

Veterinary Orthopaedics and Lameness (VSR 511; 1+1) MANUAL



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TABLE OF CONTENTS

Practical No.	Exercise	Page No	Date	Signature of instructor with date
ORTHOPAEDICS AND LAMENESS				
1.	Examination of body conformation			
2.	Medial patellar desmotomy in bovine			
3.	Application of plaster cast			
4.	Application of hanging pin cast			
5.	Application of K-nail in calves			
6.	Intramedullary pining of femur in dog			
7.	Digital flexor tenotomy in bovine			
8.	Amputation of digit (claw) in bovine			
9.	Amputation of forelimb			
10.	Amputation of hind limb			
11.	Amputation of tail			

PRACTICAL-1

Date _____

EXAMINATION OF BODY CONFORMATION

Lameness is an indication of a structure or functional disorder in one or more limbs manifested during progression or in the standing position. One of the predisposing factors of lameness is body conformation especially of limbs.

The conformation is defined as the form or out line of an animal. It includes relationship of form to function. For normal balance the horse's body is divided into three equal parts of visually drawing/ vertical line.

1. Line from point of elbow to whither.
2. Line from tuber coxae to the cranial aspect of stifle.

The above two line should assume perpendicular relationship to the ground surface.

3. Line from point of shoulder to the center of stifle should assume a relatively parallel relationship to the ground surface.
4. From top, a line between whither down through center of back roughly divides the body into two separate halves.

A horse's body should be pleasing and in balance with the limbs.

Some of the body conformations noticed are as under:

1. Body taller at croup than whither
2. Long backed horses
3. Short backed horses.

However body conformation does not affect locomotion as commonly as limbs conformation.

LIMBS CONFORMATION:**A. Forelimbs**

Normally both the forelimbs should be straight in cranial view. A line from point of the shoulder should bisect the limb and the toes should point straight forward. The distance between fore feet should be same as distance between bases of limbs.

FAULTS IN CONFORMATION OF FORE LIMBS:

1. Base narrow
2. Base wide
3. Toe in/pigeon toe
 - Base narrow toe in
 - Base wide toe in
4. Toe out/splay foot
 - Base narrow toe out
 - Base wide toe out
5. Plaiting
6. Calf knees/sheep knees
7. Bucked knees/ goat knees/knee sprung
8. Knock knees/ carpus valgus/ knee narrow
9. Bow legs/ carpus Vagus/ Bandy legs
10. Offset or bench knees
11. Tied in knees
12. Cut out under the knees
13. Standing under in front
14. Camped in front
15. Short upright pastern
16. Long upright pastern
17. Long sloping pastern

B. Hind limbs

Normally a line dropped from the point of tuber ischii should divide the limb into equal parts when viewed from posterior.

FAULTS IN HIND LIMB CONFORMATION:

1. Base narrow
2. Base wide
3. Sickie hock
4. Straight behind
5. Standing under behind
6. Camped behind

DETECTION OF LAMENESS:**A. ANAMNESIS**

1. Acute/chronic lameness
2. Hot/cold lameness
3. Possible cause
4. Stumbling
5. Recent shoeing
6. Any treatment adopted.

B. CLINICAL EXAMINATION:

1. Visual examination
 - a. **At rest:**
 - i. Position of horse: Any deviation from normal
 - ii. Type of conformation
 - iii. Resting of toe on ground
 - iv. Shifting of weight on limbs
 - b. **At exercise**
 - i. Incoordination in movements of limbs during walk/trot/canter or gallop on hard surface.
 - ii. Movement of head & neck during exercise.
 - iii. Landing on the part of foot.
 - iv. Limb contacts (Brushing, cross firing etc.)

Visual examination at exercise helps in grading the lameness I, II, III or IV.

- I. No lameness in walk but present in trot.
 - II. Lameness in walk but no variation in head movements (seen during trot).
 - III. Lameness in walk and trot.
 - IV No weight bearing lameness.
2. Examination by palpation and manipulation for painful lessons.
 3. Radiography
 4. Thermography
 5. Angiography
 6. Cinematography
 7. Electro goniometry
 8. Bone scintigraphy
 9. Arthroscopy
 10. Local anaesthesia/nerve blocks
 11. CT scan and MRI
 12. Exploratory arthrotomy
 13. Biochemical profile/synovial fluid analysis
 14. Biopsy
 15. Culture/antibiotic sensitivity test of synovia

PRACTICAL-

Date_____

MEDIAL PATELLAR DESMOTOMY IN BOVINE

INDICATIONS: Recurrent upward fixation of patella with locking.

SURGICAL ANATOMY:

The patella is a large sesamoid bone which develops in the tendon of quadriceps femoris muscle. It is connected to the femur by collateral ligaments and to the cranial tibial tuberosity by patellar ligaments. The patellar ligaments, medial, middle and lateral, are the continuations of the fibrous bands of the quadriceps muscle to the cranial tibial tuberosity. The middle patellar ligament is thick and strong as compared to other two ligaments. The medial patellar ligament is widely separated from the middle patellar ligament at both the ends. The lateral patellar ligament is flat and lies close to the middle ligament at both the extremities.

SITE OF OPERATION:

In the medial aspect of stifle joint where medial patellar ligament inserts into the inner aspect of the anterior tibial tuberosity.

CONTROL AND ANESTHESIA:

1. The animal is controlled in lateral recumbency with the affected limb towards the ground and the upper unaffected hind limb is drawn forward and tied with the fore legs.
2. Affected hind leg which lies downward is dragged backward and is tied with a piece of bamboo in order to expose the stifle joint and to tense the patellar ligaments.
3. Analgesia is achieved by local anaesthetic using linear infiltration at the operative site and site is prepared for aseptic surgery.

SURGICAL TECHNIQUE:

Medial patellar desmotomy to correct upward fixation of patellar in bovine can be performed by two methods:

- a) Open Method.
- b) Closed Method.

A. OPEN METHOD:

1. A small skin incision of about 3 cm in length is made directly over the medial ligament, starting immediately in front of the medial tibial tuberosity, towards the cranial tibial tuberosity.

2. The fascia is dissected to expose the glistening medial patellar ligament. In buffaloes, the fascial layers are thick and highly engorged with blood vessels.
3. The ligament is exteriorized by passing a curved scissors or tenaculum flat wise under the ligament. The ligament is then sectioned near its insertion using a knife.
4. The wound is explored with index finger and undivided fibers of the ligament are severed completely by scissors.
5. The cutaneous wound is closed by three or four simple interrupted or mattress sutures by using black braided silk No.3.

NOTE:

Protrusion of the adipose tissue through the gap created by the cut ends of the ligament, cessation of crunching sound and immediate relief of the characteristic jerky flexions during progression are indications of a successful medial patellar desmotomy.

B. CLOSED METHOD:

1. A stab incision is made into the skin with B.P. blade immediately in front of the medial tibial tuberosity.
2. A pointed knife or Hey groove knife is passed flat wise with its tip fixed in the 'V' shaped groove between the middle and medial patellar ligaments. The sharp edge of the blade is directed towards ligament.
3. The ligament is then transected by withdrawing the knife towards the operator and the scalpel is taken out.
4. Few drops of betadine are poured at the operated site.

POST-OPERATIVE CARE:

1. The animal should not used for hard work for 8-10 days.
2. The antiseptic dressing of the surgical wound is done with tincture iodine or betadine for one week.
3. Skin sutures should be removed on 7th or 8th post-operative day.

PRACTICAL-3

Date_____

APPLICATION OF PLASTER CAST**INDICATIONS:**

- ☛ Closed fractures of long bones distal to stifle and elbow
- ☛ Severe sprain or strain of ligaments of joints distal to stifle and elbow

SITE:

The plaster cast should be applied all around the affected part including at least one joint above & one joint below the affected part. For better immobilization of the affected bone, full limb cast extending as far above to the stifle or the elbow joint should be applied.

SPECIAL REQUIREMENTS:

- ✓ Plaster of Paris impregnated gauge rolls of various sizes (3", 4", 6")
- ✓ Small tub (full of Luke warm water)

ANAESTHETIC TECHNIQUE:

1. General anesthesia particularly for non-cooperating small animals.
2. Deep sedation
3. Epidural analgesia for application of POP in hind limb of large animals.

CONTROL:

1. Lateral recumbency with the affected limb uppermost in most of the cases.
2. Lateral recumbency with the affected limb downward for repair of radius-ulna and metacarpal fracture repair in dogs.
3. Dorsal recumbency with the affected limb suspended above the patient's body for immobilization of radius ulna fracture in dogs.

PROCEDURE:

- ➔ The hair of the intended area for P.O.P. application is trimmed short.
- ➔ The affected limb including the foot is cleared and dried
- ➔ In cases of large animals, two holes are drilled in the hoof anteriorly and a long wire is passed through it. This wire is held by an assistant exerting a slow, steady and constant pull to facilitate reduction at the fracture site.
- ➔ In case of small animals adhesive tape stirr-up is applied over the dorsal and palmar/plantar surfaces of foot. This stirr-up is held by an assistant to provide traction.

- ➔ A bandage (or rope in case of large animal) loop is applied in groin or axilla and the counter traction is provided by an assistant in an opposite direction to the that of traction.
- ➔ Talcum powder or Boric acid powder is liberally sprinkled over the intended area for POP application.
- ➔ The fracture is now reduced by traction, counter traction and/or by toggling.
- ➔ The limb is kept as such in the position of reduced fracture.
- ➔ One to two layers of cotton bandages are now applied over the whole area and then moderately thick cotton padding is done over that. Extra padding is done over bony prominences.
- ➔ The POP bandage is now immersed in lukewarm water till bubbles stop coming from the bandage. The bandage is gently squeezed and is applied over the cotton padding with a moderate pressure.
- ➔ The bandage is generally applied from lower most part to upwards. The first two to three turns are applied at exactly the same area whereas subsequent turns overlap the preceding turn by one half of its width.
- ➔ Each layer is smoothened with hands and also by moistened cotton by an assistant. This provides a good bond of POP with the preceding layer.
- ➔ One by one other POP bandages are similarly applied till adequate thickness of POP cast is achieved.
- ➔ At the knee & hock joint the plaster is applied in the figure of eight fashion to prevent breakage of POP just below these joints.
- ➔ The plaster cast is kept moist through out its application.
- ➔ When the application of the cast is complete, the surface of the cast is rubbed with hand to provide a smooth & hard coating.
- ➔ The traction & counter traction bandages are removed.
- ➔ The animal is kept in cast position until plaster hardens. Usually one hour for thinner cast and four to five hours for thicker cast are required for adequate hardening.

POST OPERATIVE CARE:

- Restricted movements for first few days as the plaster may take 36-48 hours to get completely hard.
- Thereafter also only limited movement of the animal should be allowed throughout the period of application.

- Antibiotic therapy
- Prevention of self-mutilation.
- The animal is examined closely for first few days for any development of pressure sore. If the cast is too tight, it should be removed & reapplied.
- Periodic radiographs to examine the fracture healing process should be taken preferably every fifteen days.
- After radiographic evidence of fracture healing the cast is removed approximately in about 4-6 weeks in young animals and in 8-10 weeks older and larger animals.

REMARKS:

- In large animals, hoof is not included in POP cast, whereas in small animals only two central toes of the fingers are kept outside the POP cast.
- If the water in which the POP bandages are being immersed is too hot, the cast will set too rapidly and will not allow time to constitute a good cast in a one solid unit. However, too cold water causes delay in setting time thus prolonging the period of restraint of the animal.
- POP cast should be used only for those closed fractures, which can be reduced optimally. The fractures with unmanageable overriding are better treated by other means.
- If POP cast is to be used for open fracture, a window in the cast has to be made for antiseptic dressing (ASD) and proper evaluation of the wound.
- For larger and heavier animals, the bamboo, PVC or aluminum splints usually placed on dorsal and planter aspects can reinforce the cast. However, additional POP bandages are required with the concomitant use of these splints.
- The cast should not be too tight. The rule of thumb is that one finger should go under the upper margin of cast easily.
- In heavy animals, the cast should be periodically checked for development of any crack. Usually it becomes necessary to replace the POP cast after two weeks in such animals.
- The adult large animals (+300 Kg) require about 8-12 six inches rolls for full limb cast with splints.
- The small animals may need just 3-6 three to four inches POP rolls.

PRACTICAL-4

Date_____

APPLICATION OF HANGING PIN CAST**INDICATIONS:**

Closed fractures of tibia and radius and ulna in large heavy animals where plaster cast alone cannot provide adequate stability because of the heavy musculature in the proximal area.

SITE:

Same as for limb plaster cast.

SPECIAL INSTRUMENTS:

- i) Electric heavy-duty bone drill, Steinmann pins of different diameters, pin cutter, rasps and pin bender.
- ii) All equipments and things required for plaster cast application.

ANAESTHETIC TECHNIQUE:

1. General anaesthesia
2. Epidural analgesia may be employed for procedure in hind limbs.

CONTROL:

Lateral recumbency with the affected limb upwards.

PROCEDURE:

- ❖ The proximal tibial area is prepared as for aseptic surgery.
- ❖ A sufficiently thick Steinmann pin is driven through a nick in the skin of lateral aspect of proximal tibial or radius ulna region. The pin is introduced into all layers of tissue into the bone and out from the fan cortex through all layers of soft tissue to the out side of skin in the medial aspect.
- ❖ The drill is removed and the pin is cut after leaving about two three inches on either side of limb.
- ❖ The haemorrhage is controlled and cut ends of the pin are rasped smooth.
- ❖ A thick gauze piece impregnated with an antiseptic solution is placed over the area from where the pin is introduced and exited.

- ❖ The fracture is now reduced and plaster of Paris bandages are applied all over the limb as routinely. The bandages should involve the Steinmann pin in it. The pin now will not let these bandages slip over the thick muscles of the surrounding area.

POST OPERATIVE CARE:

Same as for routine plaster cast application.

REMARKS:

- ❖ Extreme care should be taken while introducing Steinmann pin. Any major vessel should be avoided. There should not be wobbling in the pin during its introduction as this would create much bigger hole in the bone and may create a fracture itself.
- ❖ The direction of pin should be perpendicular to the long axis of bone and it should pass through the bone at middle.
- ❖ The placement of pin should be sufficiently away from the articular surface as well as from the fracture site.

PRACTICAL-5

Date _____

APPLICATION OF K-NAILS IN CALVES**INDICATIONS:**

Management of long bone fracture of humerus, femur, radius and tibia.

SPECIAL EQUIPMENTS:

K-nails of appropriate size and diameter, suitable drills, guide wire, bone holding forceps and other instruments required for fracture repair of long bones.

CONTROL AND ANAESTHESIA

Lateral recumbency with affected limb on upper side. Local/regional anaesthesia under proper sedation.

SURGICAL TECHNIQUE:

1. Expose the fractured bone depending upon the bone involved.
2. Reduction of bone fragments is done.
3. Drill the proximal fragment through medullary cavity at dorsal aspect to come out through cortex and skin.
4. Intramedullary nail of appropriate size is inserted into medullary cavity with the help of guide wire.
5. Guide the nails into medullary cavity of distal fragment so as to fix it into epiphysis.
6. The exposed part of K nail is cut.
7. The skin wound is closed in routine manner.

POST OPERATIVE CARE

1. System antibiotics and analgesics.
2. Antiseptic dressing, till sutures are removed.
3. Sutures are removed after 8-10 days.

PRECAUTION:

To prevent rotation, modified Thomas splint can be applied.

PRACTICAL-6

Date_____

INTRAMEDULLARY PINNING OF FEMUR IN DOG**INDICATIONS:**

Management of femur fracture by open reduction.

SITE OF OPERATION:

Cranio-lateral incision, extending from slightly caudal to the greater trochanter to the lateral condyle of the femur.

CONTROL AND ANAESTHESIA:

Animal is positioned in lateral recumbency with the affected limb up and general anaesthesia is administered after proper premedication. The femoral area is prepared for aseptic surgery.

SURGICAL ANATOMY:

The femoral bone is covered and supported by the two major muscles, vastus lateralis and biceps femoris. The superficial fascia and the tensor fascia lata covers these two muscles.

OPERATIVE TECHNIQUE:

- 1) The femoral diaphysis and metaphysis is approached through a cranio-lateral skin incision made on the lateral aspect, extending from slightly caudal to the greater trochanter to the lateral condyle of the femur.
- 2) The subcutaneous tissue and superficial fascia are incised directly under the skin incision.
- 3) Fascia later is incised to the entire length of the skin incision along the cranial border of the biceps femoris muscle aponeurosis.
- 4) Biceps femoris and vastus lateralis are reflected caudally and cranially respectively after excising the inter-muscular septum between these muscles to expose the shaft of femur.
- 5) After locating the site of fracture, the proximal bone fragment is elevated and an intramedullary pin which almost fills the diameter of the medullary canal is inserted into the proximal fragment and the pin is withdrawn through the skin after making stab incision at the trochanteric fossa.
- 6) The fracture is reduced and the proximal and distal bone fragments are aligned and the pin is then inserted in the distal

fragment and anchored at the distal extremity thus immobilizing the fracture.

- 7) After accomplishing the open reduction, the muscles are apposed and the fascia later is sutured and finally the skin is sutured in routine manner.
- 8) The skin around the protruding pin at trochanteric fossa is depressed and the pin is cut as short as possible to buried subcutaneously. A simple interrupted suture is applied on the skin to close the hole.

POST-OPERATIVE CARE:

- 1) A course of antibiotics and analgesics should be administered for 5-7 days.
- 2) Exercise should be limited for 3-4 weeks period.
- 3) If necessary, limb should be immobilized by application of modified thomas splint.
- 4) Careful clinical and radiographic evaluation of fracture healing process should be done.
- 5) Skin sutures should be removed 8-10th post-operative day.
- 6) Intra-medullary pin should be removed after complete fracture healing as evidenced by clinical and radiographic evaluation.

PRACTICAL-7

Date_____

DIGITAL FLEXOR TENOTOMY IN BOVINE**INDICATIONS:**

Contraction of superficial / deep digital flexor tendons (Knuckling) or deformity due to partial or permanent flexion of the fetlock or interphalangeal articulations.

SITE OF OPERATION:

Outer aspect of the limb at the level of lateral border of tendon in the midway point of metatarsal region or at the inner aspect of the limb on the anterior border of the tendon about 1 cm below the middle of metacarpus.

SURGICAL ANATOMY:

In cattle, the superficial digital flexor divides into two bellies, superficial and deep, terminating on tendons at the distal part of the forearm. The superficial tendon joins the deep tendon about the middle of metacarpus. The conjoined tendon bifurcates, and passing under the two digital annular ligaments, they are inserted into the volar surfaces of 2nd phalanges by three slips. The deep digital flexor divides near the distal end of the metacarpus into two branches, which are inserted into the volar surface of the 3rd phalanx.

NOTE:

- 1) In some cases, the flexion deformity improves spontaneously.
- 2) In mild cases, treatment is not required because daily normal walking exercise is sufficient to stretch the tendons.
- 3) In other cases, affected joint has to be kept in forced extension by splint or a plaster cast.
- 4) Radiography of the affected joint should be done prior to tenotomy to rule the evidence that the tendons are involved or the bones are affected.
- 5) Tenotomy should be performed if the contraction of tendon or deformity can not be corrected by stretching the limb under general anaesthesia or (2nd)/(3rd) points mentioned above fails.

CONTROL AND ANAESTHESIA:

The animal is selected controlled in lateral recumbency with the affected limb lower most. The operative site is prepared for aseptic surgery. The site of operation is infiltrated by linear infiltration using 2% lignocaine hydrochloride to obtain local analgesia.

SURGICAL TECHNIQUE:

- 1) A 2cm long skin incision is made on the medial aspect of the limb between the two flexor tendons.
- 2) A mid metacarpal or metatarsal site is preferred since it lacks the synovial sheath.
- 3) The subcutaneous tissues are separated by blunt dissection, and the blood vessels are identified and retracted.
- 4) A small tenotome or curved knife is pushed between the two tendons.
- 5) Both the tendons are identified and separated by blunt dissection.
- 6) The affected tendon is transected while forcibly extending the fetlock joint.
- 7) The skin wound is then sutured routinely.
- 8) The limb should be put under the plaster cast just below carpers tarsus.

Z-TENOTOMY:

This technique is used for lengthening of the tendon for correction of the contracted tendons. A longitudinal incision is made in the centre of the exposed tendon. At each end of the incision, a transverse incision is made but in apposition direction. The ends are then sutured. The skit incision is closed and plaster cast is applied on the limb.

POST-OPERATIVE CARE:

- 1) A course of antibiotic is desirable, if infection is suspected.
- 2) The plaster cast should be kept for 3 to 4 weeks.
- 3) Skin sutures should be removed 8 to 10 days after operation and plaster cast is reapplied.
- 4) Following removal of plaster cast at 3rd or 4th week, the physiotherapy for the treated limb should be suggested.

PRACTICAL-8

Date_____

AMPUTATION OF DIGIT (CLAW) IN BOVINE**INDICATIONS:**

1. Irreparable injury.
2. Foul-in the foot of the digit
3. Gangrenous dermatitis

SURGICAL ANATOMY:

The three bones of digit are

1. Os- suffragins as first phalanx
2. Os-corona as second phalanx
3. Os-pedis third phalanx

The respective interphalangeal joints are

1. The suffragine-coronal (first interphalangeal joint)
2. The corono-pedal (second interphalangeal joint)

ANAESTHESIA & CONTROL

- Planter retro block
- Intravenous retrograde anesthesia
- General anesthesia

SURGICAL SITE

1. Through the corono-pedal joint, leaving the coronary band intact
2. Through the lower third of the os-suffragins

SURGICAL TECHNIQUE

A tourniquet is applied above to knee to control bleeding.

TECHNIQUE I

For amputation through the second interphalangeal joint:

1. The wall of the hoof is pared, leaving only a thin layer of horn.
2. A horizontal incision over the thinned hoof, close to and below the coronary band, cutting through the horny tissue and sensitive laminae, is made, and the interphalangeal joint is reached.
3. Disarticulate through the joint and complete the amputating digit.

TECHNIQUE II: -

Amputation through the lower third of the first phalanx, above the first interphalangeal joint:

1. The skin is incised horizontally above the coronary band & another vertical incision on the lateral aspect of the pastern is made to join it, so as to raise two skin flaps & expose the lower portion of the first phalanx.
2. The first phalanx is cut horizontally with a saw and the amputation is completed.

After amputation the digit by any one of the above 2 methods, the tourniquet is removed 2 further haemorrhage is controlled by ligating the bleeding vessels & by gauze packing. The skin flaps are sutured and a bandage is applied.

The sutures are partially removed to remove the gauze packing the next day and afterwards the wound is treated on general principles.

PRACTICAL-9

Date _____

AMPUTATION OF FORE LIMB**INDICATIONS:**

1. Severe trauma or mangling of the body part
2. End stage osteomyelitis
3. Gangrene
4. Neoplasia
5. Total loss of neurological function results in limb dysfunction.

ANAESTHESIA AND CONTROL:

General anesthesia, recumbent state

The pectoral limb is amputated using one of two specific techniques, fore quarter amputation, which includes scapulolectomy or a scapulohumeral disarticulation.

1. The animal is placed in lateral recumbency with the affected leg uppermost, resting on a sand bag. The distal extremity of leg is draped.
2. A semi circular skin incision is made on the lateral aspect of the limb extending from the line through the middle of the humerus down to the elbow joint. The leg is then abducted and the incision joined by corresponding incision on the medial aspect.
3. The skin flap is reflected on the lateral aspect to expose the long and lateral heads of the triceps brachii muscle, the brachio cephalicus muscle and the cephalic vein, which is ligated.
4. The common tendon of insertion of the triceps brachii is severed and the muscle mass reflected proximally to expose the brachialis muscle where it curves around the lower third of the humerus and the superficial radial nerve, which is severed proximally.
5. The brachialis and brachio cephalicus muscles are severed and reflected to expose the lateral aspect of the shaft of the humerus.
6. The animal is turned over and the skin flap on the medial aspect reflected to expose the biceps brachii muscle, the brachial artery and vein which are ligated and the ulnar nerve, which is severed proximally.
7. The biceps brachia muscle is severed just proximal to where it divides to be inserted on to the ulna and is rejected.

- 8 The leg can now be amputated by sawing through the shaft of the humerus using a hacksaw blade or giggly wire saw.
9. The ends of the severed muscles are sutured together with interrupted chronic catgut sutures to form a protective muscle pad over the stump of the humerus. The brachialis & biceps brachii muscles are first sutured together over the stump & then the brachio cephalicus and triceps brachii muscles.
10. After the ends of the muscles have been sutured together, care must be taken to ensure that their edges are also co-apted.
11. The skin flaps are co-apted with interrupted mattress sutures using mono-filament nylon and the edge of the wound protected by over sewing a gauze pad.

PRACTICAL-10

Date_____

AMPUTATION OF HIND LIMB

The pelvic limb is amputated using one of two specific techniques:

- I) COXO-FEMORAL DISARTICULATION**
- II) MID-DIAPHYSEAL FEMORAL AMPUTATION-**

There is no inherent advantage in one technique over the other, however the mid shaft technique may be considered more cosmetically acceptable by the owners of male dogs because it will cover the genitals.

SURGICAL TECHNIQUE

- I) The leg is draped & positioned.
- 2. A semi circular skin incision is made on the lateral aspect of the leg, extending from a line through the lower third of the thigh down to stifle joint. The leg is then abducted and the incision joined by a corresponding incision on the medial aspect.
- 3. THE skin flap is reflected on the lateral aspect to expose the sartorius, , quadriceps femoris, biceps femoris muscles and the fascia lata.
- 4. The fascia lata is incised along the length of the attachment to the biceps femoris muscle.
- 5. The quadriceps femoris & biceps femoris muscles are separated by blunt dissection to expose the lateral aspect of femur.
- 6. The tendon of insertion of the quadriceps femoris muscle and the anterior belly of the sartorius muscle are severed proximal to the patella & reflected to expose the lateral aspect of the femur and the distal posterior femoral artery, which is ligated.
- 7. The aponeurosis of insertion of the biceps femoris is incised transversely and the muscle reflected to expose the popliteal artery, the sciatic nerve and the abductor, semimembranosus and semitendinosus muscle. The popliteal artery is ligated and the sciatic nerve divided proximally.
- 8. The animal is turned over and the skin flap on the medial aspect reflected to expose the posterior belly of the sartorius and the gracillus muscle. These muscles are severed and reflected to expose the femoral artery and vein, which are ligated, and saphenous nerve which is divided proximally.
- 9. Also exposed are the semi membranous and semi tendinosus muscles, which are severed together with the underlying abductor muscle to expose completely the shaft of the femur.

10. The leg can now be amputated by sawing through the shaft of femur using alacusane blade and the operation completed in the manner described for coapting an amputated front leg.

REMARKS

- 1.The limb should be removed as near to the trunk as possible.
- 2.Hemostasis is critical; replace fluid or blood lost during the surgery.
- 3.Strive for speed in the surgery to prevent excessive haemorrhage & soft tissue drying.
- 4Never ligate large arteries & vein together because an arterio-venous fistula may develop.
- 5.Be certain that animals general condition can tolerate such a traumatic procedure.
- 6.Never amputate a limb in the face of thoracic metastasis, unless the pain is excessive.

PRACTICAL-11

Date_____

AMPUTATION OF TAIL**INDICATIONS:**

1. To improve the appearance of the animal
2. Injury as neoplasm of the tail
3. Tail gangrene

SURGICAL ANATOMY:

1. The skeletal framework of tail is made up of coccygeal vertebrae of which number varies with species to species.
2. The paired muscles of the tail are enclosed in the strong coccygeal fascia, which is loosely attached at the root of the tail.
3. Sacro- coccygeal dorsalis muscles lie on either side of the dorso-median aspect of the tail.
4. Sacro-coccygeus lateralis muscles lie immediately lateral to dorsalis.
5. Sacro-coccygeus ventralis lies on the ventral aspect of the sacrum and coccy.
6. Inter transversalis caudae consists of muscles bundles and lies on the lateral aspect of the tail between sacro- coccygeus lateralis & ventralis.
7. The blood supply to the tail is through the middle and lateral coccygeal arteries and nerve supply by coccygeal nerves.

SITE OF OPERATION

Above the injury or seat of infection at the intervertebral articulation.

ANESTHESIA & CONTROL:

1. Large animal is controlled in standing or in recumbent position & small animal on the operation table in recumbent position.
2. Anaesthesia is achieved by infiltrating local anaesthetic solution subcutaneously encircling the tail above the site of operation or by posterior epidural anesthesia.
3. In uncontrollable animal sedative as tranquilizers may be required.

SURGICAL TECHNIQUE:

1. Tourniquet should be applied on the back of the tail.
2. Two 'V' shaped flaps one on dorsal and the other on ventral side are made at the site of operation after palpating the articulation.
3. Prominent vessels at the lateral and ventral aspect are identified and ligated proximal and distal to the proposed site of amputation.
4. Intervertebral space is located by blunt dissection and the joint is disarticulated with the help of BP blade. The distal portion of the tail is then removed.
5. Skin flaps are united by simple interrupted or interrupted mattress sutures.

POST-OPERATIVE CARE:

1. Sutures are removed 7-8 days after surgery or after complete healing
2. Daily antiseptic dressing is to be done.