# FETOTOMY

Prepared by-

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# Fetotomy

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## Definition:-

**"Fetotomy (originally referred to as embryotomy) is sectioning of a fetus into two or more parts within the uterus and vagina to reduce the size such that delivery through the birth canal becomes possible"**

## Types:-

- **On the Basis of Divison of Fetus---**
  - **Partial-** dividing the parts of fetus
  - **Total-** dividing the whole fetus
- **On the Basis of Method Involved---**
  - **Subcutaneous fetotomy-** amputation of fetal parts below the skin
  - **Percutaneous fetotomy-** amputation of fetal parts encluding skin

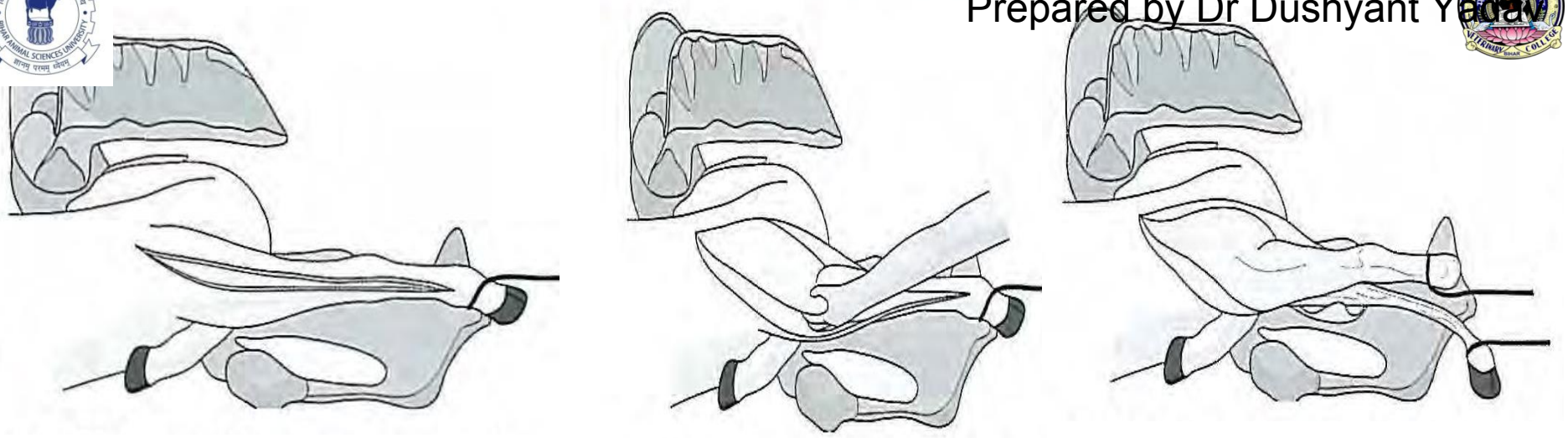


**Fig: Subcutaneous fetotomy A-** incision on the skin from fetlock to scapular cartilage, **B-** Dissection of skin from underlying tissues, **C-** Amputation of extended limb

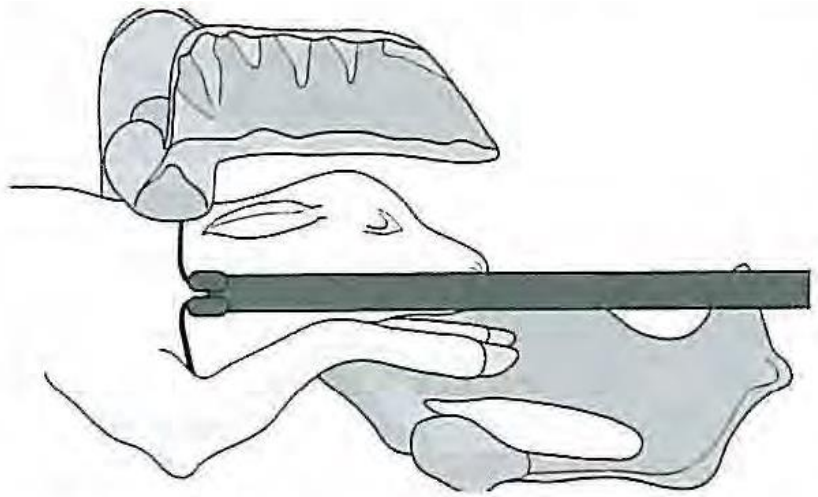


**Fig: Percutaneous fetotomy;** no need to any incision on the skin

# Advantages of fetotomy

- ✓ It reduces the size of fetus
- ✓ Avoid cesarean section
- ✓ Require little assistance
- ✓ Prevent the trauma caused by excessive traction etc.

# Disadvantages of fetotomy

- ✓ Causes injuries or laceration of uterus or birth canal by instrument or sharp edge of bone
- ✓ Exhaustion to dam and operators
- ✓ Pressure necrosis of birth canal
- ✓ Possibilities of infection when delayed cases etc.

# Equipments/Instruments

## Used in Subcutaneous Fetotomy-

- **Knife-**
  - Canceled knife, Stalfer's knife, Hallurck ring knife, Cole pattern guarded knife, Robert's knife
- Air Insufflator
- Kaller's Semisharp Spatula etc.

## Used in Subcutaneous Fetotomy-

- Knife
- Benisch fetotome
- Thygesen's double barrel fetotome
- Threader and brush
- Wire Saw
- Snare
- Wire saw handles
- Krey hook- A Krey hook with an obstetric chain or rope
- Saw wire introducer etc.

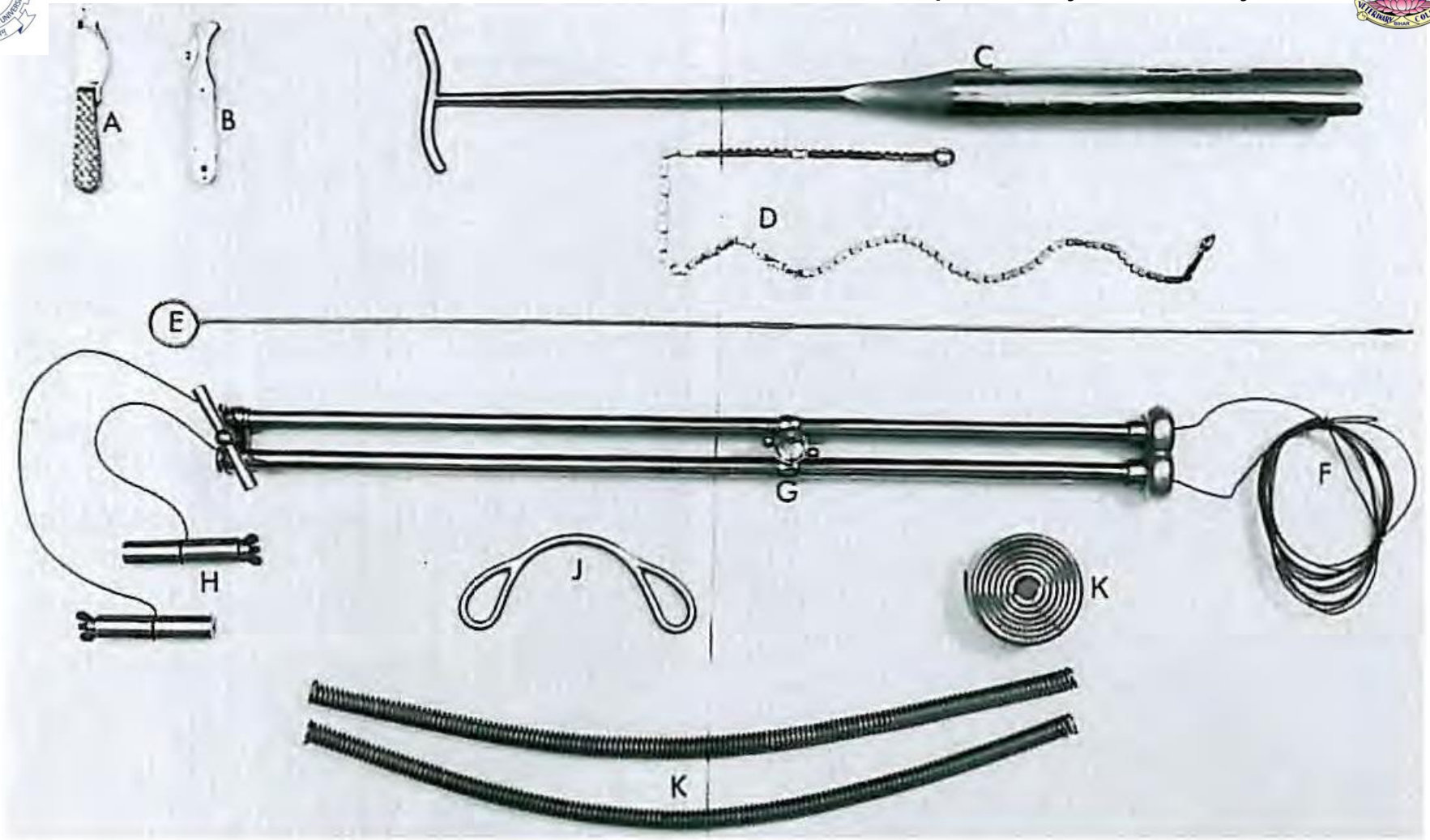



**Fig: A-** Robert's guarded knife, **B-** Unsworth's guarded knife, **C-** Kaller's Spatulla, **D-** Persson's chain saw, **E-** Fetotomy wire introducer, **F-** Mutifilament fetotome wire, **G-** Modified Thygesen's fetotome, **H-** Fetotome wire hand grips, **J-** Shriever's wire introducer , **K-** Gattli's spiral tubes (used to protect the wire saw)

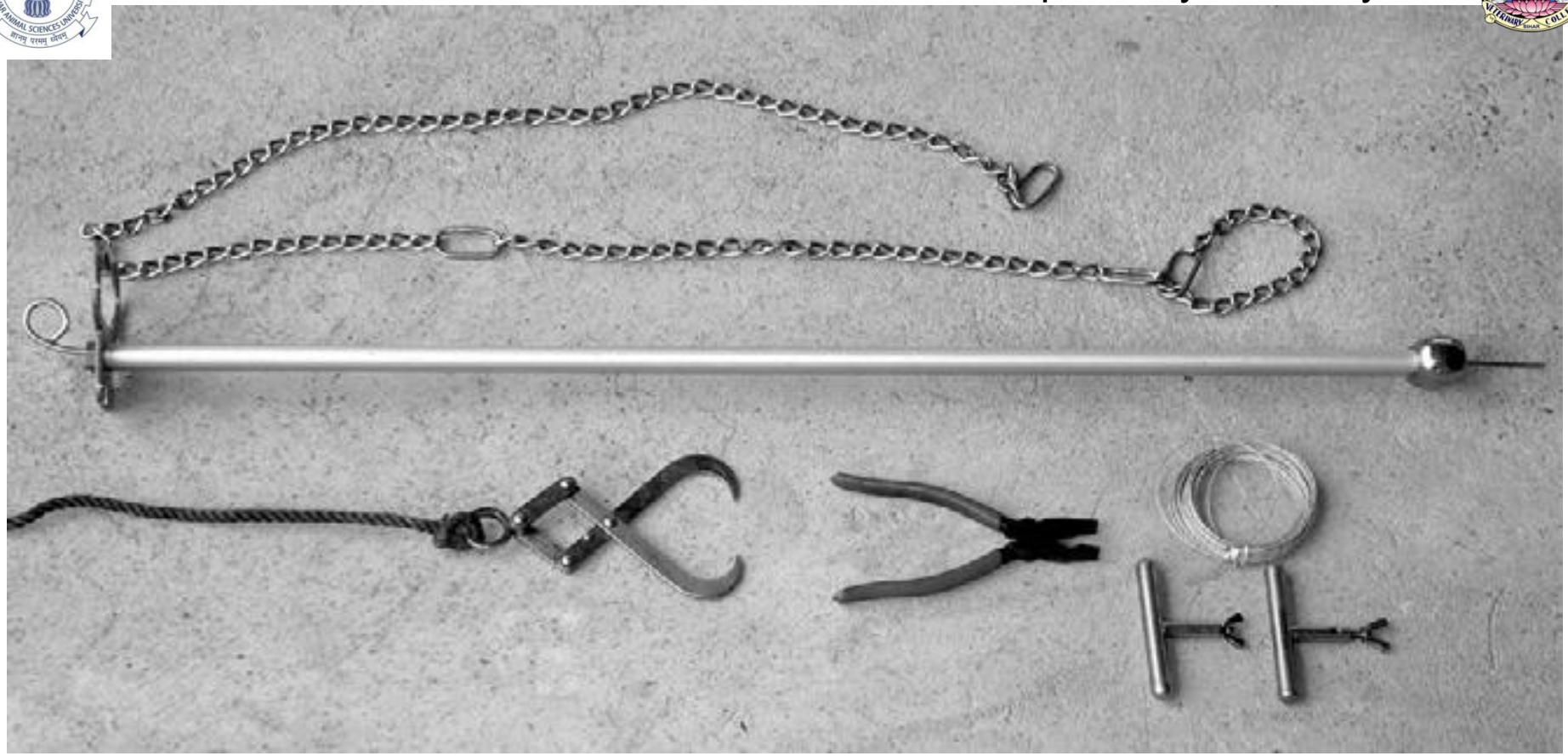


**Fig:** From *bottom left in clockwise direction*- ***Krey hook*** **with attached rope**, **Utrecht fetatome with wire threader** inserted through one barrel, **calving chains**, a **roll of fetotomy wire**, **fetotomy handles**, and **pliers**

# Indications for Fetotomy

- ✓ Feto-pelvic disproportion
- ✓ Pathologic enlargement of the fetus (fetal gigantism)
- ✓ Incomplete cervical dilatation
- ✓ Fetal mal-posture and mal-presentation
- ✓ Fetal malformations (like monster) etc.

***Note:***

- ❑ Fetotomy is not useful when the birth canal is obstructed or reduced in size

# General Considerations/Prerequisits

- Instruments should be properly sterilized
- Fetus should be dead (sacrificed only when dam is very high quality)
- Perineal region of dam should be cleaned properly with PP solution
- Birth canal should be well dilated to introduce the fetotome and operators hand
- Birth canal should be free from laceration
- **Restraint**-Standing or Lateral recumbency
- **Anesthesia**-Epidural anesthesia (with local anaesthetic agents)
- **Lubrication-** Plenty of lubricant generally Petroleum-based water soluble lubricants
- **Assistance-** At least one and preferably two assistants. If two; one maintains position of fetotome and other on the sawing

# Precautions During Fetotomy

- ✓ Proper lubrication is necessary up to the end of operation
- ✓ Knife should be used carefully
- ✓ Sawing should be started after final checking of fetotome position
- ✓ Wire saw should not crossed to each other
- ✓ Sawing should begin with slow, short strokes, with only light pressure on the wire
- ✓ After the wire is seated beneath the fetal skin, strokes of the wire can be lengthened and heavier pressure applied
- ✓ Tension on the saw wire should not be relaxed during the cutting procedure, because the saw wire may tangle and break
- ✓ Change the operator when first get tired etc.

# Fetotomy in Anterior Presentation

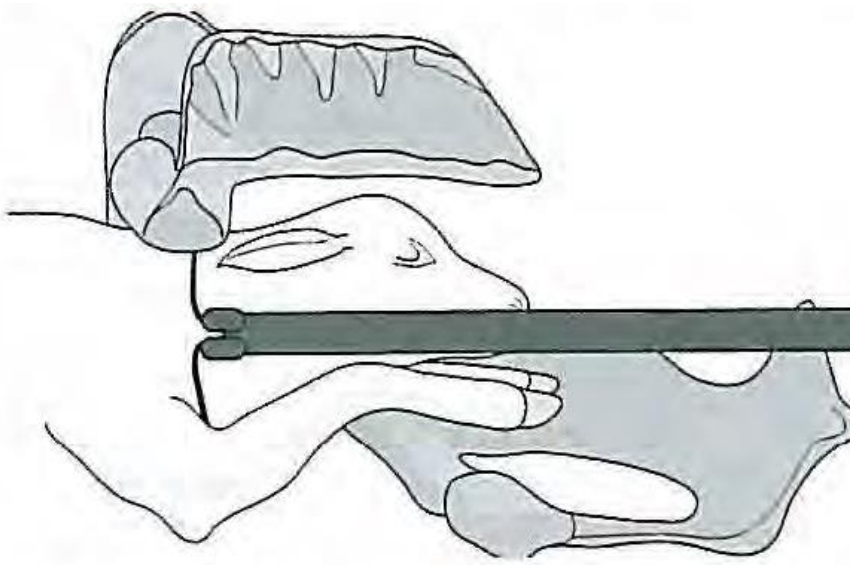
❖Requires a maximum of **Six** (some times seven) cuts-

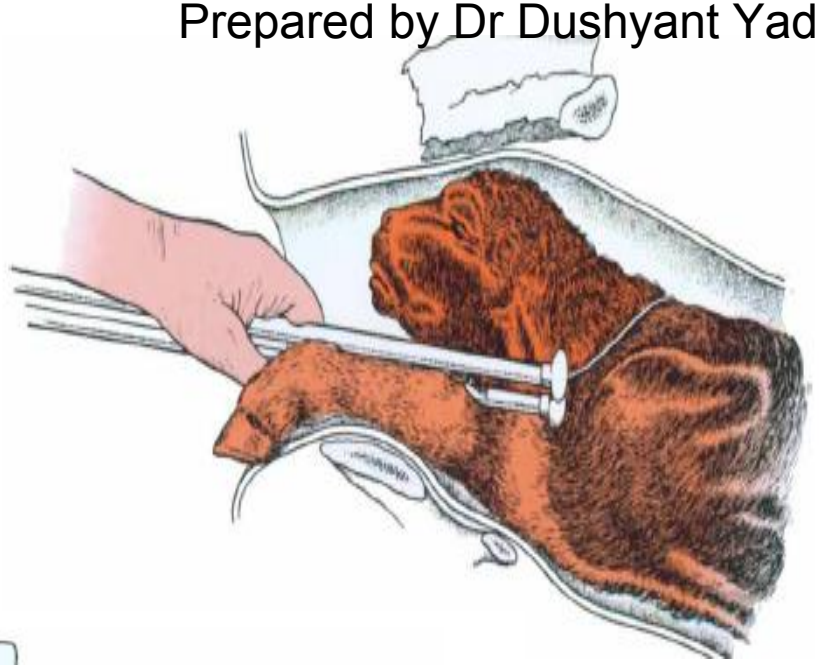
1. Decapitation (Amputation of head)
2. Amputation of fore limb (Rt/Lt)
3. Amputation of other fore limb (Rt/Lt)
4. Transverse dissection of fetal trunk at anterior part of chest
5. Transverse dissection of fetal trunk at posterior part of chest (at lumbar region)
6. Longitudinal dissection of hind quarter (pelvis bisection)

# 1. Decapitation (Amputation of the Head)

- A loop of saw wire is passed over the head of the fetus immediately caudal to the ears

- Head of the fetotome is positioned between the mandibles and caudal to their posterior borders or caudal to the ramus of the mandible





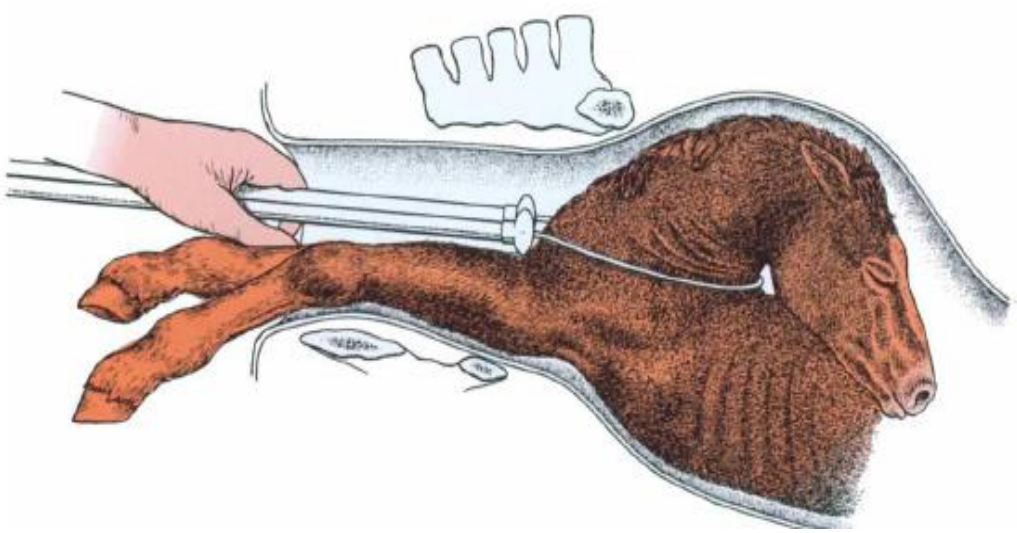


**Fig: Amputation of Head** (Positioning of the Fetotome Head and Loop of Saw Wire)

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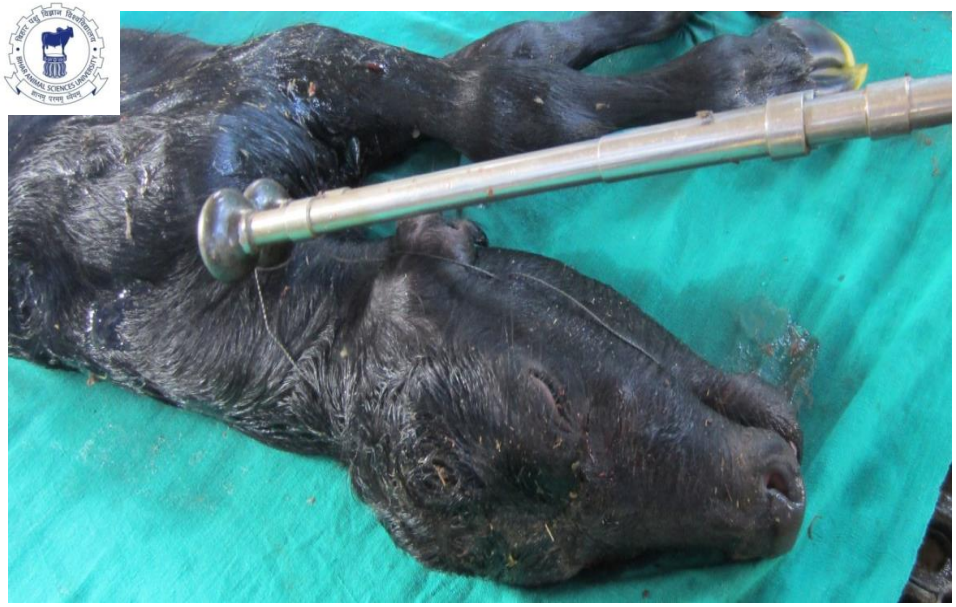

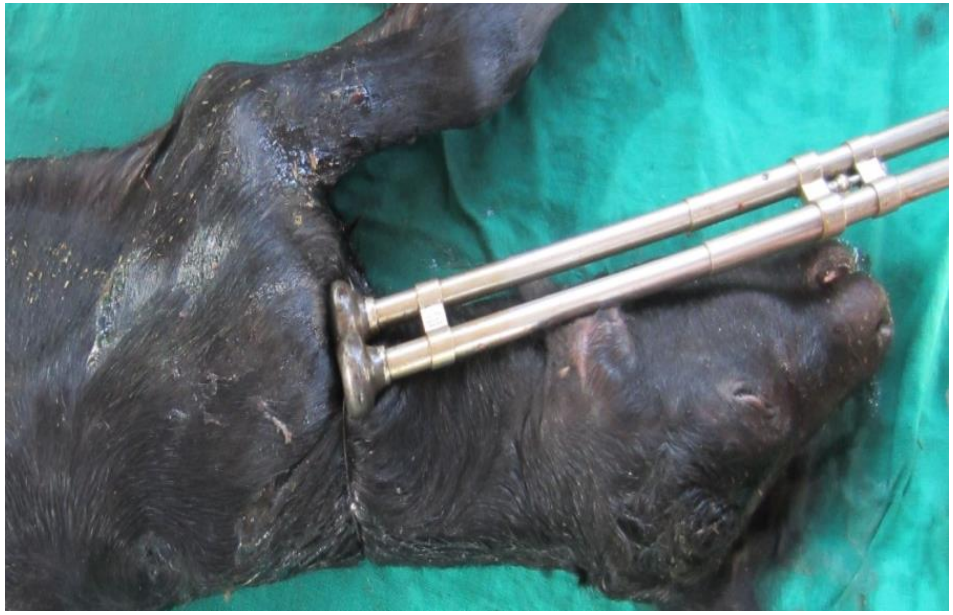

**Fig: Amputation of Head** (Positioning of the Fetotome Head and Loop of Saw Wire) **(Original Photographs*)**

# 2 & 3. Amputation of the Forelimbs

- Before being amputated, the forelimbs must be extended
- Distal portion of the limb protruded from the vulva

## Procedure

- An obstetric chain is first fixed to the limb
- Chain is passed through the loop of the wire saw
- Placed the saw wire loop between the claws of the forefoot to temporarily anchor it
- Passed the fetotome along the lateral surface of the limb until the **head of fetotome** rests near the middle of the scapula and move upto posterior border of scapula

- Give moderate traction to extend the leg
- Saw wire loop is removed from the interdigital space
- Move the **loop of saw wire** up the medial surface of the limb until it lies **medial to the scapula in the axillary space**
- Apply the traction with obstetric chain to fully extend the limb
- Covers the head of the fetatome with a hand and amputate the limb
- Amputate the second forelimb in similar manner

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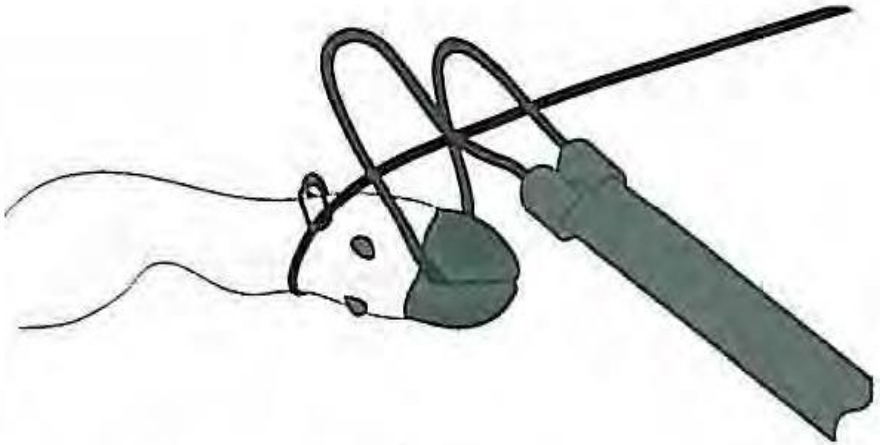


**Fig: Temporary positioning of the fetotome wire** between the claws of forelimb

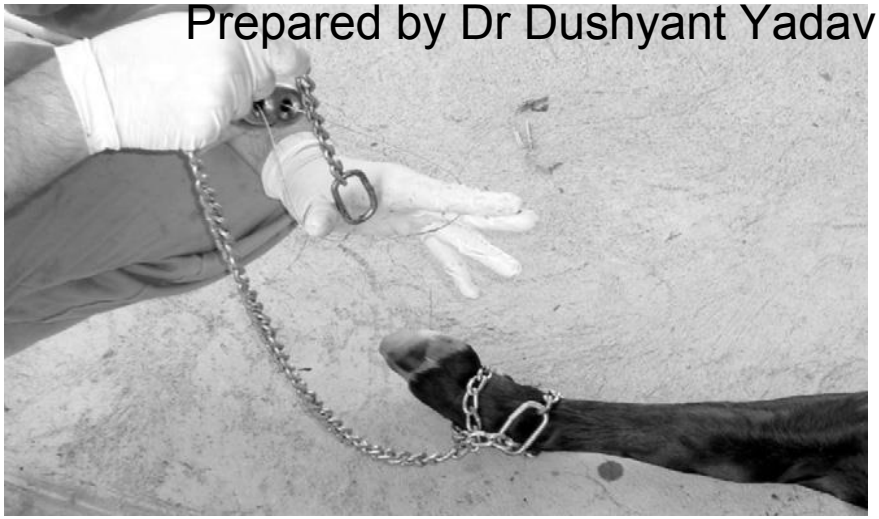


**Fig:** Obstetric chain attached to the limb is passed through the wire loop

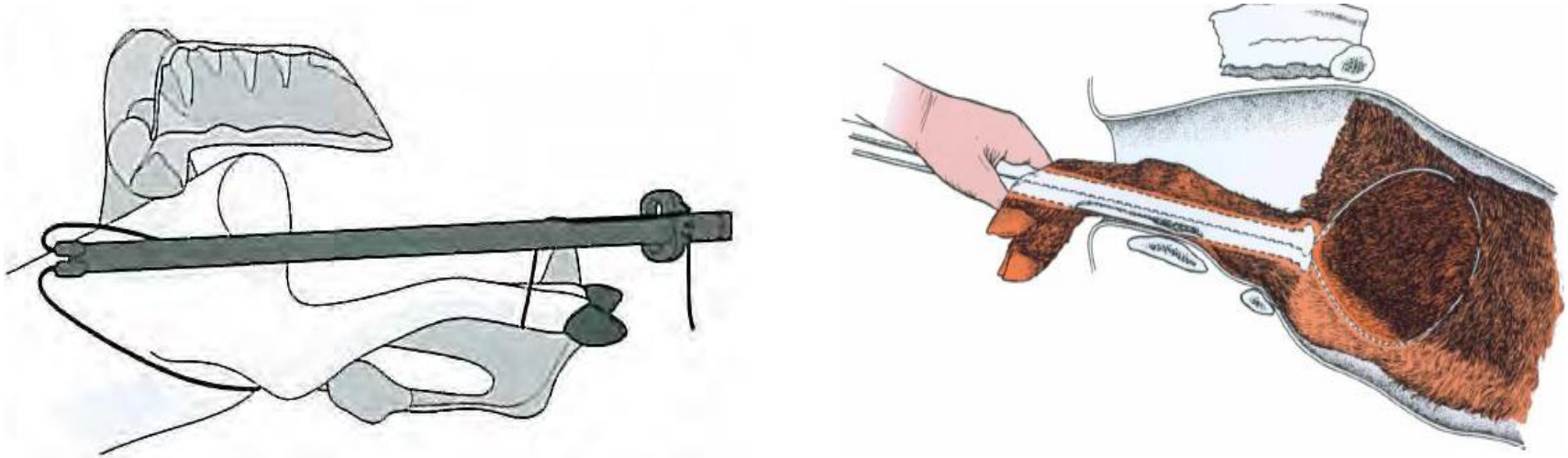


**Fig: Amputation of Forelimb** (Positioning of the Fetotome Head and Loop of Saw Wire)

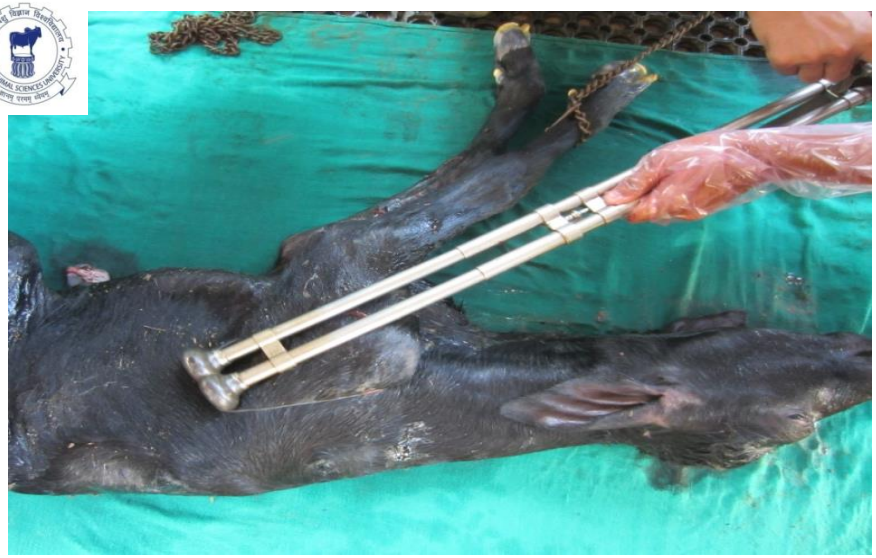


**Fig: Amputation of Forelimb** (Positioning of the Fetotome Head and Loop of Saw Wire) **(Original Photographs*)**

**Fig: Amputated one Forelimb (Original Photographs*)**

# 4. Transverse Dissection of Fetal Trunk at Anterior Part of Chest

- Firstly Krey hook is fixed to the exposed cervical vertebrae
- **Head of fetotome** placed behind the posterior border of scapula
- **Loop of saw wire** passed along the dorsolateral surface of the fetal chest near the scapular attachment
- Chain from the Krey Hook is then anchored to the fetotome
- Fetotome motion can be minimized by pushing the fetotome against the fetus

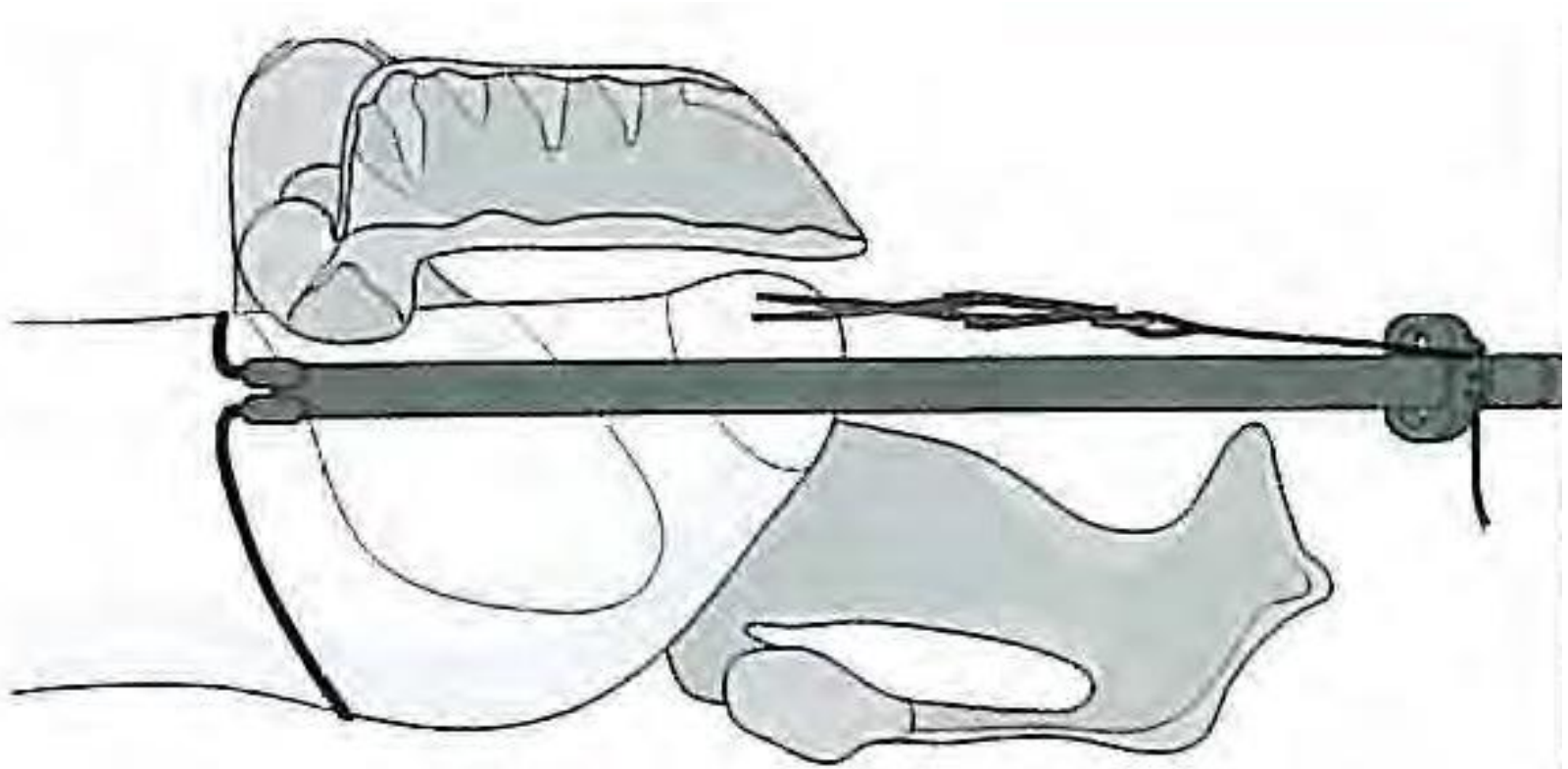
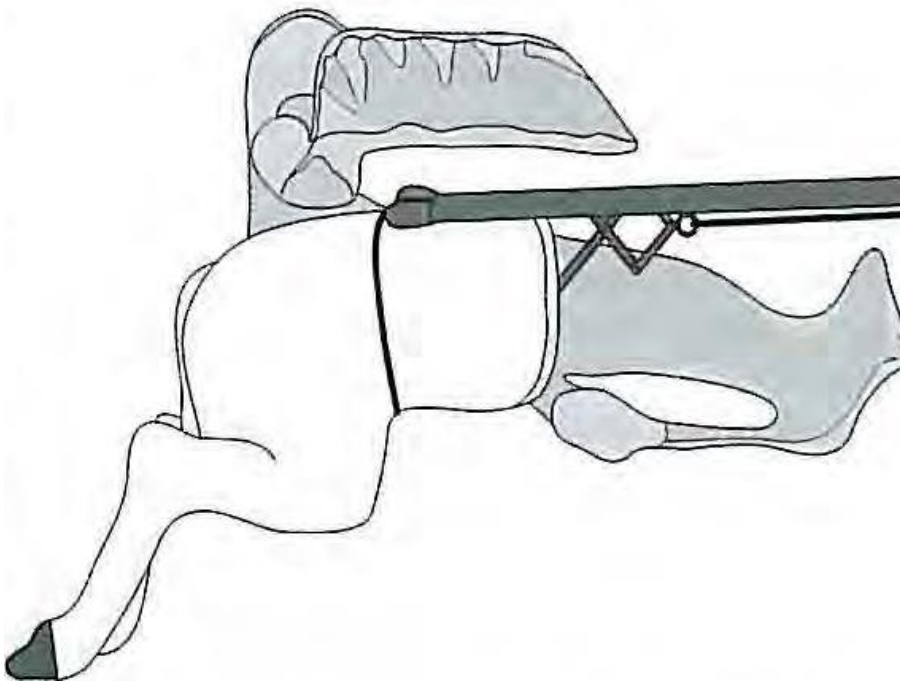


**Fig:** Transverse **Dissection of Fetal Trunk** at **Anterior Part** of Chest

# 5. Transverse Dissection of Fetal Trunk at Posterior Part of Chest (at Lumbar Region)

- Krey hook is anchored to the thoracic vertebrae
- **Head of the fetotome** is positioned on the dorsolateral surface of the fetus immediately caudal to the last rib
- **Saw wire loop** is at right angles to the fetotome around the abdomen



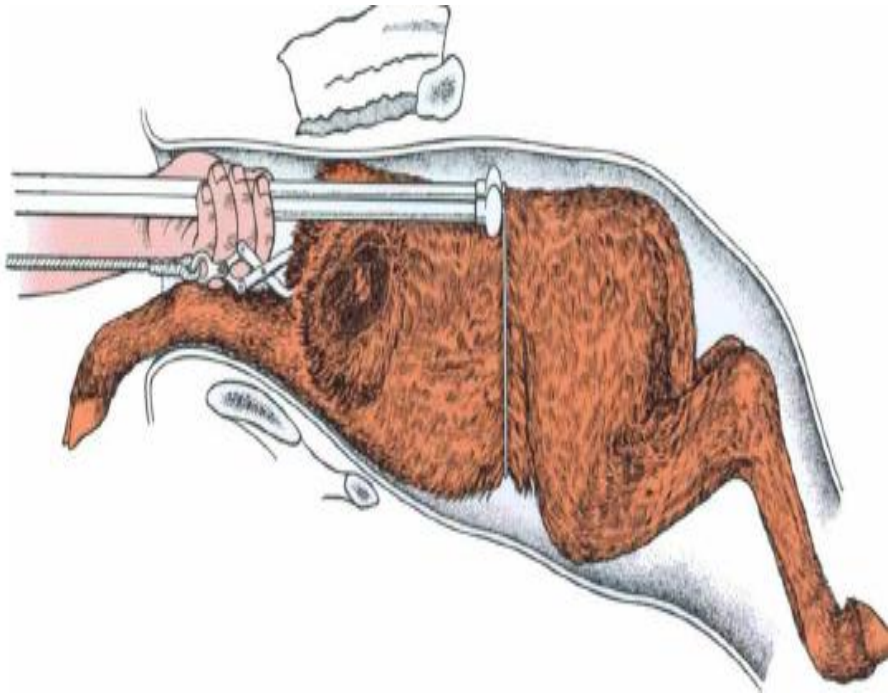
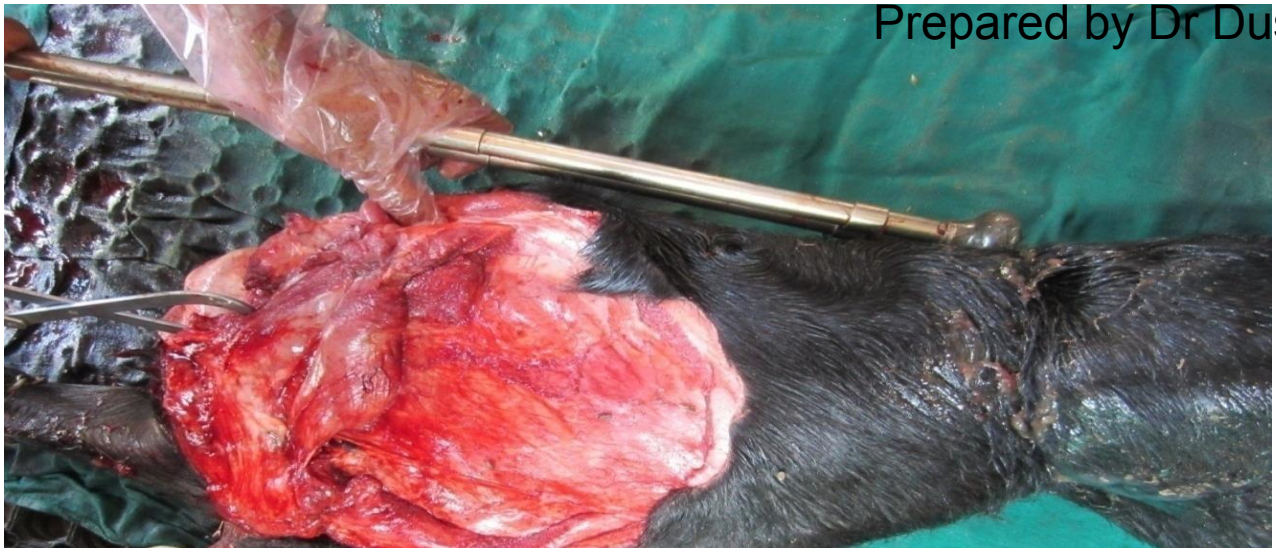


**Fig:** Transverse **Dissection of Fetal Trunk** at **posterior Part** of Chest (at **lumbar region**)



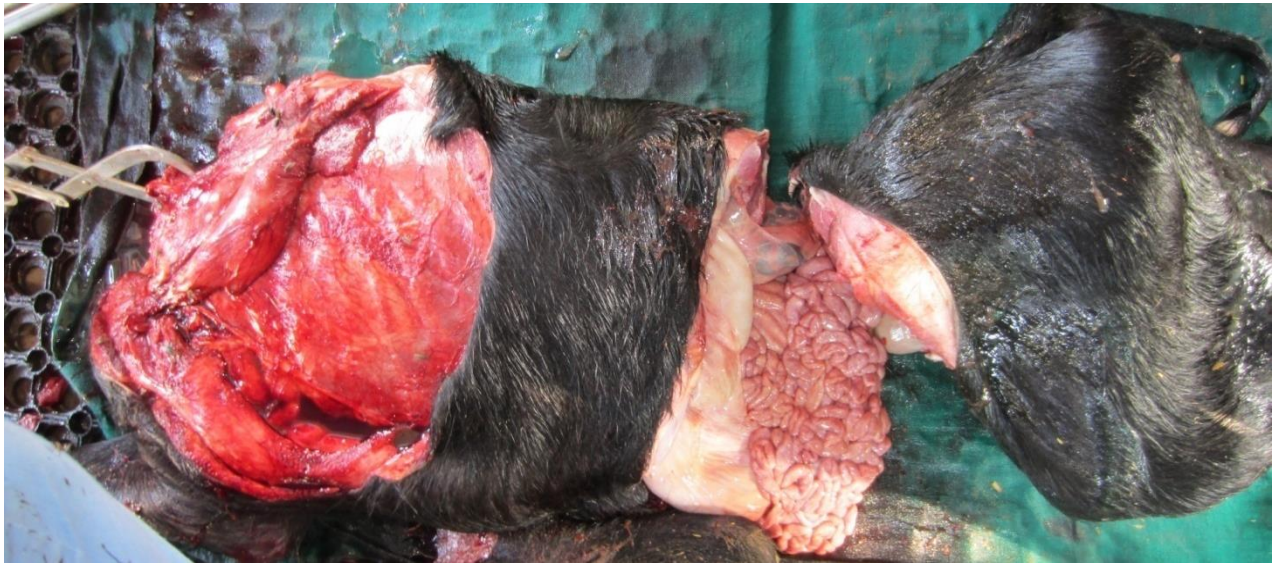


**Fig:** Transverse **Dissection of Fetal Trunk** at **Posterior Part** of Chest (at **lumbar region**) **(Original photograph*)**

# 6. Longitudinal Dissection of Hind Quarter (Pelvis Bisection)

- It is final longitudinal division of the fetus separates the hindquarters
- Using an introducer, the saw wire is passed over the dorsal aspect of the pelvis and the introducer retrieved between the hind limbs
- **Head of the fetotome** placed anterior to lumbar vertebra
- **Wire Saw** between the tail and tuber ischii (pin bone)

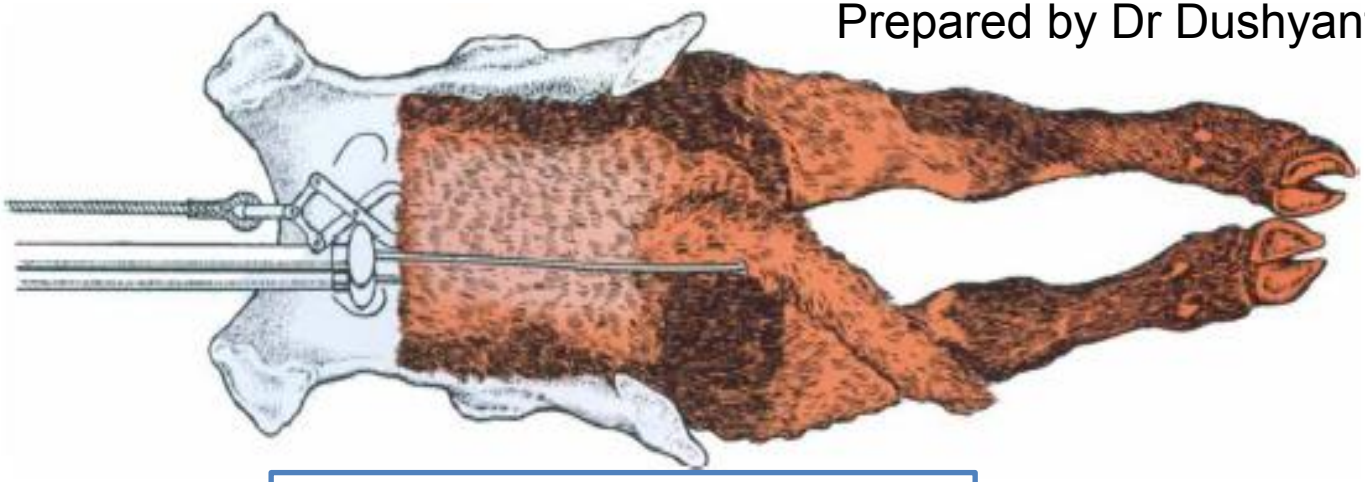


**Fig:** Pelvis Bisection

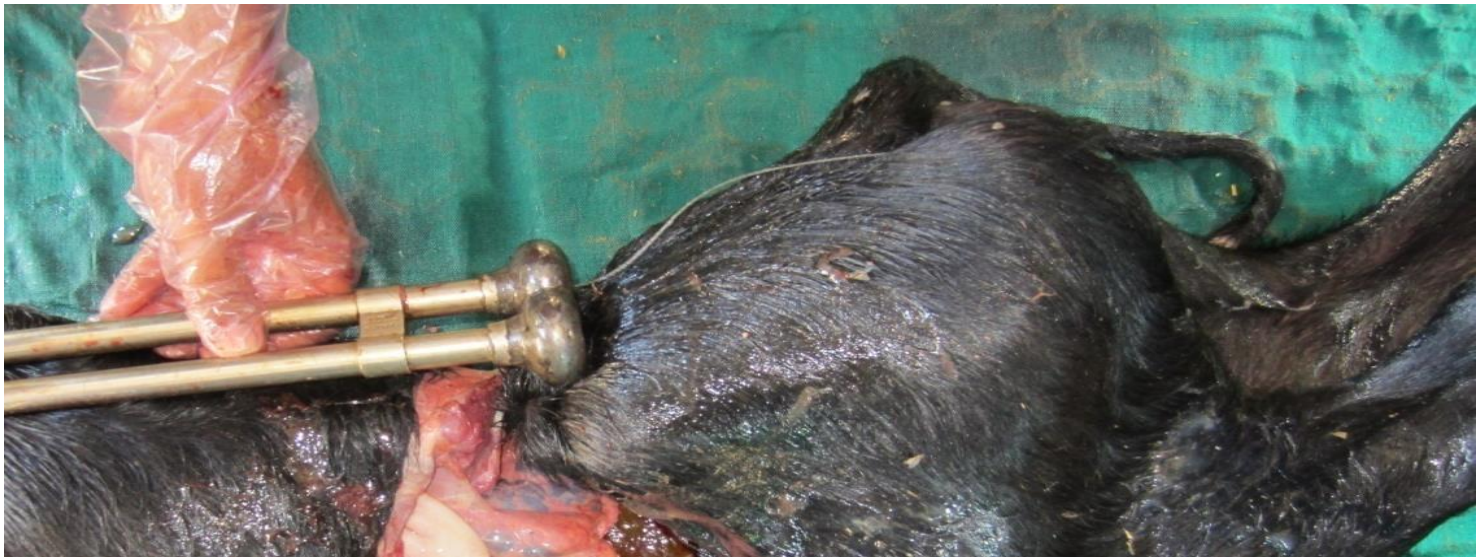


**Fig:** Pelvis Bisection
**(Original Photograph*)**

# Fetotomy in Posterior Presentation

***It includes:-***

1. Amputation of the Hindlimb

2. Same for the other Hindlimb

3. Transverse dissection of the fetal trunk at the lumbar region (posterior chest)

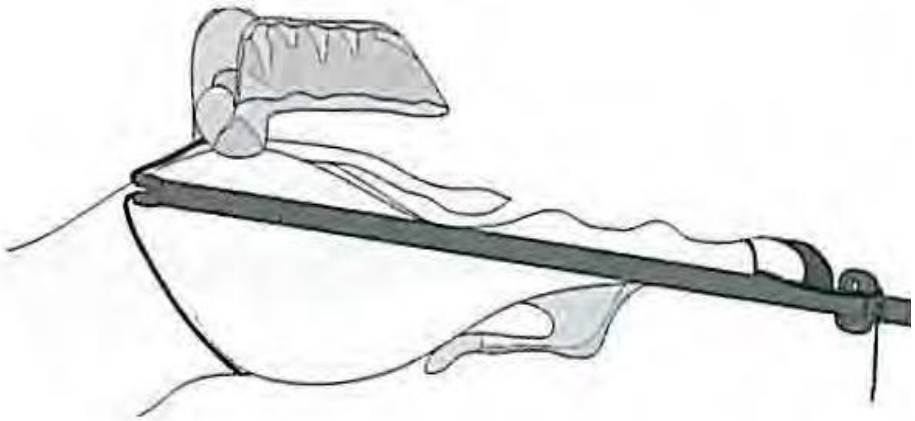
4. Transverse dissection of the fetal trunk at the scapular region (anterior chest)

5. Diagonal longitudinal division of the foreparts of the fetus

# 1 & 2. Amputation of the Hind limbs

## Procedure:-

- An obstetric chain is attached to the limb to be amputated
- Passed the chain through the loop of saw wire
- Anchored the wire loop temporarily between the claws
- Introduce the fetotome along the lateral surface of the limb and move untill the **head of fetotome** rests in the **area of the greater trochanter of the femur**
- Move the **saw wire** up the medial surface of the limb until it lies medial and **cranial to the stifle joint (between tuber ischii and tail head)**
- Give the traction on the chain to extend all the joints
- Amputated the limb and Second limb can be amputated similarly



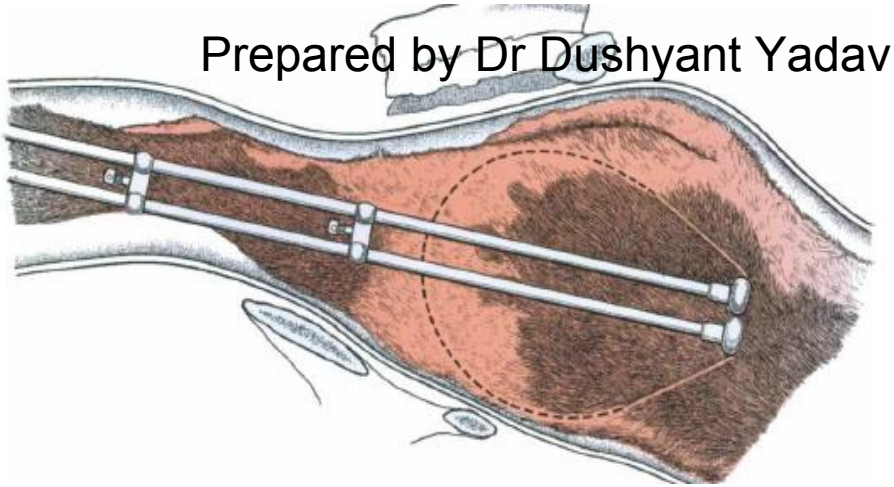


**Fig: Amputation of Hindlimb** in Posterior Presentation (Acute angle)

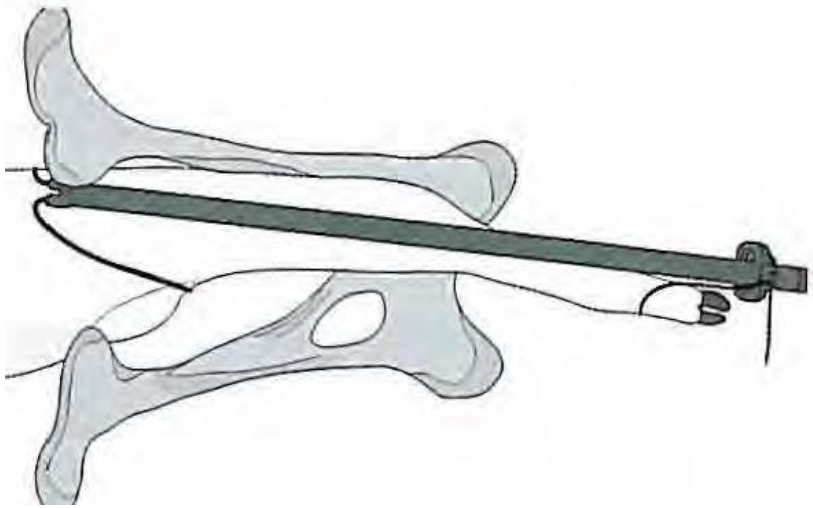


**Fig:** Amputation of **Second Hind limb** in Posterior Presentation

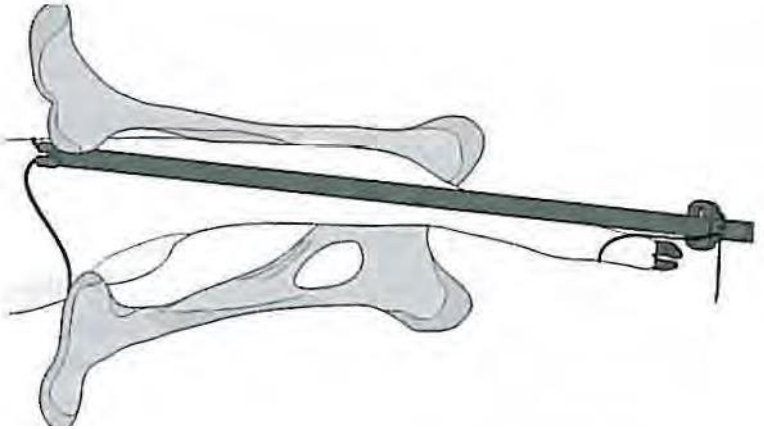


**Fig:** Amputation of **Second Hindlimb and Calf's Pelvis** in Posterior Presentation

## 3. Transverse dissection of the fetal trunk at the lumbar region (posterior chest)

- **Head of fetotome** placed **just caudal to the last rib**
- **Wire Saw loop** is placed at **around the trunk** at **right angle to fetotome**
- Pelvis is secured with Krey hook

## 4. Transverse dissection of the fetal trunk at the scapular region (anterior chest)

- Position of **fetotome head** on the dorsolateral surface of the fetus **immediately caudal to the scapulae**
- **Saw wire loop** is then positioned **around the chest** at **right angle to fetotome**

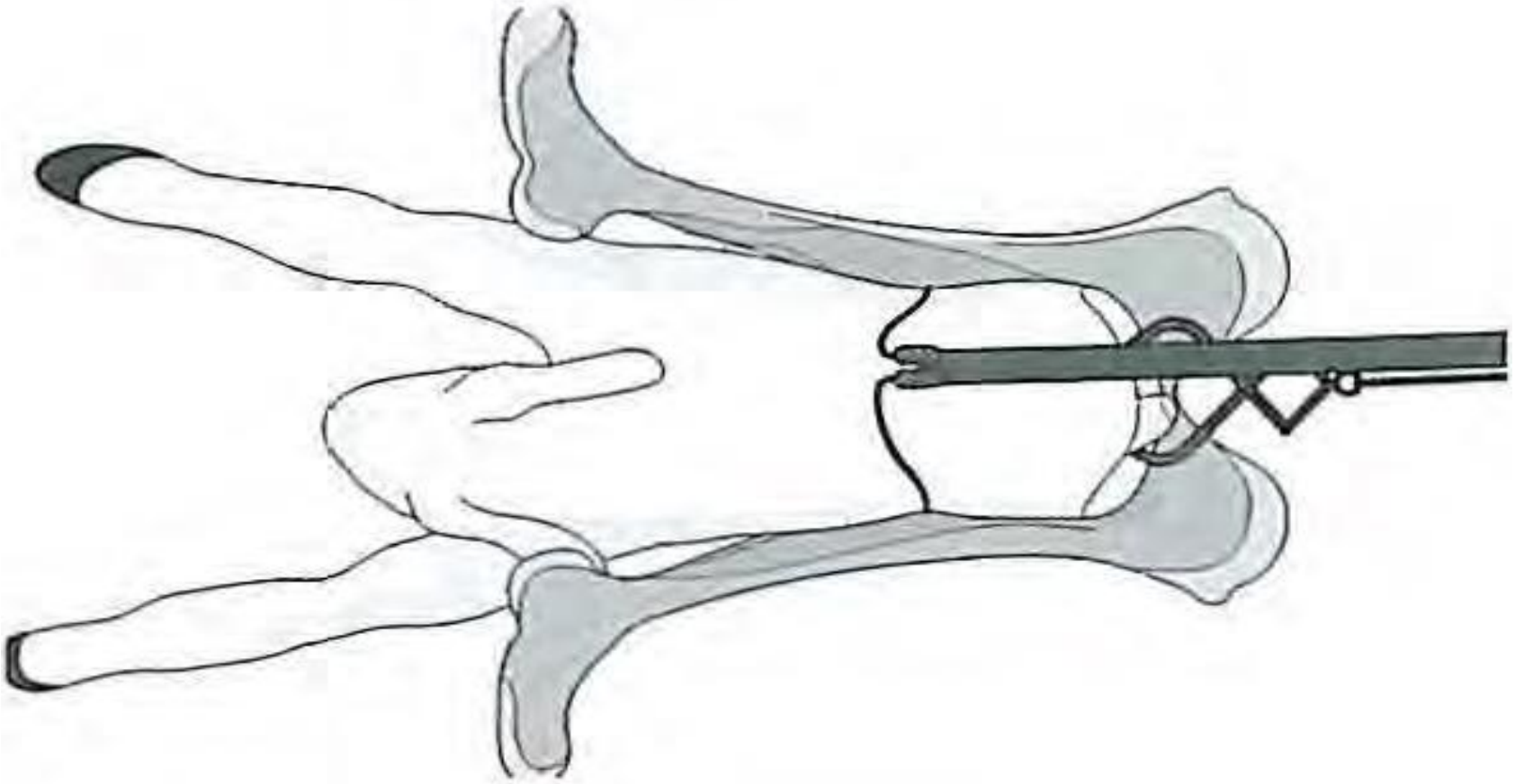


**Fig:** Transverse **dissection of fetal trunk** in posterior presentation

# 5. Diagonal longitudinal division of the foreparts of the fetus

- Amputation of each forelimb separately or by diagonal division of the forepart
- Head of fetotome is positioned at posterior to scapular attachment of opposite limb
- Saw wire pass dorsally over fetus, guide ventrally below the forelimb involving the base of neck and retrieve on opposite side of limb so that ventrally part of wire faces medially to elbow joint

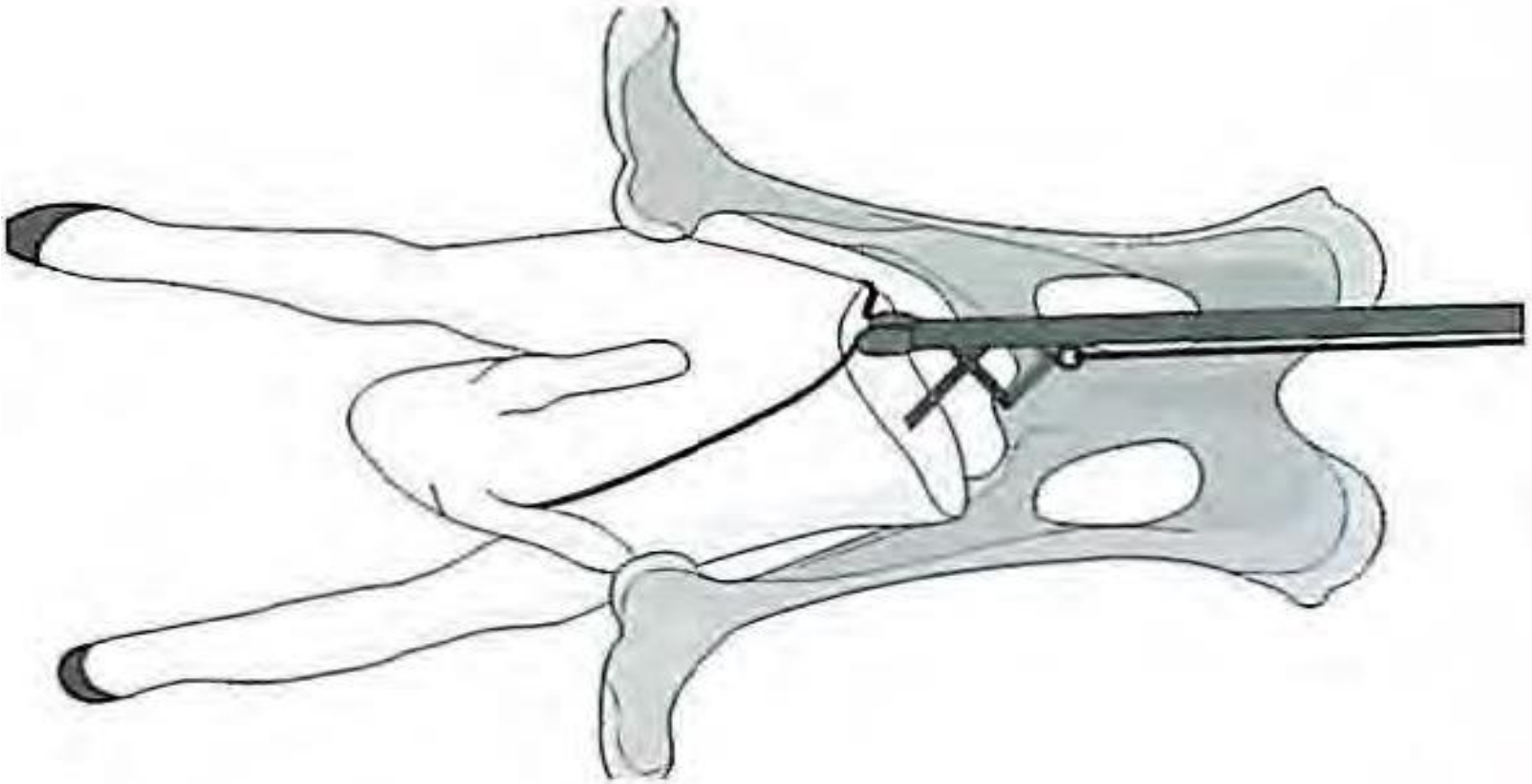


**Fig: Diagonal Bisection of Forequarters** in posterior presentation

# Modified Fetotomy

"A modification of the Utrecht method (common) for complete fetotomy has been described that reduces the number of cuts required but applicable only when the fetus is not excessively oversized"

## ***Cranial Presentation***

- The head of fetus is first amputated by encircling the neck with the saw wire
- Head of fetotome positioned similar to normal fetotomy but, saw wire is positioned between the stump of the neck and the opposite forelimb
- Results into amputation of one forelimb, the neck, and a portion of the thorax which permits evisceration of the thoracic and abdominal cavities
- Traction on the remaining forelimb is then continued until delivery is complete
- If necessary, the fetal pelvis is sectioned

## ***Caudal Presentation***

- First hind limb is amputated as in normal fetotomy
- Then evisceration is done to reduce the size of fetus
- If not reduced sufficiently, a **transverse cut is made through the thorax caudal to the scapula**
- A **final cut** is made **obliquely through the remaining forepart of the fetus-**
  - One section is composed of a forelimb and most of the thorax and
  - other is composed of the head, neck, and remaining forelimb

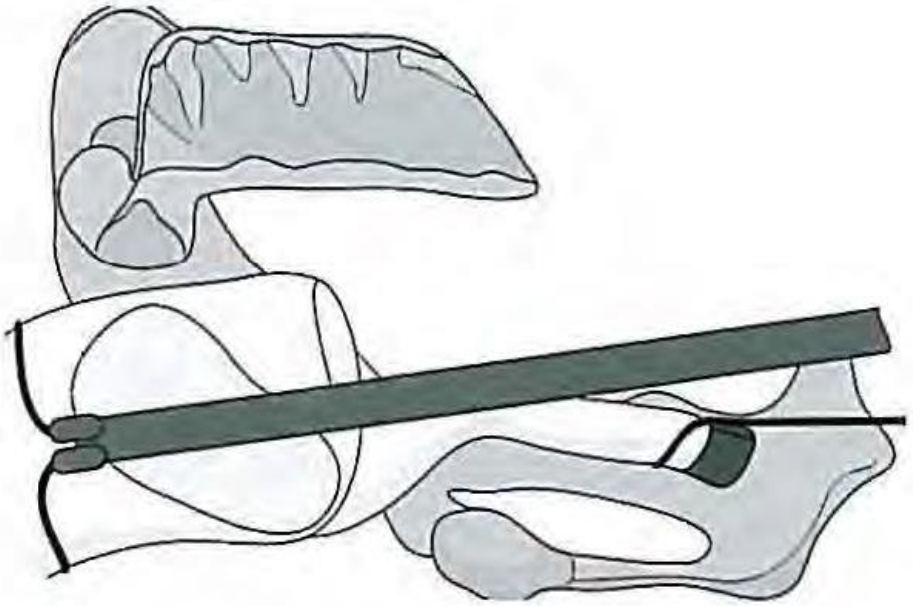


**Fig:** Transverse dissection through trunk after **amputation of head/neck and right fore limb**

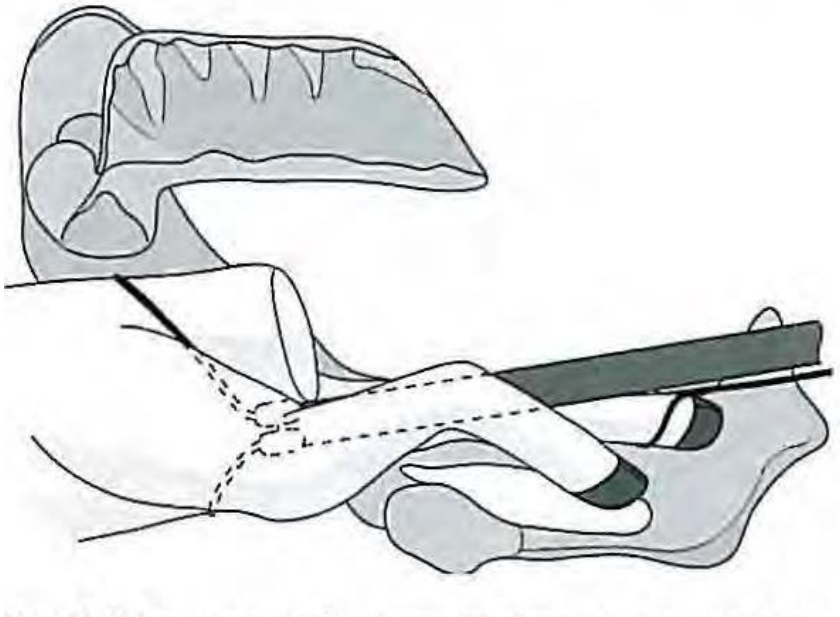


**Fig:** An alternate approach to **amputate the left fore limb and neck** following amputation of the head

# Fetotomy in Mal-positioning/ Abnormal of Fetus

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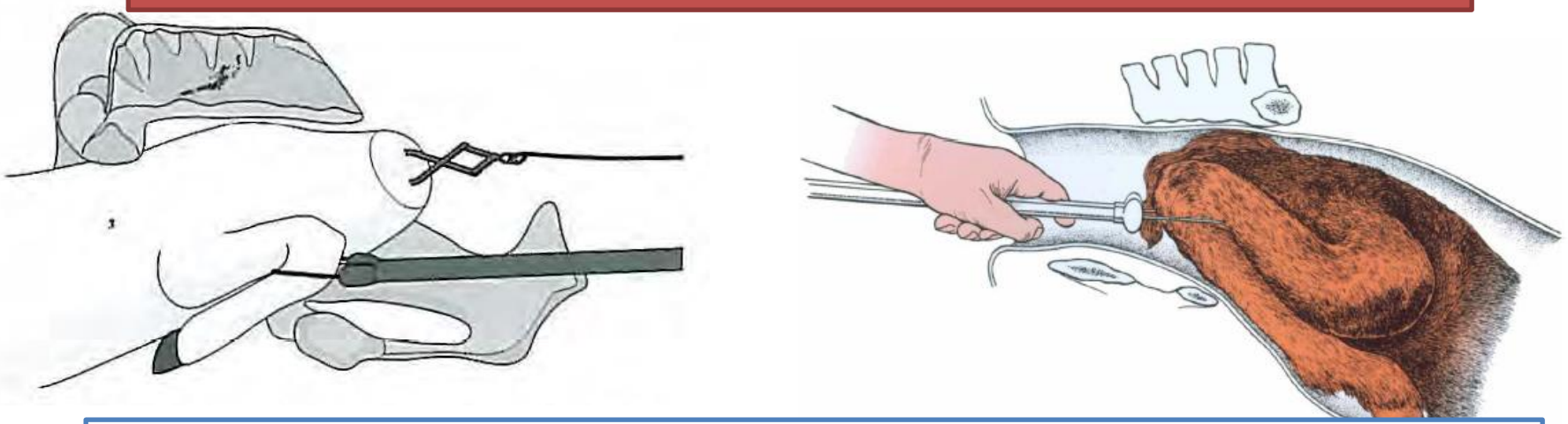

**Fig:** Position of Fetotome Head and Saw Wire in **Carpal Flexion**

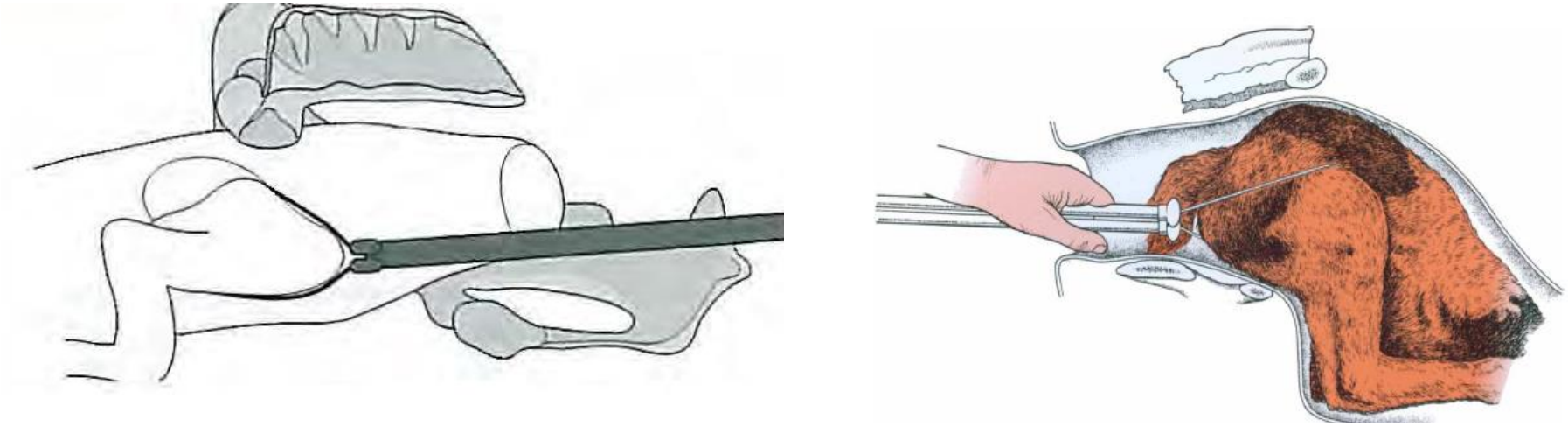

**Fig:** Position of Fetotome Head and Saw Wire in **Shoulder Flexion**

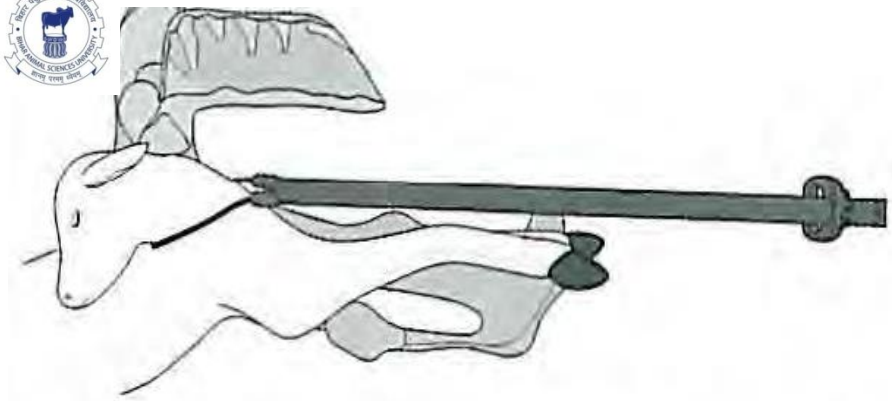

**Fig:** Position of Fetotome Head and Saw Wire in **Lateral Deviation of Neck**

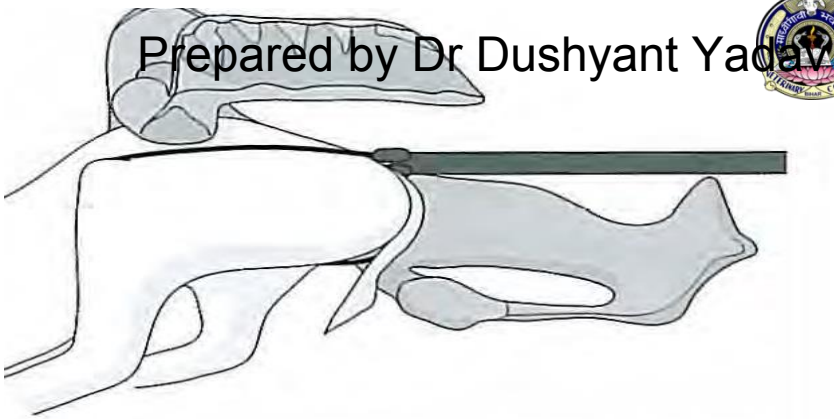

**Fig:** Position of Fetotome Head and Saw Wire in **Bilateral Hip Flexion**

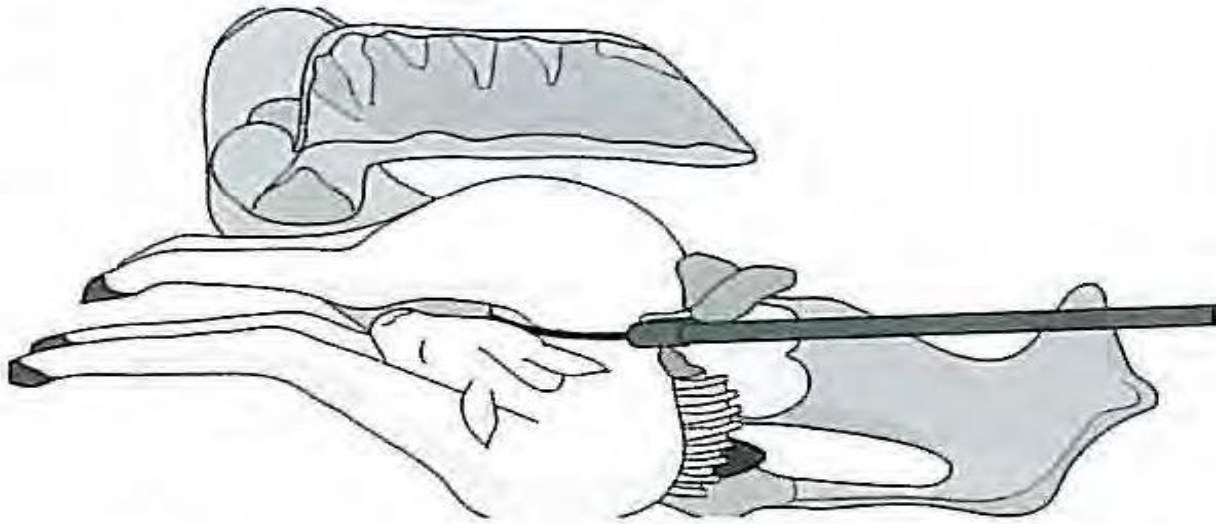

**Fig:** Position of Fetotome Head and Saw Wire in **Schistosoma Reflexus Fetus**

# Aftercare with Fetotomy

- ✓ Uterus should be routinely lavaged with warm (42° to 45°C) water to which is added a small amount of a nonirritating disinfectant
- ✓ Use the ecbolic agent such as oxytocin etc
- ✓ Systemic antibiotics
- ✓ Other supportive therapy etc.


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