonate level was also observed. The control group did not show any abnormal clinico-biochemical changes.

17. **Experimental studies on end-to-end arterial anastomosis and evaluation of different suturing technique in bovine** (1977) :

End to end arterial anastomosis by two different techniques was studied in 16 male buffalo calves. In group A, continuous over and over suture was employed for anastomosing experimentally resected carotid and median arteries in four animals each, while in group B, continuous everting mattress sutures were applied similarly. Based on the present findings, it was inferred that continuous over and over, and continuous everting mattress sutures can very well be tried in the above sequence for the repair of major damaged arteries in large animals.

18. **Studies on the effect of diazepam and meperidine hydrochloride on barbiturate anaesthesia in dogs** (1978) :

24 Mongreal dogs were utilized in the present study. Diazepam @ 2 mg./kg. I/V and Meperidine hydrochloride @ 10 mg./kg. I/M was used as preanaesthetic drug. The dose of barbiturate was significantly reduced whereas the duration of anaesthesia was prolonged with smooth recovery when diazepam was used.

19. **Evaluation of single layer everted and inverted entero-anastomosis in bovine** (1980) :

Single layer and end to end inverted and everted techniques of entero-anaesiomosis were studied in 16 male buffalo calves with silk and catgut sutures. Taking into account, the time required for operation and of adhesion, leakage at the site of anastomosis and histological picture, it was concluded that inversion technique was superior to eversion technique. One the other hand, silk suture was better than the catgut because latter elicited more even growth of connective tissues around it.

20. **An experimental study of autogenous tendon grafting in bovine** (1980) :

2. Research :

The significant achievements in research are as follows :

(i) Different techniques of autoegnous skin grafting were successfully tried in buffalo-calves. Split graft and pinch grafts were found most durable means of covering the extensively denuded area and were tried in clinical cases with successful results.

(ii) Autopolymerising agents were tried in fracture repair in large animals. The whole set-up on account of its being light and locking the fractured fragments under rigid fixation helped as an walking aid as well as effected satisfactory healing. This technique helped in preventing the loss of life and motive power of large animals and thereby considerably helped the farming cummunity.

(iii) Polythene indwelling catheter was used for the first time in bovine for effective drainage of urine after removal

of urethral calculi and subsequent break through in this aspect of treatment was suprapubic cystotomy and total catheterisation in cases of ruptured bladder. Thereafter acecocystoplasty and colocystoplasty were successfully performed for partial substitution of ruptured urinary bladder.

(iv) Large abdominal hernias posing problems of recurrence after conventional techniques of repair was effectively managed by employing prosthetic material for the repair. It is an excellent means as it furnished reinforcement and provided strength to the adjoining weak musculature.

(v) Magnet feeding as prophylactic measures was ascertained in preventing the onset of Hardware disease in cattle with remarkable success.

(vi) Arterial anastomosis by different suturing techniques, a difficult problem to achieve in veterinary practice was tried successfully in bovine.

(vii) In chronic mastitis and subsequent production of fibrosis resulting into cessation of milk is a great loss to farmers. To relieve this malady open teat surgery is being performed successfully which restores normal milk flow.

(viii) Artificial pneumoperitoneum, a new method of rectification of vaginal and rectal prolapses in cow and buffalo proved excellent and was applied for the first time in India with success.

The following research programmes have been approved and are continuing in the department :

(i) Residual effect of intravenous regional anaesthesia.

(ii) Repair of ruptured bladder with special reference to installing catheter.

(iii) Studies on peritoneal dialysis with particular reference to ruptured bladder leading to peritonitis and uremia in bovine.

(iv) Clinical biochemical studies in experimentally produced traumatic reticulitis in bovine and its surgical correction.

Equipments worth Rs. 2.5 lacs have been sanctioned and they will be installed in the newly constructed clinical complex. Although no separate research staff has been provided in the department, it is expected that after filling the posts of 3 Associate Professors and 3 Assistant Professors with supporting staff the research programmes in the department will be fully taken care of. In the newly constructed clinical complex provision has been made for specialised type of research work with in-door facilities for sick and experimental animals.

3. Extension :

In the past few years the clinical activities in the department have increased considerably. The department has proposed to start a 3 months refresher course in modern Surgical Techniques for the benefit of the field veterinarians. It is also proposed to organize Surgical Camps at different centres and in the villages adopted by the University. The department is participating in the following activities for the benefit of the farming communities:

(i) Diagnosis and treatment of surgical cases at the Veterinary College clinic.

(ii) Diagnosis and surgical operations at the field veterinary clinics of the College.

(iii) Surgical operations in the Government/Private farms.

(iv) Participation in National Social Service Programme.

(v) Participation and organisation of University Kisan Mela.

(vi) Professional Farmer's and other training programmes.

(vii) Dissemination of scientific informations through radio talks, clinical conferences and popular articles.

(viii) Extension Education on Surgery through Audio-Visual aids and other informations to the farmers on surgical importance.

'People must understand that science is inherently neither a potential for good nor for evil. It is a potential to be harnessed by man to do his bidding.'

— Glenn T. Seaborg

'Nothing astonishes men so much as common sense and plain dealing.'

— Emersion

LARGE ANIMAL SURGERY

LARGE ANIMAL SURGERY

Biochemical Alterations in Buffaloes with Diaphragmatic Hernia Effects of Herniation, Laparo-Rumenotomy and Herniorrhaphy

V. K. Sobti, Rama Kumar V., and R. N. Kohli
Department of Veterinary Surgery and Radiology,
Punjab Agricultural University, Ludhiana.

Venous blood of 21 buffaloes with diaphragmatic hernia was analyzed for packed cell volume, haemoglobin, total proteins, ablumin, globulin, glucose, serum electrolytes and minerals. In nine of these buffaloes, investigations were also carried out following laparo-rumenotomy under local anaesthesia and herniorrhaphy under general anaesthesia with chloral hydrate-thiopentone sodium combination. Similar studies on five unoperated healthy buffalo calves under same general anaesthesia served as control.

The role of various blood constituents as diagnostic tool and pointers towards pathophysiological alterations due to diaphragmatic hernia and its treatment has been discussed.

An investigation into the effects of some Osteogenic Agents on Fracture Healing in Buffalo Calves

A. K. Khanna
Department of Veterinary Surgery & Radiology,
Punjab Agricultural University, Ludhiana.

Studies were conducted on twenty two apparently healthy buffalo calves randomly divided into four groups. One group served as control whereas in the remaining three groups osteogenic activity of fresh homologous urinary bladder mucosa, cartilage powder and collagen extract of sheep tendon, respectively, was investigated. Eighth and tenth ribs of the left side were fractured and the agent under study was applied locally. Radiographic, angiographic and microscopic studies were carried out to evaluate the process of healing at thirty and sixty post fracture days.

Radiographically, the healing was poorest in animals where urinary bladder mucosa was employed. Cartilage powder treated fractures healed more satisfactorily than the controls. The application of collagen produced a callus comparable to controls at thirty days; however, at sixty days the callus was inferior to controls.

Angiographic patterns at both the stages were comparable in controls, cartilage powder and collagen groups. The urinary bladder mucosal transplant group had signs of necrosis at thirty days and definite areas of necrosis at the later stage.

Histomorphologically and histochemically the callus at thirty days was the best application of cartilage powder. While controls and collagen fibre groups had comparable state of healing, that of mucosal transplant group was marked by the presence of large numbers of neutrophils, macrophages and osteoclasts. By sixtieth day cartilage powder treated animals showed better healing than controls. However, there was a reversal in the quality of the callus produced by application of collagen fibres; the callus was more fibrous than osseous. Similarly the grafting of homologous urinary bladder mucosa resulted in the production of more fibrous and less ossified callus at this stage. It was concluded that : i, Topical application of cartilage powder some what enhanced the osteogenic activity following fracture. ii, Collagen fibres and urinary bladder mucosa produced little or no osteogenic activity respectively.

Walk with faith and be sure you will get through it; for 'Where there's will there's a way.'

— Elizia Cook

'People ask you for criticism but they only want praise'.

— W. S. Maugham

Haemoglobin-oxygen affinity in Bovines in Normal and Stress Situations

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In addition to cardiac output and its distribution and blood oxygen content, the affinity of haemoglobin for oxygen is yet another important factor upon which availability of oxygen to the tissues is dependent upon. This affinity expressed as oxygen unloading potential (conventional measure P_{50} i. e. pO_2 at which blood is 50% saturated) is known to be dependent on certain ligands like blood pH, pCO_2 and organic phosphates of red cells. Alterations in these legands may affect the transport of oxygen to tissues. Studies were therefore conducted to find out the oxygen unloading potential in cow calves and buffalo calves during health and certain stress situations.

Oxygen unloading potential in normal healthy cow calves and buffalo calves was observed to be 26.9 mm Hg (26.0-29.6 mm Hg) and 26.2 mm Hg (24.2-27.5 mm Hg) respectively. The P_{50} values were also determined in cow calves following septic shock and uraemia and in buffalo calves under septic shock and after glyceryl guaiacolate administration. The P_{50} values decreased in uraemic calves and buffalo calves under shock but remained unaffected in the remaining animals. Findings revealed that pCO_2 is not specific in shifting the oxygen dissociation curve in bovines, rather it interacts with the blood pH and other ligands. No correlation could be inferred between the body temperature and the P_{50} values. It was apparent from the observations that under certain physiopathological conditions, increased base excess in bovines may be disadvantageous as far as oxygen availability to the tissues is concerned.

'It is not enough to have good mind; the main thing is to use it well'.

— *Descartes*

Some immobilization techniques for fracture repair in Cattle and Buffaloes

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Fracture of humerus and femur in four adult bullocks were successfully repaired with Kuntschner clever leaf nails. Animals responded favourably to surgery and physiotherapy, including massage and planned exercise. Follow up for one year revealed near normal gait and restored utility. It was felt that more than simple immobilization or perfection in alignment, rehabilitation of the affected limb through planned exercise should be given a greater role in restoration of normalcy.

Compound subarticular fractures of metacarpus (2 animals), metatarsus (1 animal) and tibia (3 animals) were repaired with criss-cross pinning. In these cases following routine preparation and anaesthesia, the bone fragments were aligned and steinmann pins of suitable diameter were introduced obliquely into the skin and cortex on the lateral aspect of the one fragment and driven through the opposite cortex and skin of the other fragment. A second pin was introduced in the similar manner from the medical side so that it crossed former at an obtuse angle. A plaster cast was then applied with ends of the pins bent and enclosed in the cast. Plaster cast was applied in the figure of eight fashion. The technique proved effective even in the presence of infection and instability was not encountered. Intermittent closed irrigation with warm hypertonic saline solution proved effective for debridement of necrosed tissue and early clearance of infection.

Bilateral fracture of the mandible in a six year bullock was treated successfully with criss-cross pinning as in the repair of subarticular fractures. The direction of the pins prevented the ventral or lateral deviation because the tension falling on one pin was countered by the other. The provision of a drainage tube alongwith intermittent closed irrigation with warm hypertonic saline helped in the uncomplicated recovery of the animal.

'The more I read the more I meditate. And the more I acquire, the more I am enable to affirm that I know nothing'.

— *Voltaire*

A Technique for the Management of Frontal Sinusitis in Zebu Cattle

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Frontal sinusitis as a direct infection of the sinus or as a sequele to horn injuries, fractures, horn cancer or at times as a complication of dehorning is a problematic malady of zebu cattle. Inherent anatomical compartmentalisation and the normal carriage of the head further makes the process of drainage and irrigation of the sinus intricate.

Conventional techniques and some improvised methods, however, ensure adequate infusion of the drugs into the sinus, but may not necessarily ensure complete or desired evacuatien of the infused fluids or the exudates. Normal carriage of the head in the bovine necessitates a most ventral perforation in the frontal sinus receptacle in order to overcome the drainage problem and the limitations of the available techniques.

In a clinically evaluated technique in 12 bullocks, a self designed, locally fabricated* "Sinus probe" was found to be committal. The contrivance effectively aided to perforate one or two offending septal plates within the frontal sinus. Manual perforation, at times was aided by malleting the handle of the probe. Frontal sinus was thus made to communicate with the nasal meatus and thereby to be the exterior via the nostril. The procedure ensured perfect evacuation of the infused drugs via the ventral exit connecting the sinus with an indwelt polyethelene tube.

The surgical technique essentially included conventional and improvised cornual anaesthesia, flap amputation of the *processus cornus* (including part of frontal bone), traversing the probe across the frontal sinus till it emerged from the same nostril exteriorily. A partly fenestrated suitably sized polyethylene tube was indwelt via the probed passage, part of the dorsal and the ventral ends of the tubes protruded beyond the sutured flap above and the nostril below respectively.

Lavage, medication and aeration of affected frontal sinus was easily accomplished at the desired interval. The retention of part of therapeutic medication within the sinus could also be possible by desired closure or opening of the ventral exit. The catheter was retained conveniently for 10 days on an average. The minor dorsal cutaneous wound left in place of the tube after its removal, healed uneventfully with conventional management.

*M/s Gargo Pvt. Ltd., Bhuteshwar Road, Mathura.

An Improvised Technique for Radical Ocular Exenteration in Bovines

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Orbital exenteration is imperative in panophthalmia, irreparable ocular lesions and ophthalmic neoplasia. Conventional ocular ablation technique invariably lead to a prolonged healing period primarily because of extraneous complications.

In a recently contrived technique evaluated clinically, healing occurred within 10-12 days. The technique afforded almost a closed healing of the orbital cavity and ensured desired irrigation, medication, aeration and drainage of the exudates from the orbital cavity and advantageously obviated routine packing etc.

After instituting desired premedication, ocular anaesthesia, affected eyeball is ablated employing usual ankyloblepharon technique observing adequate measures for haemostatis. Prior to lid suturing a 15-18 cm long (4mm OD), polyethylene tube is intubated via a snugly fitting hole drilled mechanically in the malar bone, flanking 2.5 cm below the inferior orbital rim. Internally, the catheter abuts approximately at the base (during normal head carriage) with part of length (fenestrated, lying free in the cavity). The catheter is anchored externally and retained till such time the healing of the cutaneous wound and anticipated healing by granulation within the orbital cavity is completed. One to two weeks' period was found adequate.

Studies on uterine healing — Comparison of single and and double layer suturing pattern in cows.

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The comparative evaluation of uterine suturing techniques, in 15 cows, were made. Total of 60 uterine incision, four per animal, were performed equally in all the animals, and repaire of the incisions were made by continuous single layer lembert inversion, lock stitch and double layer lembert inversion suturing pattern. Macroscopic and microscopic observations were made at 3rd, 5th, 7th and 21st post-operative days. The observations demonstrated that single layer lembert pattern of uterine repair healed early with less adhesions and minimum

fibrosis. The lock stitch pattern were associated with moderate adhesion, where as in double layer lembert technique the least post-operative complication with maximum holding strength were observed. The bursting pressure of lock stitch was poorest among the techniques used. Pathological changes like haemorrhage, oedema, mucosal necrosis were seen, on 3rd post-operative day, in all the groups, but haemorrhage and oedema were maximum in lock stitch pattern. Mucosal necrosis was maximum in double layer lembert group, followed by lock stitch and least in single layer lembert group. The mucosal continuity was observed on 7th post-operative day only in single layer lembert suturing technique where in other groups it was not seen due to mucosal necrosis. The serosal continuity was observed on 5th post-operative day in all the groups. Muscularis healing was not observed in any of the groups upto 21st day. When all these patterns were compared, the single layer lembert pattern was found to be superior as compared to lock stitch and double layer lembert techniques.

Interstinal Disorders in Cattle

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Gastro intestinal disorders are on the increase in bovine. The common intestinal affections include torsion, displacement and intussusception. In the present paper various intestinal disorders encountered in surgical clinic, College of Veterinary Science, Tirupati are discussed These included intestinal obstructions, rotation of colon and torsion of the caecum, torsion of ileum and jejunal displacement, diverticulum of colon, torsion of spiral colon and fibro-sarcoma of the pelvic cavity interfering with defecation. The clinical symptoms and their surgical management are described.

Surgical Treatment of Tumours in the Nasal Cavity and Paranasal Area in Bovine

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During the past three years, 4 cows, 2 bullocks and 2 bulls with tumour in the nasal passage and paranasal area have been operated in this department. Tumours occuring in paranasal area affected mostly the Jersey cross-bred bulls, bullocks and cows. One Holstein-Friesian cow also had suffered. In one country-bred cow a nasal polyp with suppuration was operated, too.

These animals were having dyspnoea alongwith noisy respiration. Protrusion of the eyeball of the affected side was marked in all the animals except a bullock with tumour bulging out in between the eyes in the midline and the cow suffering from polyp. There was profuse nasal discharge which was blood-tinged at times.

The animals were restrained and tracheotomy was performed. A tracheotomy tube made out of polythene tube, a circular rubber piece and the netting of a tea strainer was introduced in the tracheal opening and was anchored to the skin around.

Trephining of high and low frontal sinus in 6 cases, and below the orbit in 1 case were performed. In case of bullock trephining was done in between the eyes because the tumour mass was causing a bulge at that area. In the cow with polyp, trephining was done at the mid-nasal area immediately above the facial vein. The attachment was found to be extending caudally and thus another trephining was taken up at a superior site, at a distance of about 4 cm. behind the first one. The polyp mass was detached and was removed through the nostril.

The tumour mass in the animals invaded posterior nasal chamber and turbinate bones. The bones were completely necrosed and were removed by digital manipulation.

Six animals died within 3—6 days after operation, one survived upto 2 months and the other one recovered fully. The cow in which the polyp was removed had no complication when followed upto 3 months after operation. In almost all the cases of paranasal tumours, there was invasion of the frontal sinus, superior aspect of the nasal cavity, orbital area and also the maxillary sinus producing necrosis of bones. The necrosed mass was appearing like black clotted mass containg spongy bony parts. There used to be profuse bleeding during manipulations.

Trephining of skull in early stage of tumour affection may be rewarding but the difficulty lies in its detection. Bleeding can be checked to some degree

by gauge pressure and local application of haemostats. The tracheotomy tube fabricated in this department can be prepared by a field veterinary surgeon costing about ten rupees. These tubes can be sterilised before use and can be reused time and again without any eventuality.

Studies on Clinico-biochemical Changes in Experimental Abomasal Torsion in Buffalo Calves

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The experiment was conducted on 12 male buffalo-calves and the animals were divided into group I and II of six animals each. In group I abomasal torsion was created experimentally while group II acted as control where only laparotomies were done.

In general, the animals with twisted abomasum exhibited marked anorexia, dullness and depression followed by suspended rumination and ruminal stasis. The symptoms of dehydration were more pronounced with gradual loss of body condition. The temperature remained near normal but the pulse was weak, feeble and accelerated along with slight increased respiration. The animals mostly preferred sitting in sternal recumbency.

The animals voided scanty faeces of variable consistency, colour and odour and on examination the rectum was found empty except for a little quantity of mucous. There was asymmetry of the flanks with distinct bulging of the right flank. The atypical sounds were audible from right flank on auscultation, percussion and ballottement.

The concentration of Hb% and serum sodium did not reveal any significant change. Serum potassium and chloride showed a highly significant ($P < 0.01$) fall from their normal values, whereas a significant ($P < 0.05$) fall was observed in the level of total serum protein. But plasma bicarbonate showed a highly significant ($P < 0.01$) rise in the animals of group I.

The laparotomised animals of group II did not exhibit any abnormal clinico-biochemical changes.

Preliminary Survery on the Incidence of the Eye Tumours in Bovines

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Twentyfive cases of eye growth over the period of 3 years were subjected to different histological examinations to confirm the incidence of eye tumours in cattle and buffaloes.

The tissues were removed surgically and preserved in 10 per cent formaline. Paraffin sections were cut at 5 μ thickness and stained in haemotoxyline eosin for microscopic examination.

Out of 25 cases 16 were confirmed as reaction to chromic inflammation and injury and not true neoplastic growth. In rest of the 9 cases 5 were microscopically confirmed as squamous cell carcinoma. Two were fibromas originating from the bulbar conjuctiva and the remaining two were dermoid tumours originating from corneo-scleral junction. The animals showing carcinomas were two bullocks and three cows. Those affected with the fibromas were she buffaloes while dermoid tumours were recorded in female cow calves.

The animals suffering from squamous cell carcinoma were in the age group between 7—10 years while the two buffaloes suffering from fibromas were of 6 and 8 years of age. The calves with dermoid were 4 days and 2 years old.

Although the numbers of animals examined were not very large it may be stated that only 36% of the observations on growths were tumours while remaining were in form of chronic granulomatous inflammatory responses.

The incidence of tumours was high in cattle in comparison to buffaloes. However both buffaloes were female. Out of 7 cattle suffering from tumour 5 were female while 2 were male which reflects on the high incidence of eye tumours in female. The two female buffaloes suffering from fibromas further confirmed the high incidence of eye tumours in females. The animals suffering from eye tumours excluding dermoid were in age group between 6—10 years of age indicating the group to be more prone to such conditions. The dermoid in both the animals was seen on the day of their birth.

No incidence of recurrence was noticed in cases of fibroma and dermoid where only tumours were removed. In all cases of squamous cell carcinoma extirpation of eye ball was preferred keeping in view the possibility of their recurrence.

The injury to the eye ball was confirmed by owners in all 5 cases of squamous cell carcinoma, while no incidence of apparent injury was reported in cases of fibromas.

Declawing in Bovine

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Declawing operations were performed on six jersey cows suffering from Suppurative arthritis (Pastern-2, Coffin-3) and necrosis of the third phalanx (1 case). The affected digits were removed aseptically under retrograde intravenous anaesthesia. In five cases second and third phalanges were removed while in one case all the three phalanges were removed. The operated feet were kept under aseptic pad and bandage and covered with transparent polythene sheet to guard against floor contamination. The wounds were dressed on alternate days with topical antibiotic powder. The skin sutures were removed on the eighth post operative day. The operation was successful on all the cases.

Influence of Certain Local Medicaments on Biochemical Changes during Wound Healing in Male Cow Calves

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The present study was undertaken to assess the influence of local medicaments i.e. Furacin, Himax and Livoderm on certain biochemical changes in granulation tissues during different stages of wound healing.

The experimental study involved thirty cross bred male cow calves of three to four months age. The calves were divided into five groups consisting of six animals in each group. Four skin depth rectangular wounds of 2.5×5 cms size were surgically induced under anterior epidural anaesthesia on either side of the dorsal plane of thorace-lumbar region of the body. Three out of the four wounds were treated with Furacin, Himax and Livoderm ointments while fourth wound was dressed with Normal Saline which was kept as a control wound.

In Group I wounds were treated for three days and the granulation tissue was collected on third day. Group II, III, IV and V were similar to Group I except that the wounds were treated for six, nine, twelve and fifteen days and granulation tissues were collected on respective days for different biochemical estimation as follows:—

The tissue ascorbic acid showed insignificant drop from three to six days after wounding in control and treated wounds. There was a significant ($p < 0.05$) rise in the ascorbic acid concentration at 12 days which came to the near

concentration of three days, at 12 days after wounding.

The rise in tissue nitrogen level at six days was significant from the values obtained at 3 days which also declined to a significant level at 12 days. The rise at 15 days was significantly below the level obtained at six days. However, the level of tissue nitrogen of control wounds differed significantly ($p<0.05$) from the level in Furacin, Himax and Livoderm treated wounds at nine days. Livoderm and Furacin treated wounds showed non-significant difference in tissue nitrogen level and it was significant from Himax treated and control wounds at 12 days.

Himax ointment showed highly significant effect on production of high qualities of hexosamine during early period of wound healing than Furacin, Livoderm and Normal Saline (control) treated wounds. The level of tissue hexosamine was high in early periods of wound healing which gradually decreased in later stages of wound healing.

In control wounds synthesis of hydroxyproline and collagen was rapid upto 12 days which slowed down afterwards. In Himax treated wounds the level of tissue hydroxyproline and collagen at 3 days was significantly high ($p<0.01$ and $p<0.05$) from control, Furacin and Livoderm treated wounds which showed non-significant difference within themselves. The level of tissue hydroxyproline and collagen at 6, 9 and 15 days was non-significant within the treatments. However, at 12 days a highly significant ($p<0.05$ and $p<0.01$) rise in the level of hydroxyproline and collagen was observed in Himax treated wounds. The wounds treated with Furacin, Livoderm and control showed non-significant difference at 12 days within themselves.

A Clinical Case of Rectal Tumour in Bull

A. S. Bose, O. Ramakrishna, N. T. Krishna Murthy and K. Ravikumar

An unusual case of rectal tumour was successfully treated in a bull of 5 years old.

The animal was admitted with a case history that it was straining while passing faeces since many days and one day the owner observed a large mass coming out of the rectum. The mass was hard, and pedunculated. Under epidural analgesia the growth was removed after applying a series of transfixation ligatures to the base with No. 3 catgut. Animal showed immediate relief while passing the dung. Antibiotics were given for 5 days post-operatively. Histopathology of the growth revealed soft fibroma of rectum.

The Use of Sanitary Towels and Condoms as Substitutes for Surgical Dressing in Veterinary Practice

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Various types of bandaging materials such as gauze, cotton, lint, adhesive tape, elastic bandage, wire mesh, polythene sheet, healex spray, etc. are available to protect the surgical wounds during the normal healing process. These have to be sterilised before they are used. In field practice, facilities for sterilisation are not readily available and hence most often they are used without sterilisation with the attendant risk.

When confronted with a situation of this kind, we have used the sanitary towels, marketed as Stayfree, Carefree etc. safely, very effectively and conveniently in canines. They are available in sterilised, ready-to-use packs. Their absorbent nature and smooth texture provides for absorption of any haemorrhagic or serosanguenous exudates and also protect the wound with adequate antisepsis.

They are placed on the surgical wound, specially on the lines alba site and kept in situ using adhesive tape or a many-tailed bandage.

In the case of cows, she-buffaloes and does, after teat surgery such as repair of teat fistula or lacerated wounds, the rubber condom (Nirodh, Durex etc.) can be slipped over the teat and held in position with the help of adhesive plaster. Because of its smoothness and moistproof nature, the wound lips are protected from dung, urine and other extraneous sources of contamination. This provides a good substitute when compared to the conventional method of bandaging the teat.

The easy availability, ready-to-use packing and negligible cost should make these materials more handy for a practitioner.

Intestinal Obstruction due to Intussusception and Hernia in Ruminants

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Two cases of intussusception and one case of diaphragmatic hernia are recorded in ruminants. These cases were observed at necropsy with a history of sudden death. The gross lesions were adhesions and venous congestion at the site of intussusception. The possible pathogenesis of intussusception and diaphragmatic hernia causing acute death will be discussed at the time of presenting paper in the conference.

Technique of Novel Method of Using Polythelene Tube with Rubber Balloon within the Teat Canal for Post Operative Draining of Milk Open Teat Surgery

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For avoiding manipulation of suture wound edges during milking and for avoiding the leakages through the line of sutures and for keeping the teat canal empty, the milk was required to be drained out by resorting to use of Rubber Valve or Polythelene Tube without cap or modified fenestrated Polythelene Tube.

Now a technique of novel method of using polythelene tube with rubber balloon, has been successfully tried and described for post operative draining of milk in open teat surgery.

A polythelene tube of about 12 to 15 cms. in length and of a suitable diameter, a rubber balloon of about 7 cms. length, silk thread and air pump formed material for this apparatus. The polythelene tube was passed through the opening of the balloon till it reached the blind end which was then perforated and the tube was passed further. The point of perforation was made air proof or air tight with 4 to 5 loops of silk thread.

Apparatus was kept sterile by immersing in rectified spirit. The polythelene tube alongwith rubber ballon was passed into the teat cistern to such a length that it passed beyond the upper commissure of the fistulous wound. In case, any difficulty of passing the tube with rubber balloon, the teat sphincter was widened with the help of sterile modified triffin knife. Air was pumped into the balloon so that it created a moderate pressure on the teat mucosa and prevented the milk from coming in the contact with the line of sutures. A thread was tied at the end of balloon so as to retain air in the ballon lodged in the teat cistern.

This apparatus was kept in the teat cistern for 72 hours after which the air was removed and the apparatus was pulled out.

The cap was put over outside the end of polythelene tube of the apparatus in case of the animals, which were low or medium milk yielders and the cap was removed and milk was allowed to drain out in high milk yielders.

Observations:

This technique was employed in six clinical cases of she-goats with satisfactory results and without any complications.

The inflated balloon obliterated the space in the teat canal and thus prevented the milk from coming down in the teat canal.

The sutures line was thus protected from being soiled by milk, so as to

promote quicker healing. It was found to give wide stream of milk after removing the air balloon, 72 hours after its insertion.

Results of the surgical treatment of penetrating/fistulous wounds were found most satisfactory by using this novel apparatus.

Clinical and Clinicopathological Observations in Traumatic Pericarditis in Bovines

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Traumatic Pericarditis was experimentally produced in 9 animals with a view to study clinical symptoms, and to study the haematological changes as well as the changes in the SGOT activity during the course of the disease.

Wires of 3 different shapes were introduced through the reticular wall, diaphragm and pericardium so as to remain fixed in situ. Multihumped wire was found to be comparatively more convenient.

Clinical Symptoms :

Anxious look, crouched posture, abducted elbows, reluctance to move, slight elevation of temperature, tachycardia, and decreased respiration were the first noticeable symptoms. These symptoms were followed by pulsation of jugular vein, partial anorexia, muffled cardiac sounds and increased area of cardiac dullness. Development of oedema was not noticed during the period of observation of 11 days.

Clinico-pathological Observations :

Leucocytosis, alteration in Lymphocyte-Neutrophil ratio, Neutrophilia with increased band cells were the prominent haematological findings.

Variation in the SGOT activities were not characteristic enough to indicate the progress of the disease.

Radiological examination was considered useful if facilities permit.

Characteristic clinical symptoms mentioned above supported with the haematological changes together provide useful guideline for the diagnosis of the condition.

A New Technique of Using Modified Halls Triffin Knife and Lamllear Tent or Surgical Pin for Correcting Blind Teat and Stricture of Sphincter

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After ascertaining the nature of teat affection as a blind teat or stricture of sphincter muscles and that the teat canal was filled with the milk, the teat was prepared for aseptic surgery and after anaesthetising the same with ethyl chloride or intracanal, the surgical interveation was commenced.

In case of blind teat and sterilised 14 hypodermic was used for penetrating the teat orifice for allowing insertion if the sterilize modified triffin knife by Kulkarni (1974) through the teat orifice into the streak canal.

In case of the stricture of the sphincter, the sterilised triffin knife was inserted through the teat orifice easily.

After passing the triffin knife within the streak canal, the sphincter was passed over the blade and the triffin knife was moved firmly, so as to cut the sphincter in triangular incisions vertically within the streak canal.

Few streams of milk or the fluid were removed and if the milk flow was in thin streams, the cuts were made larger. Bleeding was mopped. Antibiotic was infused in the teat canal and then a piece of surgical pin 1.5" in length dipped in spirit for ½ an hour was then inserted through the teat orifice into the streak canal and thread was tied to the teat. The teat was then milked and antibiotic was inserted for three days within the teat canal.

Observations :

The modified halls triffin knife was found suitable for giving the simultaneous even cuts on the streak canal to the desirable exteat. It was also found easy to control the depth of the cuts and thus complications like leaky teat could be avoided.

The lamllear tent was found to possess a character of increasing in its diameter within 18 to 20 hours upto 3 to 4 times its original size when brought in contact with the fluid. Due to the expansion it exerted pressure on the cuts of the teat sphincter from within and thus helped in obliterating all the chances of adhesions in streat canal. In all the cases the stream of the milk was wider. No harmful effects of the surgical pins were noticed.

Studies on Horn Cancer
Preliminary Trials of Immunotherapy

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When immunotherapy was attempted on 10 cases of horn cancer of varying duration, 6 recovered within a span of 1½ to 2 months. The animals were inoculated singly or twice with a preparation of horn cancer tissue. With two animals BCG was inoculated simultaneously; one animal recovered while the other died. Histopathological studies on biopsies taken during the treatment revealed cancer cell lysis, initially associated with the infiltration of neutrophils and macrophages and later associated with the infiltration of lymphocytes and macrophages. Animals with a small tumour mass or those that had the tumour mass reduced surgically were favourable for recovery. All animals were kept under observation for 2½ to 5 months after recovery, to ensure that there was no relapse.

Evaluation of Single-Layer Inverted and Everted End-to-End Entero-Anastomosis in Bovine

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In this endeavour single-layer end-to-end inverted and everted techniques of entero-anastomosis were studied in sixteen male buffalo calves with different suturing materials. They were divided into four groups i. e. A, B, C and D, each consisting of four animals. In groups A and B, inverting connell sutures were placed using 3/0 silk and 3/0 chromic catgut respectively. While in groups C and D, 3/0 silk and 3/0 chromic catgut were used in the similar fashion of everting through and through mattress sutures.

The success of experimentation was assessed on the basis of observations made upto a period of 7th, 14th, 21st and 28th day post-operatively. Gross, radiological and histopathological studies were conducted for ascertaining patency of the lumen, healing of the bowel and other changes at the site of anastomosis.

On the basis of these studies the following conclusions were arrived at :

i) The return of physiological functions was similar in all groups of animals. These two techniques had no

untowards effects on the return of physiological functions.

ii) The average time required for entero-anastomosis as well as for the entire operative procedure in inverting technique groups was less than that of the everting ones.

iii) At the anastomotic site only 12.5 per cent leakage was observed in cases of everting groups but this was not sufficient enough to cause mortality in experimental animals.

iv) Uneventful recovery of all the animals took place without antibiotic protection.

v) The everting groups of animals showed maximum area of adhesions than the inverting groups.

vi) The degree of stenosis was statistically analysed and everting groups had significant difference over inverting groups.

vii) The degree of stenosis was maximum on the 7th post-operative day which gradually decreased as the period of observation increased.

viii) Gross as well as radiological examinations revealed more degree of contraction in inverting groups than everting groups.

ix) Histologically there was evidence of uniform intestinal healing in inverting groups as compared to everting groups of animals.

x) Further histological study revealed intense tissue reaction around the catgut suture which was absent in case of silk suture groups.

Based upon the findings of the present study, it was inferred that inverting continuous connell suture using 3/0 silk can very well be tried in large animals as a simple, safe and less time consuming technique for entero-anastomosis.

Experimental Production of Traumatic Reticulitis and its Surgical Correction in Buffalo Calves

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Traumatic reticulitis was produced experimentally in eight healthy male buffalo calves weighing between 75 to 110 kg by feeding nails of two different sizes (2" and 2.5" long). Observations were made on the basis of stagewise symptoms manifested by the animals and different diagnostic methods. The surgical correction was done after performing the rumenotomy. Detailed clinical symptoms, diagnostic methods, surgical technique as well as observations and results are described and discussed.

Effect of Suture Materials and Patterns of Anastomosis on Intestinal Healing in Calves

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The study was conducted on 24 male cow calves in age group of 1 to 1½ years to observe the effect of inverting and everting patterns of anastomoses using absorbable and non-absorbable suture materials on collagen concentration and bursting strength of intestinal wound. Results demonstrated low collagen content and poor holding power of everted as compared to inverted pattern at any given intervals. However, these differences were significant only at early stages of healing. The anastomoses made with absorbable sutures were weaker than similar anastomoses made with non-absorbable sutures.

Free Full Thickness Autogenous Skin Grafting in Bovine— An experimental study

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Free full thickness autogenous skin grafting technique was studied on eight surgically prepared wounds in buffalo calves. Out of eight grafts applied, three failed to "take". Remaining five grafts which succeded to "take" showed perfect union at the line of junction and appeared cosmetically smart. The results were discussed in light of their success in "take", growth of hairs, pliability, texture of the grafted skin and degree of contraction. From the above study it was inferred that though full thickness skin grafts offered strong repair, cosmetically better appearance in all respects, but it required optimal condition for its 'take' which was difficult if not impossible to achieve in bovine. However, in smaller wounds of bovine, where epithelisation is delayed this type of grafting can be used for full functional cure.

Brief Introduction to Cryosurgery & its Prospects.

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In the past few years the use of controlled freezing of local tissues has been employed for treating cancerous & non-cancerous diseases of domestic animals. This promising field of Cryosurgery has got some merits over the traditional surgery and also some disadvantages due to its limitations. Its principles, merits & demerits have been discussed and a brief introduction to cryosurgery has been attempted to in this paper. In conclusion, Cryosurgery can be used as an adjunct to routine practice of surgery for efficient treatment of some ailments.

A Comparative Study of Intestinal Anastomosis by Inversion and Eversion Techniques in Buffalo-Calves

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Single-layer end-to-end inverted and everted techniques of entero-anastomosis were studied in sixteen male buffalo calves with silk and catgut sutures. The average time required for entero-anastomosis as well as for the entire operation by inverting technique was less than that of the everting technique. There was uneventful recovery of all the animals without antibiotic protection. All the animals of everting group showed area of adhesion whereas only three out of eight showed slight adhesion in inversion entero-anastomotic group. The degree of stenosis was more pronounced in inversion technique than eversion method. On microscopic examination healing and repair was more uniform in inversion group. Severe connective tissue proliferation around everted mucosa caused adhesion in eversion technique. There was a pronounced connective tissue proliferation with moderate amount of mononuclear cell infiltration around the catgut suture whereas only mild connective tissue proliferation and mononuclear cell infiltration was noticed in silk suture group of animals. Taking into account the time required for operation, area of adhesion, leakage at the site of anastomosis and histological picture it was concluded that inversion technique was superior to eversion technique. The inversion technique had only one shortcoming that it caused some degree of stenosis especially in early phase of repair. On the other hand, silk suture was better than catgut suture because latter elicited more severe growth of connective tissue around it.

Transosseous Phlebography in Metatarsal Fracture in Bovine

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Transosseous phlebography with torniquets placed proximal to the hock demonstrated both intraosseous and extraosseous venous channels of metatarsal bone. The observations during fracture healing revealed that osseous phlebography is a reliable technique in evaluating the repair process of fractured bone. In normally healing fractures intraosseous venous channels crossing the fracture gap was seen within 4—6 weeks in young bovine calves. There seems to be correlation with the reconstitution of venous flow and prognosis of fracture healing.

Ceramic as Substitute for Bone Grafts in Cases of Bone Deficits

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In this paper the experimental work has been presented to evaluate the possibility of using porous ceramic as a substitute for bone grafts. The experiment was conducted on "Goat" and follow-up was recorded under Clinical limb uses; biochemical changes; radiological changes and histopathological changes.

The results were encouraging and it was found that ceramic can be used as graft in place of bone. This is a preliminary report, further research work is needed.

Hydrocel in a Ongole Bull

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An Ongole bull aged 8 years was brought to clinic with a complaint of swollen scrotum. It was reported that the scrotum was found increasing in size for past one year. The animal is a champion weight puller and had won many prizes during the past 4 years. The scrotum was tapped twice and some medicaments were also applied by village quakes.

But it had not subsided. The operation was successfully done. In this paper the technique of operation and after-care has been described. ●

Internal Fixation : An Experimental Evaluation of Various Methods in Fracture of Femur in Small Ruminants

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This study is an attempt to evaluate the extra-medullary and intramedullary internal fixation devices prepared in operation theater with readily available material.

The study was conducted in 24 small ruminants divided equally into four groups. A transverse mid-shaft fracture of femur was created in all the animals using wire saw.

In group-I the fracture was immobilized with Kuntscher nail and in group-II iron rod coated with methylmethacrylate was used to immobilize the fracture. The fractures in group-III were immobilized with venable stainless steel bone plates, whereas in group-IV the bone plate prepared from heterogenous bone used for the purpose. All the animals were maintained for six months. The four groups were compared on the basis of clinical, radiological, angiographic and venographic observations.

No marked difference in clinical signs was observed except that the period of lameness was more in animals where intramedullary fixation was done in group-I and II. The series of plane radiographs revealed that allignment of fracture ends was maintained throughout the period of observation. The periosteal proliferation was observed as early as 15th day post-operatively. The subsequent radiographs revealed that periosteal proliferation was more extensive in group-IIand IV. However, no abnormal reection in the bone at the site of contact with material was observed in any of the four groups.

The resorption of heterogenous bone plate started on 75th day post-operatively and was completed by 160th day. The angiographic and venographic studies did not reveal any marked difference among the groups at various steges.

On the basis of this study it can be concluded that heterogenous bone grafts and an iron rod coated with innert synthetic material can be adequate substitute to stainless still devices if not superior replacements.

Congenital Flexion of the Carpus in a Cow Calf
A Case Report

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Congenital flexion of the carpus in Bovines is a common surgical entity encountered by the veterinarians. The fore legs are flexed at the carpus due to two ligaments on the posterior surface of the carpus, one at the lateral and one at the medial edge. When these two ligaments are divided, the carpal joint can be extended. The condition has also been attributed to the congenital contracture of the tendon of the Flexor carpi ulnaris muscle at the carpal region.

The paper describes a case of male cow calf admitted to the Veterinary Polyclinic, Dhule, on 12-5-78 (In-patient No. 15/7), with the right carpal joint flexure since birth which was successfully operated.

Muzzleprintometry in Bovines

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Muzzleprint examination has been found to be a most convenient, and dependable method for identification of cattle and buffaloes. This may be utilised in veterolegal cases, recovery of stolen animals, registration of animals, cattle insurance and on several such occasions where identification of the animal is required. Patterns of structures on the broad expanse of the muzzle remain constant with the age. Quantitative changes also, in subjects beyond 2 years of age, are negligible. The rise and fall character of graphs, showing the linear and angular measurements, suggests that the variations in these measurements are not due to actual growth but due to human and instrumental errors.

Dystocia in a Cow Elephant• (*Elephas maximas*) — A Case Report

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A case report of dystocia in a cow elephant *(Elephas maximas)* is presented. Symptoms of impending parturition and the effect of Puituitrin injection in the elephant are described. The urogenital canal being very long, and manipulation of the foetal extrimities impossible, exteriorisation of the foetal extrimities was achieved surgically by incising the perineal region.

Methods employed for traction of the foetus are described. Since the foetus could not be delivered after traction by men and also by a tusker, evisceration of the foetal contents was tried. The cow elephant died. The cause of dystocia was found to be shoulderlock at the maternal pelvis.

Congenital Urethral Diverticulum and its Surgical Treatment in the Male Goats

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Eleven male goats having urethral diverticulum were below six months and had the split scrotum. However, in one case monorchidism was also observed. The hairs, in form of a wide strip, were absent from the median raphe. The affected animal exhibited the pain on the palpation of the diverticula swelling and continuous dribbling of the urine. The condition seemed to be a congenital malformation which resulted due to faulty fusion of the two skin folds which fuse in the midline at the floor of the urethra to form channel. All such cases were treated surgically by dissecting out the excessive portion of the diverticulum and putting an indwelling catheter in the urethra for one week. Following a positive contrast urethrography in five cases, using the "Conray 420" (M & B), the urethral diverticulum were observed but in one case multiple urethral diverticuli were seen, in which the anterior most diverticulum was bigger and posterior successive diverticuli were in form of the shallow pouches. Surgical excision of the bigger diverticulum alone resulted in normal micturition.

Acid-Base Status in a Calf following Drenching Aspiration

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Faulty drenching leading to aspiration into the respiratory tract is a frequent occurence causing menace. One such case in a female Jersey calf aged 1½ months was presented 3 hours after faulty drenching of horsegram and gruel.

The calf was allowed to inhale 100% oxygen through a nasal catheter for 15 minutes. Tetracycline and Triamcinolone acetonide (vetolog) were administered I/M and Aminophyline was pushed into the vein.

The pO_2, pH and pCo_2 were estimated in Blood Gas Analyser using carotid artery blood of the calf. The HCo_3 and B. E. values were obtained in Siggaard-Andersen nomogram. The minute ventilation was recorded in Wright respirometer connected to an improvised mask covering the mouth and nostrils of the calf.

The findings showed that the calf was having low pO_2 level and suffering from metabolic acidosis. This was suggestive of an alternative method to adequately oxygenate the calf and identical cases so that normal oxygen tension is attained by the animals.

Bovine Diaphragmatic Hernia – An Analysis of 110 Clinical Cases

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One hundred and ten cases of diaphragmatic hernia are reported (102 she buffaloes, 7 buffalo-heifers and 1 bullock). Most of the cases occurred in adult animals indicating the acquired nature of the condition. The disease ran a chronic course and was characterized by recurrent tympany, depraved appetite, progressive loss of the condition and gradual but severe drop in milk yield. Haematological examinations were not helpful in establishing the diagnosis. Radiological examination proved useful diagnostic aid. The contrast (barium meal) radiography was valuable for confirming in doubtful cases. Laparo-rumenotomy supplied additional information on the location of the hernial ring and the organs and their extent of involvement in the hernia.

Presence of the foreign bodies in the reticulum, thoracic cavity and fibrous tracts, extensive adhesions of the organs, reticular and diaphragmatic abscesses indicated the traumatic origins of the disease.

Anatomical Basis of the Diaphragmatic Hernia in Buffaloes

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Gross, microscopic, arterio-architectural, and tendomyo-architectural studies were conducted on the diaphragm of 16 healthy buffaloes and 60 clinical cases of diaphragmatic hernia. Gross anatomical studies revealed that the hernia mostly occurred in the right ventral part of the musculotendinous junction of the diaphragm involving the varying amounts of the muscular and tendinous tissues. The maceration studies revealed no weak spot in the ventral part of the tendon and as such a transitional zone between the muscle and tendon was held responsible for the weakness of the diaphragm added with the point of pressure of the abdominal viscera falling this area. The microscopic studies confirmed that the tendon and the muscles both were relatively stronger due to being thicker and having more of the muscular / tendon fibres than the binding tissue in this area as compared to other non-rupture areas. The vascular studies revealed absence of the pericardiophrenic arteries and also the histological studies indicated a poor vascularity in the right ventro-medial part of the tendon. Phrenic angiograms revealed that the central tendon was nourished by diffusion through the arterial circle of the musculo-tendinous junction and anastomatic branch of the caudal phrenic and ascending phrenic rami only.

Thus, it appears that the metallic objects lodged in the reticulum (Tr. reticulitis) may cause a primary tear in the diaphragm. The inherent weakness of the myo-tendinousjunction coincided with the maximum pressure spot, and a poorly vascular area (reticular area) of the diaphragm further predisposes the organ to rupture or else aggravates the disease in cases of paroxysmal increase in the intra abdominal pressure in tympany, parturition or straining etc.

An Approach for the Deep Oral Surgery in Calves

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An approach to the deep buccal cavity through bilateral oral commisurotomy has been tried in three calves. The cheeks were sutured in three layers using vetafil or chromic catgut No. 1 for the mucosal and muscular layers and nylon for the skin. No untoward effect in respect of grazing or mastication was observed. Inspite of constant movement of the cheeks healing was perfect.

Caudal Phlebectasia in Buffaloes

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Varicosity of veins may be circumscribed, diffuse or saccular, occuring due to stagnation of blood. The condition may be because of acquired or congenital defects of the vein wall.

Varicosity of the udder veins in cows and spermatic veins in bull are rare, however, cases of varicose veins have been recorded in horses, cattle and dogs.

Literature on varicosity in buffaloes is scanty and hence this paper on varicosity of the caudal veins in three she buffaloes is presented.

All the buffaloes affected were females and heavy milkers. One was a Murrah buffalo and the other two graded Murrah buffaloes. In all the cases the condition started with wounds on the tip of the tail, and constant swishing of the tail due to irritation.

There was progressive diffuse enlargement of the tail which was very marked in a pregnant animal, the enlargement was both linear and transverse, increasing the weight of the tail, thus considerably impeding its normal movement. The extremities gradually became cold and there was a tendency for sclerosis and ulceration. In one animal few areas showed large saccular dilatations of varying shapes. Marked pulsations could be felt in one animal from the base of the tail to the middle, indicating abnormal dilatation of the artery.

Antiphlogistic treatment, application of pressure bandages for the entire length of the tail, and hoisting and fixing the tail on the back to prevent reaccumulation of blood by gravitation was not found useful. Caudectomy was performed on all these cases as there was a tendency for ulceration of the tail with chances of fatal haemorrhage due to errosion of the blood vessels.

Study on the Efficacy of Ultrasonic Massage on the Udder in case of Bovine Mastitis

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Infection of udder due to microbial infection in cattle, is a common condition. The condition is treated by antibiotics. Following treatment glandular dysfunction and fibrosis of the gland were noticed, resulting in loss of milk production. To overcome the dysfunction of the udder and improve the milk yield, the study was undertaken.

Under the scheme ultrasonic therapy was employed, to stimulate the glandular function so that milk production was stimulated and potentiate the therapy. The study was conducted in 20 white cattle as controls affected with mastitis, under each of the three groups of early (1-3 months), Middle (3-6 months) and (6-10 months) lactation periods, with antibiotic therapy alone, as controls. Milk yield prior to the attack and 15 days after completion of the treatment were recorded. 134 clinical cases were treated with antibiotics for 5 days. From the 3rd day, when acute symptoms subsided the udder was subjected to ultrasonic massage upto 5 days on an average. The improved milk secretion was recorded 15 days on completion of the treatment.

Of the 134 cows subjected to ultrasonic exposure 61 cows were under the first group, 32 under the second group and 41 under the third group. In the first group, early lactation animals, the milk yield was 91% whereas in the controls the yield was 65%. In group II, middle lactation animals the yield was 83% whereas in the controls the yield was 51%. In group III, late lactation animals the yield was 55% whereas in the controls the yield was 32%.

To sum up the milk yield improvement following treatment of mastitis with ultrasonic therapy was 26%, 32%, 22% in early, middle and late lactation animals compared to conventional treatment.

Estimation of Serum Alkaline Phosphatase in Different Stages of Healing of Fracture in Large Animals

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The present experimental problem was studied on twelve male buffalo calves. The experimental fracture of metacarpal and metatarsal bones were produced for the study of serum alkaline phosphatase activity during healing at weekly intervals upto eight weeks.

Radiographs were taken to ascertain the location, type, as well as the proper reduction of fractures. Similarly, the course of healing and the amount of callus formation were also observed.

The normal level of serum alkaline phosphatase activity was found 5.51 ± 0.085 B. U. in healthy male buffalo calves.

A significant increase in the level of serum alkaline phosphatase activity was found during healing of fractures. Furthermore, the result of the experiments suggested that the increase in the level of serum alkaline phosphatase activity during healing had no relationship either with the location or the type of fractures.

The increase in the enzyme level was compared with union, delayed union and non-union of fractures. There was comparatively less rise in serum alkaline phosphatase activity of delayed union than the normal union of fractures, while in non-union the increase was non-significant.

Thus, it was concluded that a slight rise in the level of serum alkaline phosphatase activity prolonged the healing period and non-significant rise, resulted in non-union of the fractures. Furthermore, the speed of increase in the level of serum alkaline phosphatase is an useful aid in assessing the prognosis of a fracture healing.

Surgical Management of Horn Cancer in Bovine

(A report of twentysix cases)

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In a period of one and a half year, 26 bovine horn cancer cases comprising 13 cows, 8 bullocks and 5 she buffaloes were treated surgically at Bihar Veterinary College, Patna for their unilateral defects. The technique involved amputation of the affected horn by flap method at its base close to the frontal sinus and then complete removal of the soft and bony cancerous tissues from the latter with a curette. The frontal cavity was packed with sterile gauze soaked in Tr. Benzoin Co. and skin flaps were sutured with silk thread in interrupted fashion. The internal packs were taken out after removing two central stitches on the third day and resutured. The cutaneous stitches were removed inbetween 10—12 post operative days.

The results obtained were satisfactory. Out of 26 cases operated upon, 23 were cured without showing any post operative complication; whereas in three cases, one required open dressing for few days after removal of stitches, one wound disrupted on 5th day of surgery and another one died on 3rd post operative day which was suffering from severe anaemia and parasitic disorders preoperatively.

Cellular Changes in Normal and Solar Irradiated Wounds in Buffaloes

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Fortyeight cutaneous wounds of equal size were experimentally created in six buffalo calves. Each calf comprised of 8 wounds, 4 on each side on the lumbar region. Four buffalo calves were exposed to solar radiation and two were kept in separate rooms to prevent direct exposure to solar radiation and served as controls.

Cellular changes in exposed as well as unexposed wounds studied at 24 hours, 48 hours, 72 hours and 96 hours intervals from the time of exposure revealed that the changes at 24 hours interval were not much significant except the observance of necrosis of adipose tissue in irradiated wounds as against a slight necrosis manifested in control wounds. At 48 hours interval, the irradiated wounds manifested vascularization, fibrin deposition and infiltration of fibroblast to a more extent than the control group.

Formation of skin epithelia was observed in both cases at 72 hours but necrosis of skeletal muscles and proliferation of fibroblasts was more prominent in exposed cases. Changes at 96 hours were suggestive of extensive necrotic and suppurative changes as evidenced by infiltration of large number of neutrophils and proliferation of fibroblasts at right angle to the capillaries in irradiated wounds while in unirradiated wounds reconstructive changes were in progress.

Cellular changes at early stages of healing in irradiated and unirradiated wounds were suggestive of retarded healing in sola rirradiated wounds. ●

Partial Amputation of Uterus in She-buffalo

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Three hundred sixty degree, a clockwise torsion of uterus in the 2nd stage of parturition resulted into necrosis of the segment of cornua of uterus due to occlusion of blood vessel was presented. The buffalo showed presence of dead foetus and severe toxemia. A caesarian section was carried out to deliver the foetus and correction of torsion did not show any improvement to the circulation to the segment and showed irreversible changes. Partial amputation of (1/4) uterine affected cornua resulted into uneventual recovery. Subsequently the animal concieved and pregnancy proceeded normally till 6 months of gestation but abortion occured afterwards. Blood sera of the animal proved positive for brucellosis in 1 in 240 dilution after 26 days of abortion. ●

Comparative Studies of Techniques for Closure of Laparotomy Incision in Bubalus - Bubalis

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Studies were conducted on eighteen apparently healthy buffalo calves randomly divided into three groups. Six animals were used in group of two for each type of suturing materials for comparative evaluation for each technique.

Observations were recorded for 7—21 post-operative days and gross and histological studies were made to mark the process of healing.

On the basis of results obtained by using three different types of suture materials in one tier, two tier and three tier techniques, the non-absorbable suture material was found to be a suitable material for closing the abdominal wall wounds by one tier technique which furnished satisfactory result with silk, cotton and Vetafil arranged in order of merit. In two tier technique, the non-absorbable materials gave inferior results grossly and microscopically. The three tier technique required more quantity of suture materials and time for closing the abdominal wound, gave much inferior quality healing results.

Partial Ablation of Udder in Cows

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Gangrenous mastitis is not common in Indian cows, but the condition has been reported in Foreign breeds. The authors encountered gangrenous mastitis in two high lactating jersey cows belonging to Bidaj cattle breeding farm. Both these animals were being treated for mastitis by the farm veterinarians. However, by third day the skin of the right quarters in one and that of the left in the other started showing discolouration and within a short time these quarters together with their teats had become purple in colour and the animals were in great agony.

Ablation of the affected quarters was carried out under sedation and anterior epidural analgesia. Both the animals recovered uneventfully and were sold in milking condition to marginal farmers on subsidised rates.

Experimental Oesophageal Anastomosis by Eversion Technique in Buffalo Calves (Bubalus Bubalis) : A Histomorphological and Histochemical Study

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Experimentally end-to-end cervical oesophageal anastomosis was performed by everting suture pattern in 12 healthy buffalo calves, under local infiltration anaesthesia. A 3 cm of the oesophagus was resected and anastomosed with horizontal mattress sutures using 4/0 chromic cat-gut.

Clinical radiographic, histomorphological and histochemical evaluations of the healing process were done in six animals (group-I) on 14th post operative day and in the remaining six animals (Group-II) on 21st post-operative day.

The recovery in all the animals was uneventful. Post-neroptic radiographic study revealed narrowing of the lumen on the 14th day which returned to that of near normal by 21st day, but showing a slight constriction at the site of anastomosis.

On 14th post-operative day routine Hematoxylin and Eosin staining of the Oesophageal tissue revealed completion of epithelization but without papillation. However, the gap of the anastomosed tissue was filled by granulation tissue. The cat-gut was still unabsorbed. Verhoeff's staining indicated less of collagen fibres than normal and very few elastic fibres. A similar increase in alkaline phosphatase activity could be demonstrated through modified Gomoril staining. Further, the submucous layer was moderately positive for PAS reaction.

By 21st day the Papillation of the mucous layer was almost re-established. The anastomosed site was bridged by mature fibrous tissue. The cat-gut was seemed to be absorbed. There was evidence of maturity of the collagen fibres. However, the elastic fibre had reappeared and could be compared to that of normal. The alkaline phosphatase activity had returned to that of normal. Similarly, PAS reaction also had almost returned to normal.

'Manipulation for the purpose of diagnosis is unnecessary : it causes unnecessary pain and may be responsible for damage to the blood vessels or nerves.'

— Sir Reginald Watson - Jones

Caesarian Section in Goats — A report on 53 clinical cases

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A report on 53 clinical cases of Caesarian section performed in the Veterinary College Clinic, on goats is presented. Causes for the dystocia which required Caesarian section were torsion of uterus (41.5%), uterine inertia (17%), ring womb (15%) etc.

The operations were performed under local anaesthesia. The site preferred was on the left flank, on an imaginary line commencing from in front of the prefemoral lymph node to the umbilicus, in an oblique fashion. This site was found to be satisfactory for the exteriorisation of the gravide uterine horn(s). Nintythree percent of these cases had an uneventful recovery.

"The surgeon must never minimize the dangers of surgery; he should not 'sell' an operation to a patient, and he must not promise that which is impossible or at most improbable."

— *J. K. Berman*

SMALL ANIMAL SURGERY

Tissue Reaction to Surgical Sutures in Infected Canine Wounds

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Seven suture materials (braided polyglycolic acid, multifilament stainless steel, monofilament nylon, black braided silk, braided dacron, plain and chromic catgut) were implanted and inoculated with three dilutions of *Staphylococcus aureus*. The degree of tissue reaction was measured at 6, 10, 20 and 40 days. Soon after implantation, the seven materials elicited different degrees of tissue response. Monofilament nylon and multifilament steel produced the least, while plain and chromic catgut stimulated the most reaction.

In chronic implantations, reactions to various suture materials differed from those observed in early stages. Response to steel and nylon remained minimal. Silk elicited by far the greatest inflammatory response. Dacron produced slightly less reaction than silk while the catguts varied little in their comparative response. Although polyglycolic acid showed intense reaction in early stages, the response was mild in chronic implantations.

Cellular reaction also varied with different suture materials. Neutrophils were the predominant cells in acute infection, but later macraphages and fibroblasts predominated. Occasionally, plasma cells, lymphocytes, eosinophils and giant cells were seen. Lesions with the catguts, silk and dacron contained large number of neutrophils even in chronic implantations, suggesting persistence of local infection. The number of neutrophils rapidly decreased with nylon, steel and polyglycolic acid sutures.

'Handle the tissues with loving kindness and they will heal in the same manner.'

— J. K. Berman

A Note on Indigenous Cardiac - Pacemaker Implantation in Experimental Dogs

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The knowledge of electro-cardiology and electrotherapy is still in its infancy and very little information is available on the subject. In human surgery only few cases have been reported regarding implantation of an imported cardiac pacemaker costing about Rs.20,000/-. To overcome the enormous cost an indigenous cardiac pacemaker costing about Rs.3,000/- per unit was designed with the collaboration of the local electronic institute and the efficiency was studied by implanting it in ten healthy dogs.

In normal dogs the sino-auricular node (SA node) located in the right atricum, acts as a natural pacemaker which brings about rhythmic contractions of the heart due to a small voltage generated in it. This produces electrical potentials of the order of millivolt which traverse throughout the atria and then conducted through the ventricle via the atrio-ventricular node (AV node) and the bundle of His. These voltages are recorded as an electro-cardiograph (ECG).

In certain conditions such as focal or myocardial diffusions involving the A. V. node or bundle of His, and complete or incomplete heart block, the heart may work erratically giving rise to irregular heart beats, resulting in reduced ventricular rate and decreased cardiac out put, leading to fainting or congestive heart failure or both. The treatment for this is to obtain an increase in the ventricular rate by making use of electrical impulses from an extraneous source such as a cardiac pacemaker.

The dogs subjected for experimentation kept under observation for about three days prior to the operation and their pulse was recorded three times daily for three consecutive days. The mean was taken from these readings and the pacemaker was adjusted to give a pulse rate (per min) slightly higher than the mean. The dogs were then subjected to left thoracotomy through 5th rib resection and pericardiotomy performed. The electrode point was sutured to the myocardium by an interrupted suture using non-absorbable suture material. The pericardial and the thoracotomy wounds were closed in the conventional way. The wire leading from the electrode was connected to the battery unit, which was implanted subcutaneously in the upper third of the thorax and the cutaneous wound sutured. Post-operatively, wound dressing was done routinely and the cutaneous sutures were removed on 10th post operative day. The post-operative physiological normals were recorded

along with ECG. The pulse and respiration were higher compared to the pre-operative readings. The ECG showed that the pacemaker readings, intermingled with those of normal heart beats. These dogs were under observation from 3 months to 2 years and it was found that there was no reaction to the metal used either on the heart or subcutis and all the animals were apparently healthy during the period of observation. The life of the battery varied from 1 to 1½ years.

It was concluded from the above study that this indigenous pacemaker did not show any untoward reaction in the experimental animals. Further studies are in progress.

Healing of Everted Colonic Anastomosis following Scalpel Surgery and Electrosurgery in Dogs

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Colo-colostomies were performed by eversion technique using chromic catgut 3/0 on 17 dogs following scalpel or electrosurgical resection. The animals were sacrificed at periodic intervals ranging from 4 to 90 days for gross, angiographic histomorphological and histochemical examinations. One dog from scalpel surgery group and two dogs from electrosurgery group died due to leakage of the anastomosis. A varying degree of adhesions of anastomotic seam were seen with omentum, intestinal loops and/or mesentry. In gross appearance of anastomosis, no difference due to scalpel or electrosurgical resection of the colon was noticed. Seventh day angiograms of the anastomoses revealed multitudes of diffused and ramifying arterioles which were clearly defined but had not crossed over the anastomotic seam by 30th day. Histologically, a slow rate of healing evidenced by less cellular scanty fibrous tissue scar was observed following electrosurgery upto 60 days. However, at 90 days histomorphological picture was similar in both groups. Since surface epithelim and glands had not regenerated even by 90 days, no enzymatic activity was observed.

Chronic Vesico - Urethral Calculi in a Dog

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A case of chronic urolithiasis in a six year old male labrador dog with the previous history of nose bleeding, during the hottest period of the year (May-July) was brought for treatment.

Anxious expression, fever, inappetance, occasional vomiting, incontinence of urine, haematuria, calculuria and anaemia were the major manifestations of the maladie. Further, the examination of the animal revealed the presence of accelerated full-volume pulse, distension of the penis posterior to the glans and expulsion of small urolithes with urine on pressing the distended portion of the penis downwards.

The PH of the urine was alkaline and chemically the urolithes were prosphates of magnesium, ammonium and calcium.

The urolithiases was treated with cystone (The Himalaya Drug Co.) one tablet (500 mg) thrice daily for two months, ampicillin 100 mg I/M daily for one week and with supportive therapy of haematinics and hypertonic dextrose solution.

A dramatic response to the treatment was noted in a fortnight when the animal appeared normal with free passage of clear urine.

After a period of three months, again the animal was brought to the clinic with the complaint of straining, difficulty in urination and haematuria.

The surgical and roentgenological examinations revealed the presence of multiple cystic calculi in the bladder which appeard like aglomeration of about 100 calculi and few in urethra.

Having performised the lapro-cystotomy and urethrotomy under general anaesthesia the calculi of varying sizes were removed from the bladder as well as urethra with the help of forceps. The bladder and the urethral wounds were thoroughly cleansed with sterile normal saline solution and irrigated thereafter with antibiotic solution. The ulcer present in the floor of the bladder, where calculi had accumulated, was operated upon and sutured and urethral calculi were also removed surgically after ascertaining the seat of calculi by means of metallic catheter. The calculi appeared yellow white and hard. Thereafter the dog was maintained on supportive therapy and antibiotics. The animal recovered uneventfully.

It was concluded that the site of formation of the urolithes was the urinary bladder and that the lesion of the bladder acted as nidus for its formation.

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A Technique of Total Pancreatectomy in Dogs

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Diabetes mellitus is one of the major metabolic diseases of man which has captivated many research workers all over the world, particularly in the production field of anti-diabetic drugs. As more and more plant materials are claimed to have anti-diabeteic properties, scientists evince a keen interest in evaluating these substances more rationally, through active research. One of the useful and easily available animal model used for this research is the ordinary mongrel dog sans pancreas ! Pancreatectomised dogs are generally preferred to chemically induced diabetic dogs.

The Animal Experimental Laboratory of the Madras Medical College, Madras, has been performing pancreatectomy for over a decade for the various units of this institution working on diabetes. Initially, the method followed was that of Markowitz *et al* in which they advocate clearing the pancreas and stripping it off the duodenum using a pusher. This technique is no doubt easy but it is rather time consuming. In that the bleeders have to be stopped by gentle pressure which causes a delay in proceeding further. Another factor is that the whole operative field looks messy on account of the bleeders.

This paper deals with a simpler technique in addition to a neat surgical field.

Partial Hepatectomy and Parabiosis in Rats

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Since research has come to be an integral part of every medical institution, whether it be small or big, the role played by scientists in experimental surgical techniques of small laboratory animals is large and varied The use of rat in biomedical research is well known and a host of surgical manipulations have been evolved, each suited for their respective research work.

The Animal Experimental Laboratory of Madras Medical College, Madras has been engaged in assisting all departments of this institution including Pharmacology and Physiology, for their respective research work; particularly studies on liver regeneration and cross circulation. This paper is on experimental surgical techniques of partial hepatectomy and parabiosis in rats. The experimental techniques and its usefulness are discussed.

Studies on the Effect of Diazepam & Meperidine Hydrochloride on Barbiturate Anaesthesia in Dogs

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The experiment was conducted in twentyfour apparently healthy mongrel dogs of different age groups. Diazepam was used in combination with thiopentone sodium and pentobarbitone sodium and similarly meperidine hydrochloride was used with those two barbiturates in a total number of 16 animals. Eight animals were kept as control where thiopentone sodium and pentobarbitone sodium were used alone in 4 animals each. A comparative evaluation of the parameters described above was done and the manifestations were discussed.

Barbiturate anaesthesia alongwith diazepam or meperidine hydrochloride was assessed to be far more superior to the use of barbiturates alone, particularly in the context of induction, dose requirement, prolongation of anaesthesia and recovery.

Mixed Mammary Tumour in a Male Dog

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A firm growth on the first mammary gland of the left side was seen in an Alsatian male dog. A year back growth was noticed as a small nodule in the nipple, which gradually increased and extended upwards involving the mammary gland. Regional lymph nodes were not normal. The adjacent nipples appeared little swollen. The testis were apparently swollen. There was no change in the behaviour of the animal. No recurrence was noticed upto 10 months after removal.

The growth was solid, firm and weighed 58 grams. It was 7×6 cms in size. On incision calcified areas were seen. Discrete haemorrhagic spots were also noticed on the cut surfaces. The tumour was preserved and sections were stained by haemotoxyline-cosin for microscopic examination.

The epithelial tissue was predominent. The acini of variable size and shape were found. Four to five acini were encircled by connective tissue. Most of the acini were lined by at least two or more layers of cuboidal epithelial cells. At places the evidence of acinar lumen was obscured by proliferated epithelial cells. There was marked loss of polarity as evidenced by haphazard arrangement of cells and the basement membrane was crossed by the neoplastic cells. Rarely large acini having single cell lining and filled with protenaceous fluid were found. In some acini the poliferated cells formed papillary projections in the lumen.

In general the epithelial cells tended to be cuboidal but there was variation in the size and shape. The pleomorphism was also noticed in the nuclei. Most of the cells contained oval and round nuclei. However, elongated nuclei were found in many cells. Nuclear standing reaction also varied. Some had vasiculated appearance while other were hyperchromatic. One to two nucleoli were found in the epithelial cells. Mitotic figure though seen were not numerous.

The connective tissue elements showed great morphological variation At places clear cartilage or even bony tissue was evident, while at other places it was in the form of loose fibrous connective tissue. In many areas the loose fibrous connective tissue was infiltrated by a large number of plasma cells. Mature fibrocytes with considerable fibres were the most common findings. At places, however the cells appeared fusiform with round to oval nuclei. Such cells were also commonly found in and around the groups of acini.

There was no evidence of necrosis and tumour in general had sufficient blood supply.

RADIOLOGY

Radiographic, Angiographic, Macroscopic and Microscopic Studies in Aspirin Induced Gastritis in Dogs

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Experimental gastritis was induced by orgal feeding of Acetyl salicylic acid at dose rate of 100 mg and 200 mg per kg body weight for 3 days in 12 dogs. The gross observations revealed haemorrhagic streaks, mucosal erosion and ulcerative patches with generalized hyperaemia of gastric mucosa. The pathological changes were more severe in the areas of distal fundus and autrum, and following feeding of aspirin @ 200 mg per kg body weight. The angiography demonstrated generalized hypervascularity as compared to normal ones. The feasibilities of single and double contrast gastrography in diagnosis of such cases were assessed.

Radiography of Affections of Bovine Head and Neck

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Radiographic study of 58 clinical cases of affections of bovine head and neck revealed higher incidence in male (38/58) as compared to female animals (20/58). The affections of bovine skull accounted for 2.2 per cent (43/1933) while oesophageal disorders represented 0.8 per cent (15/1933). The skull disorders were noticed more in cattle, whereas oesophageal disorders were higher in she-buffaloes. The disorders of bovine skull included oesteomyelitis and fracture of mandible, tumours, hydroencephalous, nasal polyps, buccal fibroma and foreign body lodgement in intermandibular space. The oesophageal disorders were diverticulum, dilatation, obstruction and extra-esophageal lesions compressing the oesophagus.

Cerebral Contrast Ventriculography in Bovines

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Ventriculography is the process in which contrast material is injected into the cerebral ventricular system in order to visualise the size and shape of the ventricles of the brain. This technique is used in diagnosing a variety of brain lesions, such as internal hydrocaphalus, tumours, abscess, blood clots and other conditions that change the position or size of the ventricles of the brain. It provides the basis for clinical brain surgery.

The work was undertaken in ten bovine calves of age ranging from 3-6 months. The entery in the lateral ventricle was made midway between the lateral canthus of the eye and the external occipital protruberance by means of a sharp intramedullary pin and hand chuck. A 20 gauge spinal needle was forced through the hole and when cerebrospinal fluid will rise about 30-40 ml of air was injected for pneumoventriculography.

Similarly water soluble contrast agent Conray-280 was injected

The lateral ventricles and third ventricles were clearly visualised with air. However, the visualisation of fourth ventricle is difficult as the air does not move through the mesencephalic aqueduct into the fourth ventricle. Conray-280 in the present study has visualised entire ventricular system including the fourth ventricle.

Radiological diagnosis of foreign body syndrome and allied lesions in buffaloes

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An analysis of plain diagnostic roentgenograms of 308 buffaloes (306 female and 2 male) clinically suspected for foreign body syndrome and allied lesions revealed the presence of potential radio-opaque foreign bodies only in 179 animals. In 77 animals, nonpotential foreign bodies such as iron filings, nuts, bolts, coins, rings, keys, chain and silver and gold ornaments etc. were discovered, while in the remaining 52 animals no radio-opaque foreign bodies were observed. The incidence of location of foreign bodies in the reticullum (arranged in descending order) was : lower anterior (43), lower posterior (35), middle central (32), middle anterior (22), lower central (19), upper anterior (6), middle posterior (5), and

upper central (1). None of the cases had any foreign body located in upper posterior region.

Radiographs of 105 animals revealed the presence of diaphragmatic hernia but only 68 out of these had potential foreign bodies and the remaining 37 had either non-potential foreign bodies (14) or no radiopaque foreign bodies at all (23). Radiographic diagnosis of reticulophrenic adhesions was made in 18 animals only. A sharp nail or needle was observed to penetrate through diaphragm, sternum and pericardium in 7, 6 and 1 buffaloes respectively. The organ reactions discernable on radiographs included phrenic abscess (6), reticular abscess (4), thoracic abscess (14), lung abscess (2), cardiophrenic adhesions (2), pneumothorax (5) and pleurophrenic adhesions (1). Occasionally, pericarditis, pleurisy and pneumonic lesions were also observed.

It was concluded that the radiographic diagnosis of a variety of lesions accompanying foreign body syndrome and disphragmatic hernia in buffaloes could be of a great help in formulating the treatment regimen and prognosis of such animals.

Osteosclerosis in cattle : A clinical and radiological evaluation

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Five bullocks 4 to 8 years of age, lame with all the four legs having exostosis on the medial and lateral surfaces of metacarpal/metatarsal bone are presented. The main radiological features were bone sclerosis, thickening of cortics and narrowing of medullary cavity. The differential diagnosis between hypertrophic pulmonary osteoarthropathy and fluorosis is discussed, however the observations were similar to those of fluorosis.

Double Contrast Gastrography in Dogs

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Double contrast gastrography (D C G) is a method by which negative and positive contrast materials are combined in a desired proportion to reveal clearly the anatomical details of the gastrum. The D C G was experimently evaluated in nine dogs. The technique was found to be simple and reasonably safe. The precautions to be undertaken during the technique, various aspects of its utility as a diagnostic tool, along with some common defects encountered and their possible rectification are discussed.

ANAESTHESIOLOGY

Experimental Studies on Electroanaesthesia

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and

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Comparative evaluation of Electroanaesthesia wave forms was made in 210 trials in 80 dogs and 10 pigs. Low frequency square waves, high frequency square and sine bursts were compared. It was found that when Electroanaesthesia was produced by employing a combination of low frequency square waves and high frequency sine bursts in interference pattern good quality of Electroanaesthesia with least muscle activity and tissue reaction could be produced. Physiological and metabolic changes were minimum with such technique and surgical operations could be performed. Cerebral circulation and metabolism studies reveal no evidence cerebral hypoxia.

Effects of Chloral Hydrate and its Combination with Thiopental Sodium in Buffalo Calves

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Studies were conducted on 12 healthy buffalo calves (64-168 kg.) to evaluate the effects of chloral hydrate alone (102 mg/Kg) and chloral hydrate-thiopental sodium anaesthesia on haemodynamics, acid base status and blood gases.

Chloral hydrate alone caused significant tachycardia, moderate transient hypotension and significant fall in central venous pressure. There was moderate reduction in arterial pO_2 and evidence for uneven ventilation of the lungs. Acid base alterations were not appreciable. Increase in blood glucose was nonsignificant.

The combination of chloral hydrate with thiopental sodium moderated the extent of fall in blood pressure and

central venous pressure due to thiopental sodium alone. The mild metabolic acidosis was associated with moderate respiratory acidosis. There was significant desaturation of haemoglobin with evidence for alveolar hypoventilation during the early stages of anaesthesia. The oxygen extraction ratio decreased markedly at one or the other stage of anaesthesia in individual animals. The correlation of the results of these experiments with that of clinical use of this combination revealed the possibility of improved tissue oxygenation with prior use of hydrocortisones.

Haemodynamics, Blood Gas and Metabolic Alterations During Thiopental Anaesthesia in Buffaloes

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Seven clinically healthy buffalo calves (62-194 kg.) were anaesthetized with 5% thiopental sodium (1 g/100 kg.) to evaluate the effects of this agent in this species.

There was significant tachycardia without any appreciable abnormality in the electrocardiograms. Anaesthesia was associated with moderate hypotension and significant gradual decline in central venous pressure. The variations in arterial pCO_2 were not consistent. Mild to moderate metabolic acidosis was observed in all the animals and in five calves this was associated with very mild to moderate respiratory acidosis. Moderate to severe arterial hypoxemia due to fall in pO_2 and desaturation of haemoglobin was a consistent feature in all the animals. Haemoglobin-oxygen affinity was increased. Alterations in packed cell volume, oxyhaemoglobin, total proteins and albumin were not appreciable. Hypoglycaemia was recorded 24 hours after induction.

There was evidence of parasympathetic depression, vascular pooling, hypokinetic hypoxia, alveolar hypofunction in two animals and ventilation-to-perfusion abnormalities in five calves. Study did not provide any evidence for reduced or defective oxygen consumption.

Intravenous Retrograde Anaesthesia in Cattle

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Comparative study of intravenous retrograde anaesthesia with three different doses (0.5, 1.0, and 1.5 ml per 100 cm^3) of procaine hydrochloride in water and 10% alcohol is carried out in the fore and hind limbs of cattle. The doses are calculated on the basis of volume of the part of the limb to be anaesthetised.

Efficacy of the dose and solvent is assessed in terms of latent period and duration of effects and the data so collected is statistically analysed.

A stout rubber tubing serves as a good tourniquet.

Statistical analysis of the results obtained indicates that the latent period becomes shorter as the dose increases. The average latent period recorded in the present studies is 147.5 seconds in 0.5 ml dose rate, 130.87 seconds in 1.0 ml dose rate, and 105.67 seconds in 1.5 ml dose rate. Effects of solvents (water and 10% alcohol) as well as that of region (fore or hind limb) are found to be non-significant.

Duration of anaesthesia increases with increase in the dose rate. It is 102.40 minutes in 0.5 ml dose, 107.50 minutes in 1.0 ml dose, and significantly higher, 124.60 minutes in 1.5 ml per 100 cm^3 dose rate.

The use of alcohol at 10% level is found more advantageous than that of water as the duration of action significantly increases in the former solvent; 103 30 minutes in case of water solvent and 119.70 minutes in case of 10% alcohol solvent. It is also observed that in hind limb duration of anaesthesia lasts longer as compared to that in the fore limb.

The latent period, duration of action when compared alongwith side effects it is concluded that dose rate of 1.5 ml/ 100 cm^3 of 1% procaine hydrochloride in 10% alcohol produces the best results and could be recommended for the field use.

Comparative Evaluation of Various Anaesthetic Techniques with Acupuncture Anaesthesia for Abdominal Herniorrhaphy in Cattle

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Repair of ventral abdominal hernias in cattle are being done under local, regional blocks (Paravertebral Lumbar segmental Epidural and caudal Epidural) or general anaesthesia or under a combination of foregoing techniques depending on the situation, contents and nature of hernia and the size of the hernial ring This paper deals in detail about the ventral abdominal hernias in cattle treated at the surgical ward of the Veterinary College Clinic, Tirupati. The various conventional anaesthetic techniques employed hitherto for their repair and Acupuncture analgesia which is recently developed at this College and first reported in 1979 are described. The encouraging results of the preliminary trials with Acupuncture analgesia using Acupoints Le 14 and BL 30 for surgical operations in flank and abdominal floor of experimental cattle prompted to try this for clinical cases of abdominal hernia in cattle. A comparative evaluation of all the conventional analgesia techniques with acupuncture analgesia for repair of ventral abdominal hernias in cattle is made.

Anaesthetic Management of Surgical Repair of Diaphragmatic Hernia in Buffaloes

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The need for intrathoracic surgery is becoming more and more prominent because of the perfection of the surgical techniques for treatment of diaphragmatic hernia and pericarditis being a common malady in buffaloes. For such conditions controlled positive pressure ventilation with satisfactory level of anaesthesia is mandatory. In the present paper the authors describe the anaesthetic management of surgical repair of diaphragmatic hernia in buffaloes. Under general anaesthesia with chloral hydrate and thiopental sodium surgical repair of diaphragm was undertaken in 10 clinical cases of buffaloes. The success achieved in the treatment of these cases was due to adequate positive pressure ventilation of lungs and blood volume expansion during surgery. Blood gases and pH, and blood urea nitrogen (B. U. N.) estimations revealed very insignificant changes during maintenance of anaesthesia. The main drawback observed was of prolonged recovery period.

Intravenous Procaine as Maintenance Agent in Thiopental Anaesthesia in Canine Surgery

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Procaine hydrochloride; 0.5% and 1% solution in normal saline was administered as a drip at a dose rate of 1 - 3 mg/ kg body weight in thiopental (25 mg/ kg i. v.) administered dogs. Atropine sulphate was used as a premedicant. Twenty dogs were divided into 4 groups; 4 dogs each in 1st and 2nd group (experimental evaluation) and 6 dogs each in 3rd and 4th groups (clinical evaluation). Procaine 1% was administered in 1st and 3rd group of dogs and 0.5% in 2nd and 4th groups.

0.5% and 1% procaine intravenously produced a significant increase in heart rate and respiratory rate ($P < 0.05$). Hypothermia was observed in all the animals but was slightly more in animals undergoing surgery Mean arterial blood pressure slightly decreased after procaine administration but returned to preadministration level by 80 - 100 minutes. No significant alteration in electrocardiographic recordings could be detected in 1% and 0.5% procaine administered animals except one animal of 1% procaine group showed an inverted T wave between 20 - 60 minutes. Thiopental concentration in plasma in 1% procaine group started decreasing from a peak concentration of 16.63 ± 1.25 at 10 minutes to 2.95 ± 0.35 µg/ml at 6 hours and it could not be detected at 24 hours. Duration of surgical anaesthesia was 64.50 ± 1.04 minutes in 1% procaine group and 50.20 ± 2.03 minutes in 0.5% group and complete recovery occurred in 297.50 ± 3.23 and 250.25 ± 4.04 minutes respectively. The recovery was quick, smooth and uneventful in all the animals and no complication was observed. The duration of anaesthesia could be easily prolonged without untoward effects in animals undergoing surgery by further administration of procaine. Relaxation of muscles was excellent and permitted successful completion of gastrotomy, enterotomy, ovariohysterectomy, nephere-tomy and cystotomy in animals of clinical evaluation group.

'When not to operate upon a patient is as important to know as when to intervene.'

— *J. K. Berman*

A Note on Thoracic Novocaine Blockade in Bronchopneumonia in Calves

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Bronchopneumonia was induced by intratracheal administration of 120 ml of whole cow milk in 8 buffalo calves and 250 ml in 15 cow calves of 6-12 months of age. Cow calves were divided into 3 groups of 5 animals each and buffalo calves of 2 groups of 4 animals each. 1st group of cow calves was left untreated and second group of cow calves and first group of buffalo calves were treated by injecting 0.5% warm procaine hydrochloride solution at the rate of 15 ml/40-60 kg body weight on each side at the level of 4th intercostal space towards bordering sympathetic nerves and their branches. The treatment was repeated if required. Third group of cow calves were treated 24 hours after drenching, with oxytetracyclin hydrochloride (50 mg/ml) intramuscularly @ 2 ml/25 kg body weight and sulphadimidine @ 20 ml/50 kg subcutaneously followed by one half the dose daily on subsequent day for 3 days. Second group of buffalo calves were given oxytetracyclin and sulphadimidine at the above dose rate alongwith 0.5% procaine hydrochloride at the level of 4th intercostal space.

Post-experimental survival period of untreated cow calves varied from 1 hour to 6 days with a mean of 2-6 days and nerve block treated animals 4 to 18 days with a mean of 12.8 days and oxytetracyclin, sulphadimidine for 3 to 21 days with a mean of 10.6 days. Three buffalo calves treated with nerve block made a complete recovery in about 8-10 days and one animal died 48 hours after production of bronchopneumonia. Buffalo calves treated with oxytetracyclin, sulphadimidine alongwith nerve block made an uneventful recovery and were relieved of bronchopneumonia symptoms on an average of 6 days. Untreated animals or those succumbed during the course of treatment showed trachea, bronchi, and bronchioles filled with milk and frothy exudate and a characteristic bronchopneumonia features.

'The importance of after-care cannot be passed over too lightly.'

— *Otto Stader*

Neuroleptanalgesia with Morphine and Largactil in Dogs

S. S. Marudwar[1], A. K. Sharma[2] and Amresh Kumar[3]

A mixture of morphine @ 1.5 and 2.5 mg/lb and largectil 1 mg/lb body weight was used by intramuscular route to produce neuroleptanalgesia. The onset of sedation occurred on an average within 5 minutes and narcosis as well as analgesia increased with advance of time. Peak effects were observed at 20 minutes after injection. The depth of analgesia and narcosis declined 50 minutes after the administration of morphine and Largactil. Emesis, defecation and other untowards effects were not observed.

No significant difference in total erythrocytes, leucocytes, packcell volume hemoglobin percentage, differential Leucocytes, serum electrolyte: Na^+, K^+, plasma glucose and serum enzymes was observed 40 minutes and 48 hours after its administration.

A slight decrease in mean arterial blood pressure was observed after morphine and Largactil combination EKG abnormalities consisted of mainly cardiac errhythmia which could be prevented by atropinization of the animals.

Recovery was smooth and uneventful in all the cases and occurred within 90 minutes.

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2. Ph. D. Student.
3. Associate Professor of Surgery, Department of Surgery and Radiology, College of Veterinary Sciences. G. B. P. U. of A. & T. Pantnagar (Nainital).

'Genius is one percent inspiration and ninetynine percent perspiration.'

— *Thomas A. Edison*

Faith in action is LOVE
Love in action is SERVICE

— *Mother Teresa*

An Experimental Study on Intravenous Regional Anaesthesia in Buffalo Calves

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The study was carried out in 18 apparently healthy male buffalo calves. In all 40 trials were done i.e. ten trials for each strength of the drugs. The doses varied from 45 ml - 55 ml of 1% of Novocaine & Lignocaine solution & 25 ml-35 ml of 2% of Novocaine & Lignocaine. The injections were made either in radial vein or in any superficial vein below the torniquet applied at the level of the elbow joint.

The result obtained showed no significant differences between the efficacy of 1% & 2% anaesthetic solutions & both were equally effective for inducing regional anaesthesia of the limb. Anaesthesia developed satisfactorily with complete muscular relaxation and it remained affective for an hour.

Post anaesthetic complications were very few in the form of oedema and lameness, which subsided spontaneously within few hours.

A New Approach for the Bhachial Plexus Block in Cattle and Buffalo

S. A. Bhojani, R. R. Parsania, K. N. Vyas, and M. N. Manari

The brachial plexus block was carried out successfully on 24 occasions in adult cattle and buffalo calves.

The site, does induction time, duration and area of anaesthesia are discussed. 30 trials carried out revealed that this new technique can safely be employed in routine practice for surgical procedure on the forelimb of cattle and buffalo. The study indicated the failure in obese animals.

'The greatest happiness is to know the source of unhappiness.'

— *Dostoevsky*

Evaluation of Glyceryl Guaiacolate in Buffaloes

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The administration of glyceryl guaiacolate (165 mg/Kg) to seven healthy buffalo calves produced complete muscle relaxation and absence of cutaneous, pedal and corneal reflexes but palpebral reflex was not abolished. Bulging of the eyeballs was a consistent feature. The respiratory rate was not changed but in two animals its depth was reduced which resulted in respiratory acidosis. Significant hypotension and tachycardia, a transcient precipitious fall in central venous pressure, partially compensated metabolic alkalosis, hyperglycaemia, systemic shunting of the blood and decreased oxygen extraction by the tissues were the other consistent effects of the drug. There was evidence of defective oxygen consumption and possible tissue hypoxia. Arterial oxygen saturation, oxyhaemoglobin, packed cell volume, total proteins, albumin, globulin, alkaline phosphatase, blood urea nitrogen, uric acid, S. G. P. T. and cholestrol were not affected. There was slight elevation of S. G. O. T. and creatinine. No clinically significant alterations were observed in the electrocardiogram. The results demonstrated marked species variations in the effect of glyceryl guaiacolate in buffalo calves. Findings revealed that this drug does not have a wide margin of safety in buffaloes when compared with horses and other species and a cautious approach is needed for its administration.

'He who sows courtesy reaps friendship, and he who plants kindness gathers love'.

— *Richard Brooks*