

Goat Surgery Tips and Tricks

2024 MVMA Winter Meeting
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Topics

- ❑ Castration
- ❑ Dehorning
- ❑ Scur Removal
- ❑ Cryptorchid Surgery
- ❑ Umbilical Surgery
- ❑ Mastectomy



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Castration - Sensory Innervation

- ❑ Spermatic Cord, Testes, & Epididymis
 - Testicular n.
 - Originates from T10-L1 Vertebral Segments
 - Think embryological origins!
- ❑ Scrotum, Tunica Dartos, Spermatic Fascia
 - Genital branch of the Genitofemoral n. (L2-L4)
 - ❑ Innervates the cranio-lateral aspect of the scrotum.
 - ❑ Also provides motor to the cremaster muscle
 - Anterior Scrotal n. from the ilioinguinal n. (L2)
 - ❑ Innervates the cranial aspect of the scrotum
 - Perineal branches of the posterior femoral cutaneous n. (L4-S4)
 - ❑ Also innervates the caudal aspect of the scrotum
 - Posterior scrotal n. from the perineal n. (pudendal n. S4-Co)
 - ❑ Innervates the caudal aspect of the scrotum

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Castration - Analgesia

- ❑ Systemic Analgesia
 - Xylazine, Butorphanol, Morphine
 - Meloxicam, Flunixin Meglumine
- ❑ Epidurals
 - Lidocaine (2% down to 0.5% in small ruminants)
 - Xylazine
- ❑ Local Infusion
 - Spermatic Cord
 - Scrotum & Spermatic Fascia
 - Testis
- ❑ General Anesthesia

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Castration - Hemostasis

- ❑ Bands
- ❑ Pull Cord
- ❑ Emasculators
- ❑ Henderson (Stone) Castrating Tool
- ❑ Ligature



lidoband by solvet

Castration Bands
Each band contains 80 mg of lidocaine.
For castration of calves and lambs, and to deliver lidocaine as a local anesthetic. For use in calves under 250 pounds or lambs under 50 pounds.
FOR ANIMAL USE ONLY
KEEP OUT OF REACH OF CHILDREN
NDC 86176-100-06

8 Castration Bands

Manufactured by
MVL Animal LLC, 7208 107 Ave, Coalinga, CA 93238
805-466-2200, www.solvet.com

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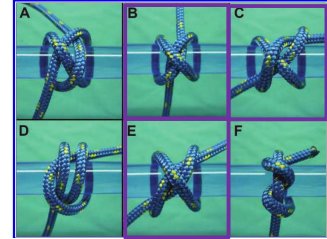
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What is the Best Ligature?

- A. Ashley modification of the Miller's knot
- B. Constrictor Knot**
- C. Miller's Knot**
- D. Modified Miller's Knot
- E. Strangle Knot**
- F. Surgeon's Throw



Hazenfield KM, Smeak DD. In vitro holding security of six friction knots used as a first throw in the creation of a vascular ligation. *J Am Vet Med Assoc* 2014;245:571-577.

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Thoughts?

- Lidocaine at base of scrotum/spermatic cord
- <2 months of age
 - Surgical Pull
 - Surgical Emasculator
 - Surgical Ligate
 - Band
- >2 months of age
 - Surgical Henderson Tool
 - Surgical Ligate or Ligate + Emasculator

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Goat Dehorning - Analgesia

- Systemic Analgesia
 - Xylazine, Butorphanol, Morphine
 - Meloxicam, Flunixin Meglumine
- Regional Nerve Block
- Local Infusion
- General Anesthesia

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Goat Dehorning - Analgesia

- Cornual branch of Zygomaticotemporal (Lacrimal) Nerve
- Cornual branch of Infratrochlear Nerve
- 2-3 ml lidocaine at each site
- Additional local

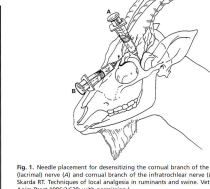
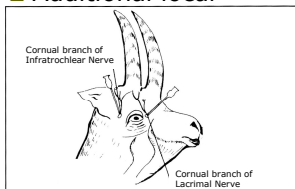


Fig. 1. Needle placement for desensitizing the cornual branch of the zygomaticotemporal (A) and cornual branch of the infratrochlear nerve (B) in the goat. (From Skarda RT. Techniques of local analgesia in ruminants and swine. Vet Clin North Am Food Anim Pract 1982;2:626, with permission.)

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Goat Dehorning - Method?

- Scoop/Tube?
- Barnes?
- Cautery?
- Surgical?



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Goat Dehorning - Cautery

Minimize risk of thermal brain injury!



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Goat Dehorning - Cautery



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Dehorning - Surgical



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Dehorning Surgical

- Open Sinus
- Shape with Ronjeurs
- Partial Closure
- Cover
 - Calcium Alginate Dressing
 - Cotton



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Goat Scur Removal

- Wish they did not happen!
- Surgical with Gigli wire
- Rongeurs to remove bone as needed
- Partial closure with cruciate sutures
- Calcium Alginate dressing
- Bandage

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Cryptorchid Castration

- Ultrasound?
 - Helps to possibly know where to look
 - No more than 5 minutes
- Peri-preputial Approach
 - Same as dogs and cats
 - Horses, tend to do an inguinal approach
- Treasure Hunt!
 - Start at inguinal area
 - Sweep dorsal and cranial to kidney
 - Think embryological descent of testis

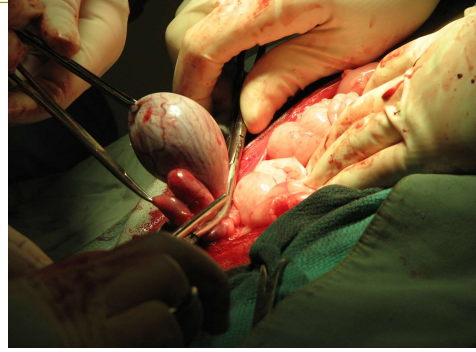
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Cryptorchid Castration



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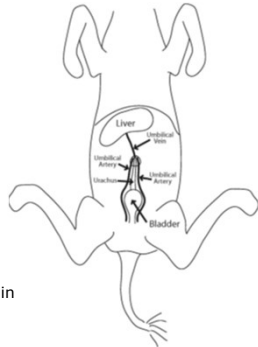
Peri-Preputial Cryptorchid Surgery



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Umbilical Anatomy

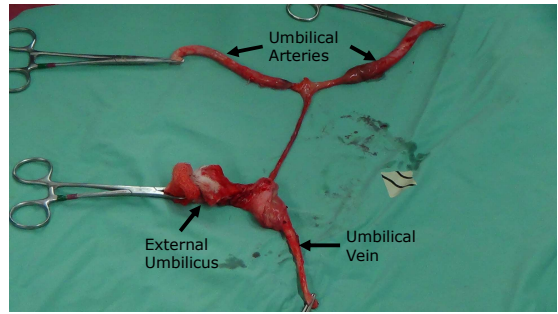
- Umbilical Vein
- Umbilical Artery
 - Left
 - Right
- Urachus
- Bladder



From Baird AN. Umbilical surgery in calves. Vet Clin North Am Food Anim Pract 2008;24(3):469

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Umbilical Structures



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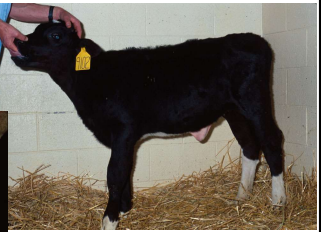
Umbilical Structures



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Umbilical Surgery

- Hernia
- Omphalitis
- Abscess/Infection
- Any Combination



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Umbilical Abscess

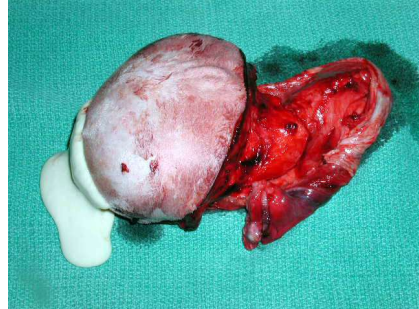
- ▣ Beware of what is inside the abdomen!



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Umbilical Abscess

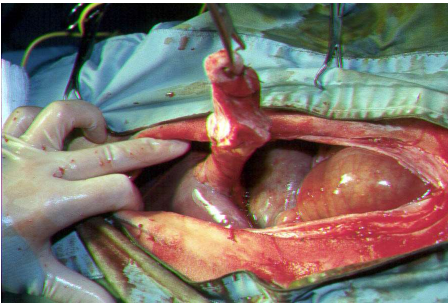
- ▣ Beware of what is inside!



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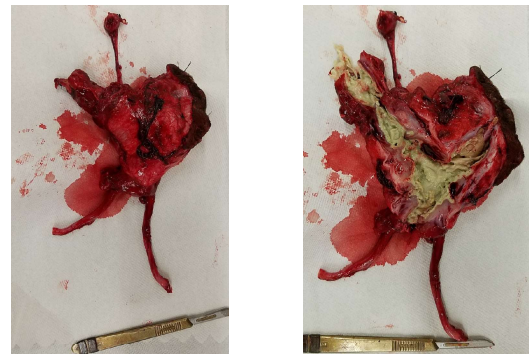
Umbilical Abscess

- ▣ Beware of what is inside!



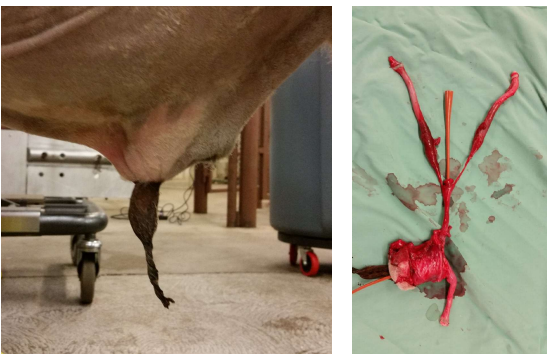
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Abscessed Umbilicus



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External vs. Internal Appearance



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External vs. Internal Appearance



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Anesthesia Options

- ▣ Sedation
- ▣ General Anesthesia
- ▣ Incisional Block
- ▣ +/- Lumbosacral Epidural



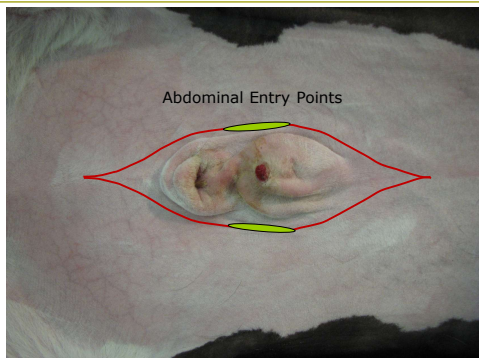
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Perioperative Medications

- ▣ Antibiotic – Single or Combination
 - Penicillin
 - Ceftiofur (Label Dosage)
 - Oxytetracycline
 - Florfenicol
 - Others
- ▣ NSAID
 - Flunixin Meglumine
 - Meloxicam

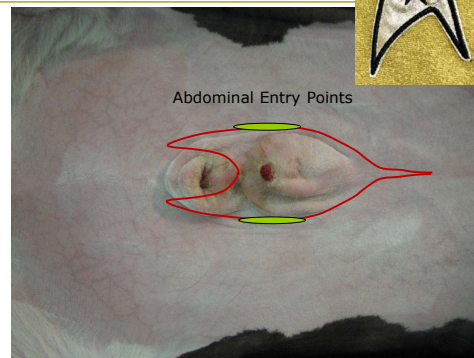
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Incision – Female

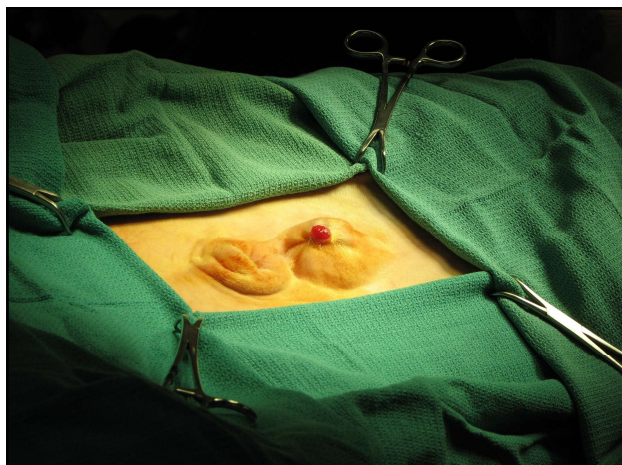


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Incision – Male



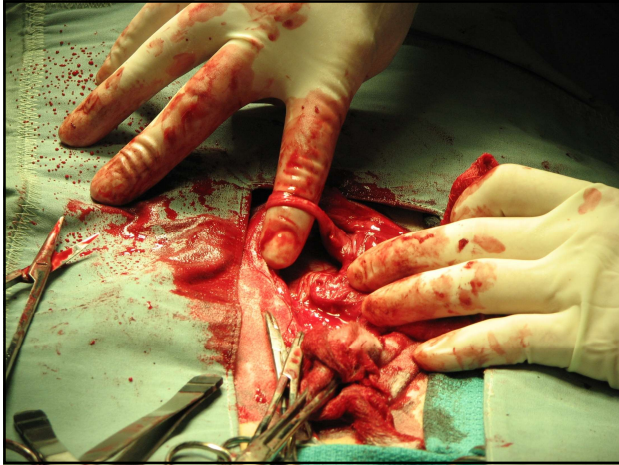
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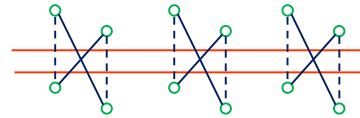
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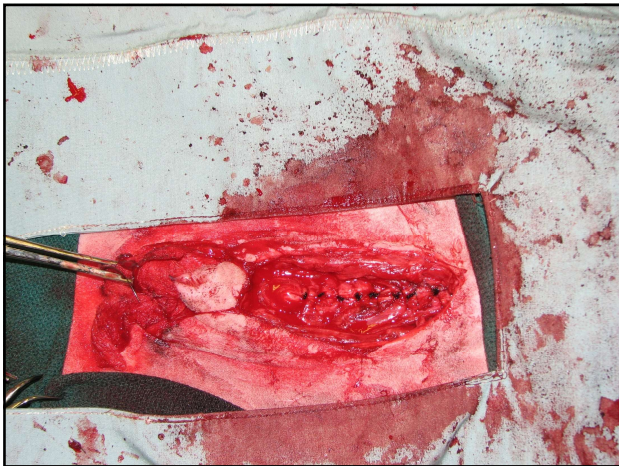
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Body Wall Closure

- Single Layer
 - Rectus Abdominus External Sheath is the primary holding layer
- Staggered Cruciate Pattern
 - Combination of Cruciate and Near-Far-Far-Near



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Skin Closure

- Subcutaneous Suture Pattern
 - Simple Continuous
 - Continuous Mattress
- Skin Suture Pattern
 - Subcuticular, Intradermal
 - Simple Continuous
 - Ford Interlocking
 - Others



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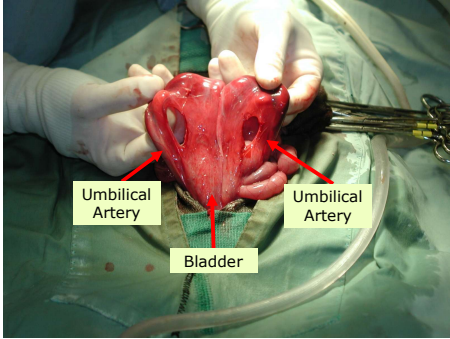
Post-Op Care

- Antibiotics
- NSAID
- Feed
 - Decreased
 - Small Meals
 - Frequently
- Belly Band
 - Optional



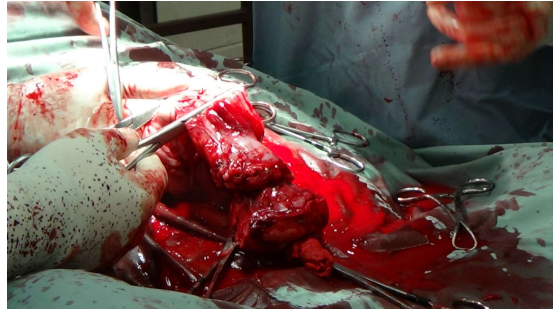
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Omphalophlebitis



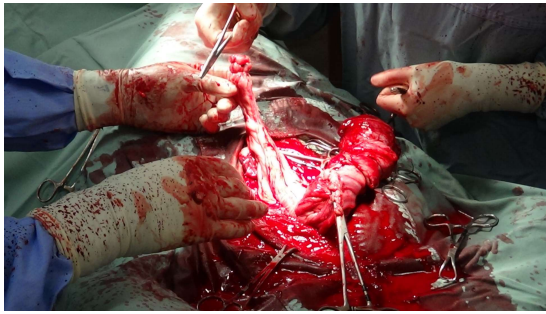
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Omphalophlebitis



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Omphalophlebitis



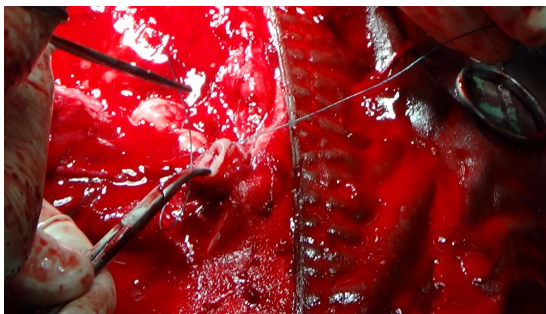
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Omphalophlebitis



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Omphalophlebitis



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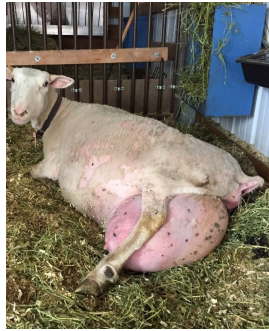
Omphalophlebitis



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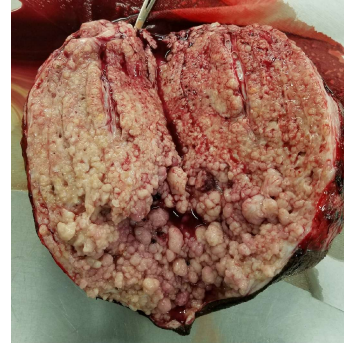
Goat Mastectomy – WHY?

- ▣ Precocious Udder
- ▣ Persistent Lactation
- ▣ Chronic Mastitis
- ▣ Mammary Abscess
- ▣ Neoplasia



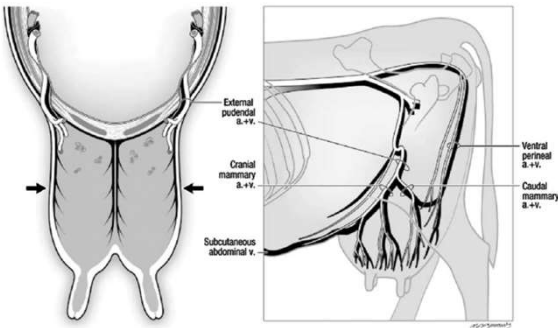
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Mammary Adenoma



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Mammary Gland Anatomy



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Mastectomy: Surgical Technique



- ▣ Dorsal recumbency
- ▣ Incision encircling the udder
- ▣ Dissect, isolate and ligate subcutaneous abdominal veins
- ▣ Continue dissection caudally
- ▣ Isolate, ligate external pudendal a., v.
- ▣ Continue dissection caudally
- ▣ Caudal aspect: ligate perineal a., v.
- ▣ Remove udder

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Mastectomy: Surgical Technique

- ▣ Close SQ
 - Jackson Pratt Drain
 - Penrose Drain?
- ▣ Close skin
 - Tension sutures
- ▣ Initial incisions critical!
 - Skin sparing, elliptical
 - Inverted clover leaf



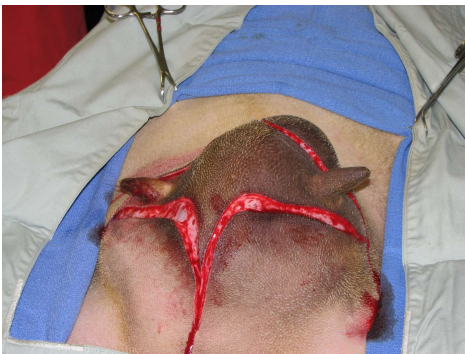
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Mastectomy – Elliptical Incision



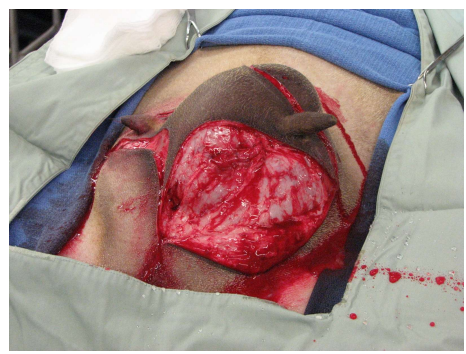
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Inverted Clover Leaf Incision



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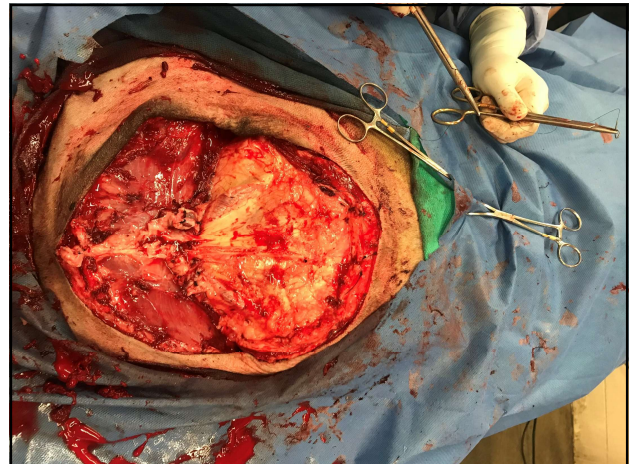
Clover Leaf



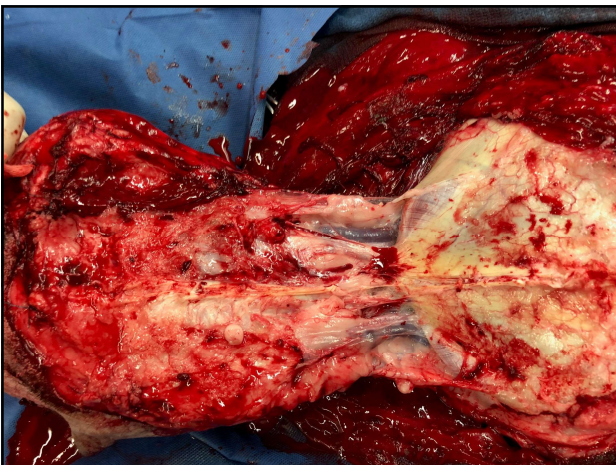
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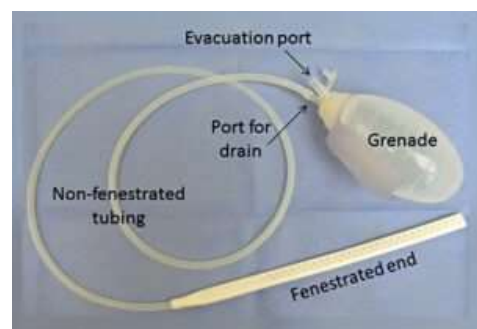


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Jackson-Pratt Drain



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Jackson-Pratt Drain Placement

- Midline
- Exit at most dependent location
- Undermine skin ~5 cm
- Place Ioband
- Attach to belly band



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Elliptical Closure

- Close SQ
- Place Drains
- Close skin
 - Tension sutures
- Initial incisions critical!
 - Skin sparing
 - Elliptical
 - Inverted clover leaf



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Clover Leaf Closure



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Mastectomy – Approach and Closure



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Recovery

- Meloxicam
- Antibiotic
 - 7 - 10 days
- Jackson-Pratt Drain
 - Minimum 7 days
 - Want skin to adhere to underlying tissues
- Stall Rest
 - 2-3 weeks

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Recovery



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Questions?



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