Tips and Tricks for the GP Surgeon:
'The new, the old and the forgotten'

Dr Eben Martin

Specialist in Small Animal Surgery

SPONSOR

Outline

- Discuss some challenges faced by GP surgeons

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  - Defining a surgeon's role

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- Discuss a few topics relevant to the GP surgeon and provide useful (hopefully) information to help clinicians

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- Defining a surgeon's role
- Discuss a few topics relevant to the GP surgeon and provide useful (hopefully) information to help clinicians
- Discuss the older and newer techniques and information relevant to certain topics

Challenges in GP

- GP veterinarians have incredibly multi-faceted jobs

The Multi-faceted Professional

PROMOTERS

PAEDIATRICIANS

ICU AND EMERGENCY PHYSICIANS

MENTORS

PHARMACISTS

BEHAVIOURALISTS

PATHOLOGISTS

DENTISTS

COUNSELLORS

SONOGRAPHERS

WILDLIFE CLINICIANS

FINANCIAL ADVISERS

ENDOCRINOLOGISTS

ANAESTHETISTS

FERAL CAT WRANGLERS

RADIOGRAPHERS + RADIOLOGISTS

PSYCHOLOGISTS

RANGERS

PHYSIOTHERAPISTS

GROOMERS

MEDIATORS

PODIATRISTS

SURGEONS

PHLEBOTOMISTS

OPTHALMOLOGIST

GASTROENTEROLOGISTS

The Multi-faceted Professional

"HIGHLY TRAINED, MULTISKILLED AND VERSATILE PRACTITIONERS"

ICU AND EME

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A Surgeon's Role

- Technical and knowledge based skill sets

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- Mentally and physically challenging

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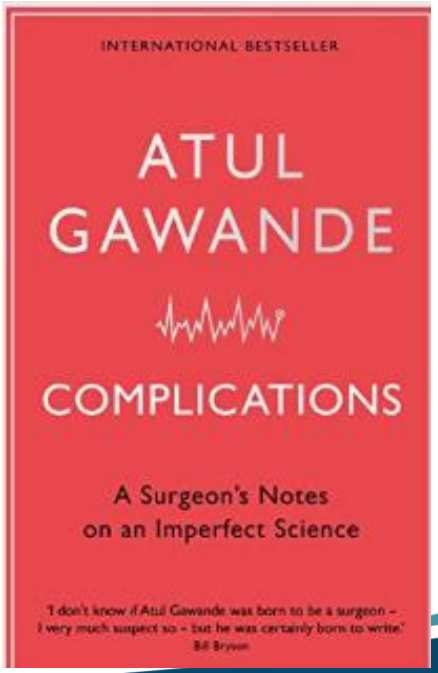
  - "Sometimes wrong, never in doubt"



A Surgeon's Role

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    - 3 areas to consider:

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      - DIAGNOSTIC IMAGING

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      - THE CONSULT ROOM
      - DIAGNOSTIC IMAGING
      - IN THEATRE

In The Consult Room

NEUROLOGICAL EXAM

- Withdrawal reflex VS Nociception

In The Consult Room

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  - Modified Frankel Score

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Grade 0: Tetraplegia or paraplegia with no deep nociception

Grade 1: Tetraplegia or paraplegia with no superficial nociception

Grade 2: Tetraplegia or paraplegia with nociception

Grade 3: Nonambulatory tetraparesis or paraparesis

Grade 4: Ambulatory tetraparesis or paraparesis and GP ataxia

Grade 5: Spinal hyperesthesia only (grade 5) or no dysfunction

In The Consult Room

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REVERSED IN AUSTRALIA

In The Consult Room

NEUROLOGICAL EXAM

- Withdrawal reflex VS Nociception
- Modified Frankel Score
- Prognosis

In The Consult Room

PROGNOSIS

Overall Success Rates:

Aikawa – Long Term Neurologic Outcome of Hemilaminectomy and Disk Fenestration for Treatment of Dogs with Thoracolumbar Intervertebral Disk Herniation: 831 cases (2001-2007) (JAVMA 2012)

In The Consult Room

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  - mTTA: 4.8 days

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  - mTTA: 21 days

In The Consult Room

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- Overall, the success rate for dogs who have pain sensation is **EXCELLENT**.
- The higher the neurological grade then the longer the time to recovery (ambulation and urination)

In The Consult Room

NEUROLOGICAL EXAM

- Withdrawal reflex VS Nociception
- Modified Frankel Score
- Prognosis
- When to recommend surgery

In The Consult Room

WHEN TO RECOMMEND SURGERY

- Levine 2007 – Assessment of conservative management
  - 223 dogs
  - 83% were ambulatory (Grade 1 or 2)
  - Success in 54% of patients
  - 45% either failed, or had recurrence that required surgery

In The Consult Room

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- Olby 2022 – Consensus statement on IVDD

Injury severity	Medical outcome	Surgical outcome	Comments
Spinal pain only and ambulatory PP	80% (115 dogs)	98.5% (336 dogs)	Lateral extrusion of disc material may lead to reduced response to medical management.
Non-ambulatory paraparesis	81% (131 dogs)	93% (341 dogs)	Level of recovery of non-ambulatory dogs was less complete with conservative management.
Paraplegia DPP	60% (67 dogs)	93% (548 dogs)	Recovery with medical management is prolonged and less complete compared to surgery
Paraplegia DPN	21% (48 dogs)	61% (502 dogs)	None

In The Consult Room

WHEN TO RECOMMEND SURGERY

- Ambulatory dogs with static disease can be managed conservatively with reasonable success
- If deterioration is noted, or prolonged static disease, surgery indicated
- Non ambulatory dogs, surgery is recommended

In The Consult Room

ORTHOPEDIC EXAM

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- Cranial cruciate ligament disease

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- Tibial Thrust Test (AKA Tibial compression test)

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Slocum 1983

Cranial tibial thrust: A primary force in the canine stifle

Barclay Slocum, DVM, and Theresa Devine, MS

SUMMARY

A cranially directed force identified within the canine stifle joint was termed cranial tibial thrust. It was generated during weight bearing by tibial compression, of which the tarsal tendon of the biceps femoris is a major contributor, and by the slope of the tibial plateau, found to have a mean cranially directed inclination of 22.6 degrees. This force may be an important factor in cranial cruciate ligament rupture and in generation of cranial drawer sign.

Rupture of the cranial cruciate ligament is cl
cally detected by the cranial drawer sign.[4] This te
performed by placing the tips of the index finger
thumb on the patella and lateral fabella. The ti
the index finger and the thumb of the other han
placed on the tibial tubercle and head of the fi
and the tibia is moved cranially. Excessive
movement indicates rupture of the cranial cru
ligament.[5,6]

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the cranial horn of the medial meniscus, wi
limb in normal standing angle. This position
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metatarsal bones. The hock joint is rapidly
of the tibia with respect

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ORTHOPEDIC EXA

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In The Consult Room

ORTHOPEDIC EXAM

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ORTHOPEDIC EXA

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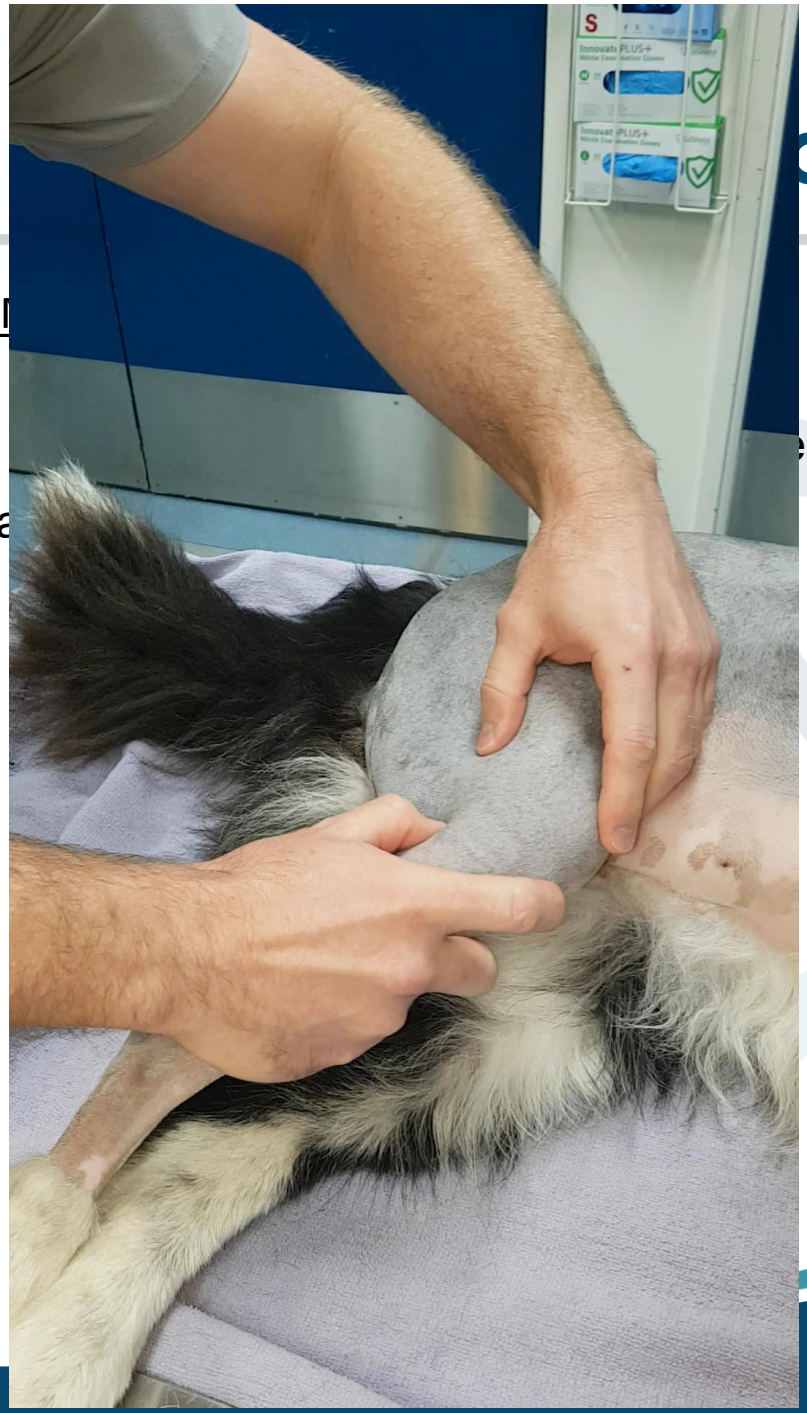

In The Consult Room

ORTHOPEDIC EXAM

- TPLO results in dynamic stabilization of the joint following CrCL rupture by eliminating cranial tibial thrust

In The Consult Room

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- **IT DOES NOT ELIMINATE CRANIAL DRAWER**

In The Consult Room

ORTHOPEDIC EXAM

- Cranial cruciate ligament disease
- Medial Buttress

Firm swelling on the medial aspect of the stifle consisting of fibrous tissue and osteophytosis. It is the bodies attempt to stabilize the stifle against cranial tibial thrust

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In The Consult Room

ORTHOPEDIC EXAM

- Medial Patella Luxation

In The Consult Room

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In The Consult Room

ORTHOPEDIC EXAM

- Medial Patella Luxation

- Decision making → When to recommend surgery?

- Immature patients VS Mature patients
  - Decision making differs

In The Consult Room

ORTHOPEDIC EXAM

- Medial Patella Luxation
- Decision making → When to recommend surgery?

IMMATURE DOGS

- More aggressive with recommending surgical intervention, particularly in quite young animals (<6 months)
- Have a chance at preventing/reversing severe changes
- Often soft tissue techniques employed
- May require follow up surgery once mature
- Decision making less dependent on degree of clinical signs

In The Consult Room

ORTHOPEDIC EXAM

- Medial Patella Luxation
- Decision making → When to recommend surgery?

MATURE DOGS

- **Based on grade of luxation and presence of clinical signs**

- Grade 1-2 dogs with NO clinical signs – Monitor
- Grade 2 dogs with MINOR clinical signs – Surgery VS Monitor
- Grade 2 dogs with SIGNIFICANT clinical signs – Surgery
- Grade 3 & 4 dogs – Surgery (almost always)

In The Consult Room

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Surgery is aimed at improving day to day function and reducing progression of degenerative joint disease

In The Consult Room

"What would you do if it was your dog?"

Sponsor

Diagnostic Imaging

- RADIOGRAPHY
- Orthopedic radiography is critically important to a surgeon

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- “Positioning, Positioning, Positioning”

Diagnostic Imaging

- RADIOGRAPHY
- Orthopedic radiography is critically important to a surgeon
- “A good picture tells 1000 words”
- “A bad picture at best is worthless, and at worst is misleading!”
- “Positioning, Positioning, Positioning”
- No excuses for poor quality radiographs
  - General anaesthesia
  - Appropriate time designation
  - Computed Radiography (CR)/Digital Radiography (DR)


Darkroom red lamp
chemical temperature digital display
film viewer
Stop developer tank inlet valve
rinsing Inlet valve
timer
Developer tank
Stop developer tank
Fixer tank
Rinsing tank

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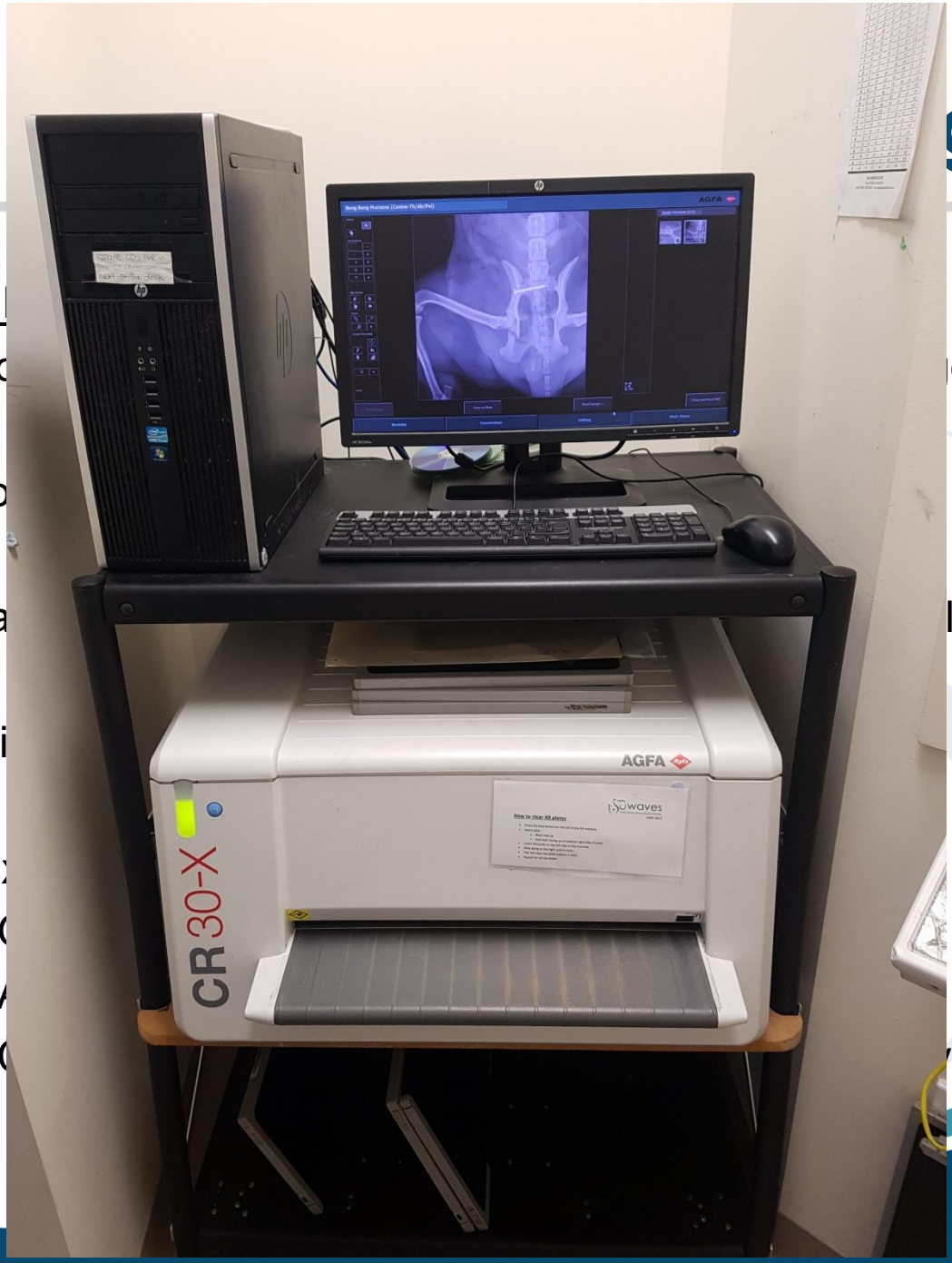
- RADI
- Ortho eon
- “A go
- “A ba leading!”
- “Posi
- No ex
  - C
  - A
  - C (DR)



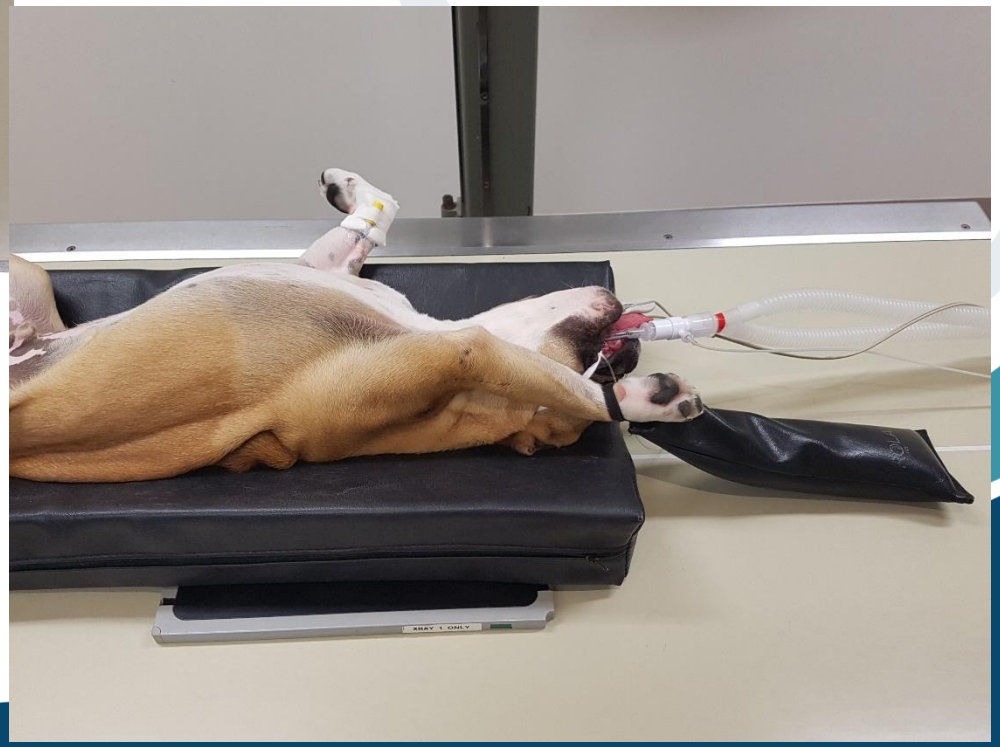
Diagnostic Imaging

- ORTHOPAEDIC RADIOGRAPHIC POSITIONING
- **Shoulder**
  - CC and lateral (+ skyline view – evaluation of bicipital groove)
- **Elbow/Antebrachium**
  - CC and lateral (+ oblique – for medial coronoid assessment)
- Carpus
  - CC and lateral (+ distraction views)
- **Hips**
  - VD frogleg, VD extended, lateral (+ DAR view, distraction views)
- **Femur**
  - CC and lateral
- **Stifle/tibia**
  - CC and lateral (+ distraction views when appropriate)
- Tarsus
  - CC and lateral (+ distraction views, + skyline view – assessment of OCD)

Shoulder

- **<u>Lateral Shoulder</u>**
  - Lateral recumbency
  - Contralateral limb with caudal traction

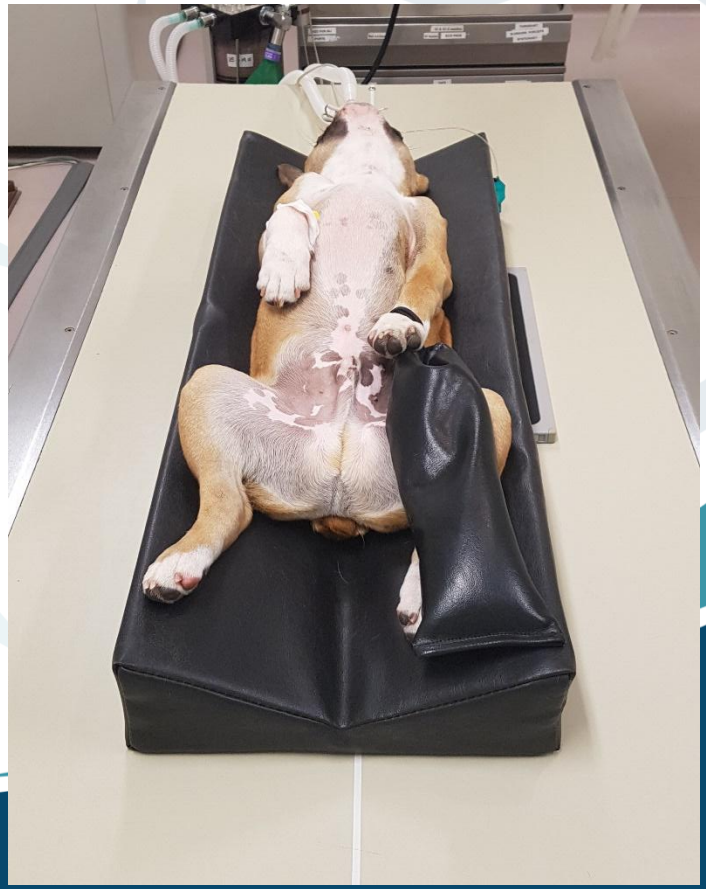
- **<u>CC Shoulder</u>**
  - Dorsal recumbency
  - Cranial traction to limb
  - Limb must be straight as possible



Humerus

- **Lateral Humerus**
- Same as shoulder

- **CC Humerus**
- Caudal traction applied to limb
- Humerus parallel to plate



Elbow/Antebrachium

- **<u>Lateral Elbow/Antebrachium</u>**
- Contralateral limb with caudal traction
- Lift head up on foam to get elbow square
- Don’t worry about carpus positioning

Elbow/Antebrachium

- **<u>CC Elbow/Antebrachium</u>**

- Twist head away from limb
- Elevate contralateral limb under axilla
- Support body on ipsilateral side
- Get the elbow straight and down the plate!

Hips

VD Views

- Dorsal recumbency in cradle with pelvis off end of cradle
- Support laterally with sandbags
- Get square on table
- Frogleg view - leave hindlimbs where they sit
- Extended view - have legs extended caudally with slight internal rotation

TIP:

- Do the frog-leg view BEFORE your extended view to assess how square the pelvis is

Femur

- **<u>Lateral Femur</u>**

- Foam wedge under gluteals to get femur square
- Caudal and dorsal traction to contralateral limb
- Get femoral condyles superimposed

Femur

CC Femur

- Femur parallel to plate
- Perpendicular to X ray beam

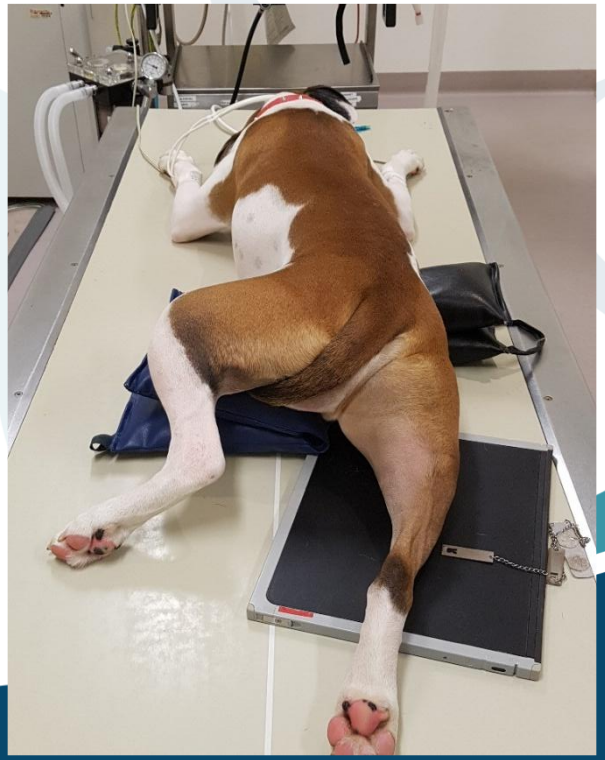
Stifle/Tibia

Lateral Stifle

- Contralateral limb pulled cranially
- Foam wedge under gluteals

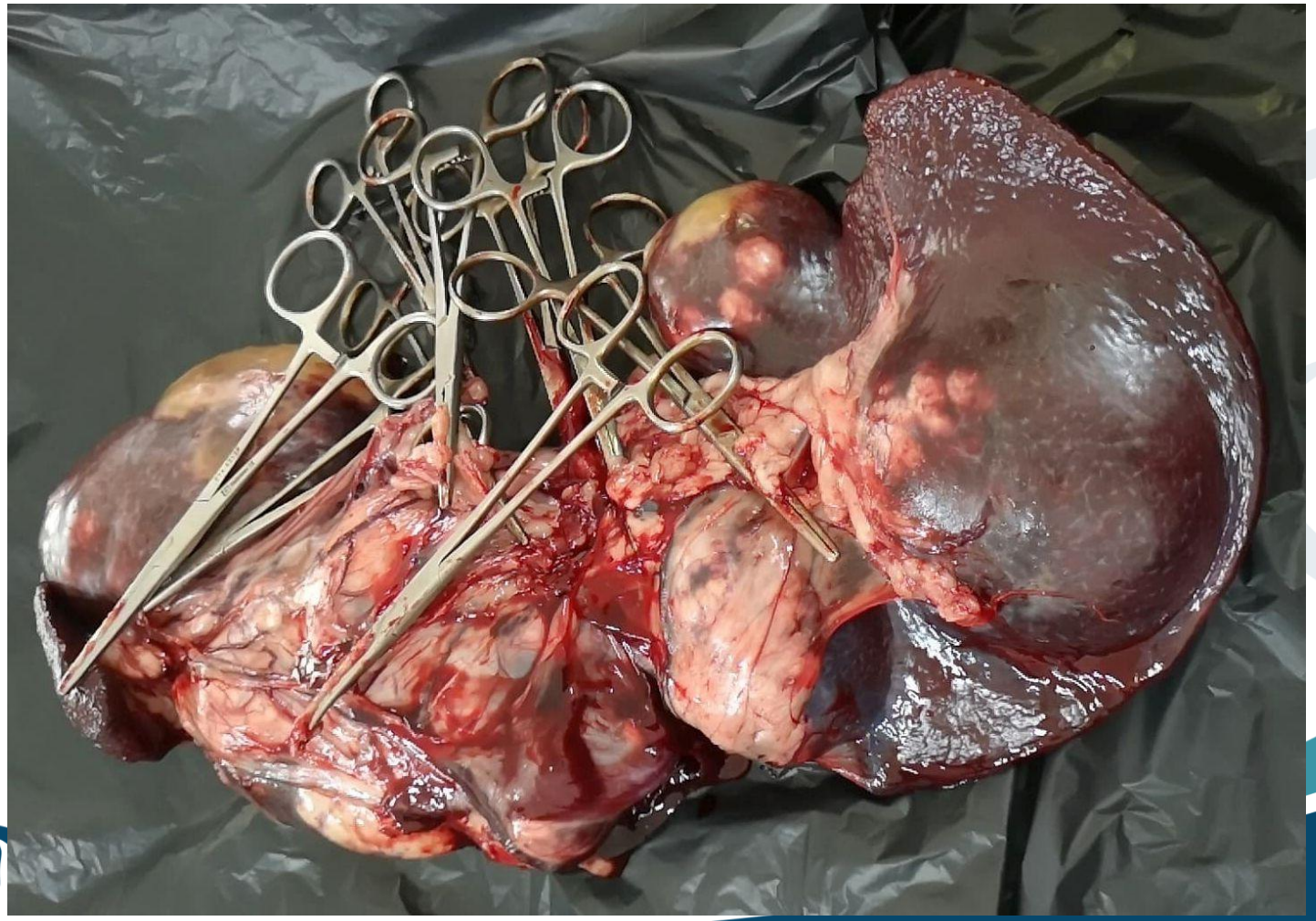
CC Stifle

- Elevation in contralateral inguinal region
- Tuck tail under
- Get leg straight and calcaneus just lateral (if no torsion present)



In Theatre

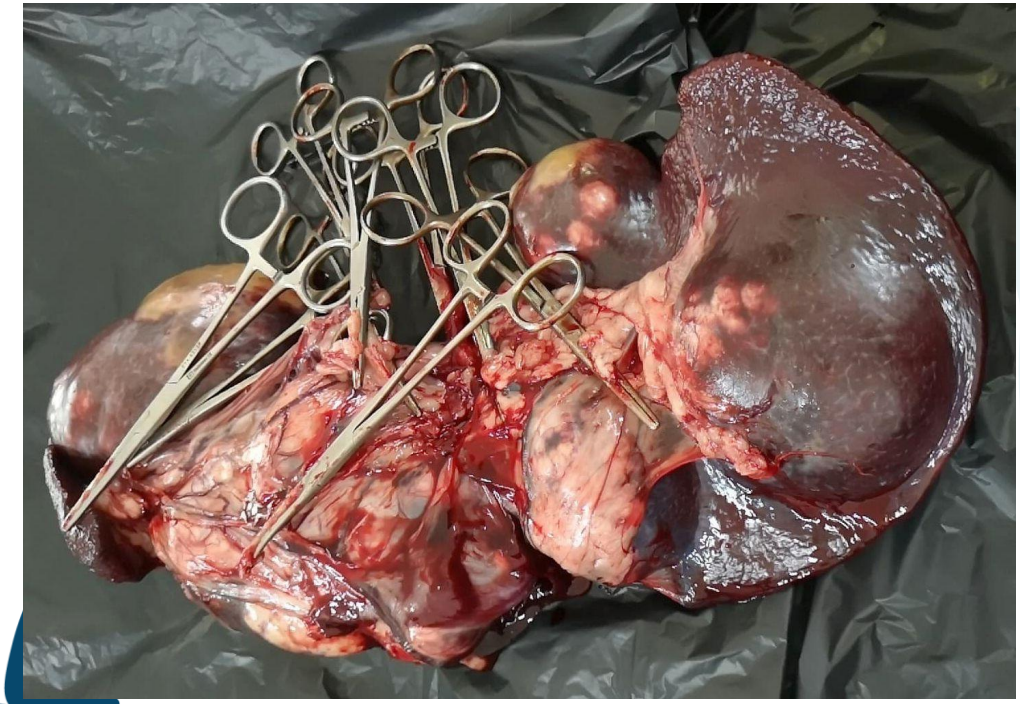
SPLENECTOMY

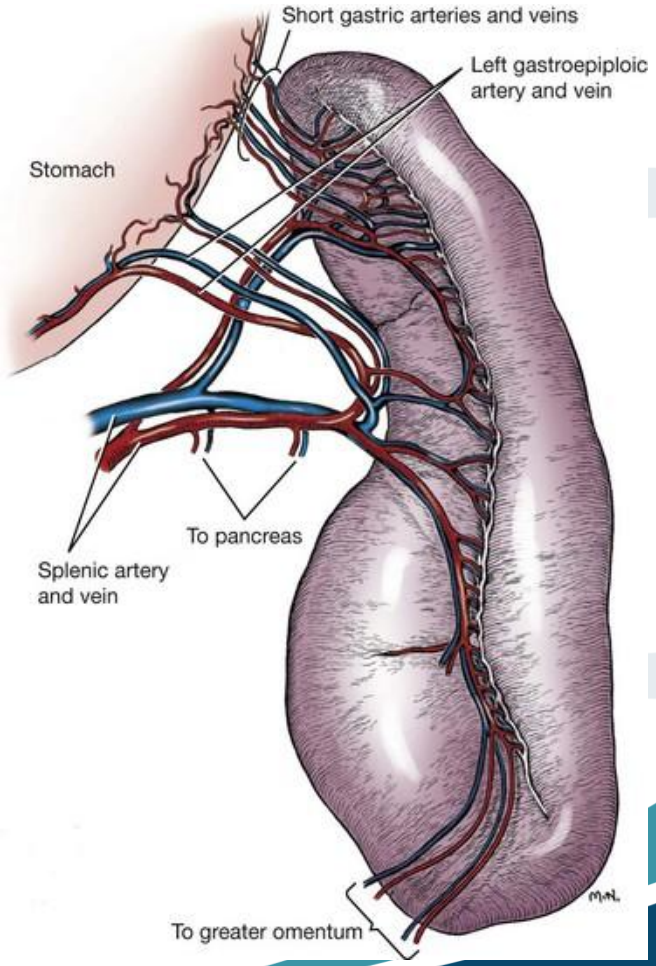


In Theatre

SPLENECTOMY

- Techniques
  - Older
    - Individual hilar ligation





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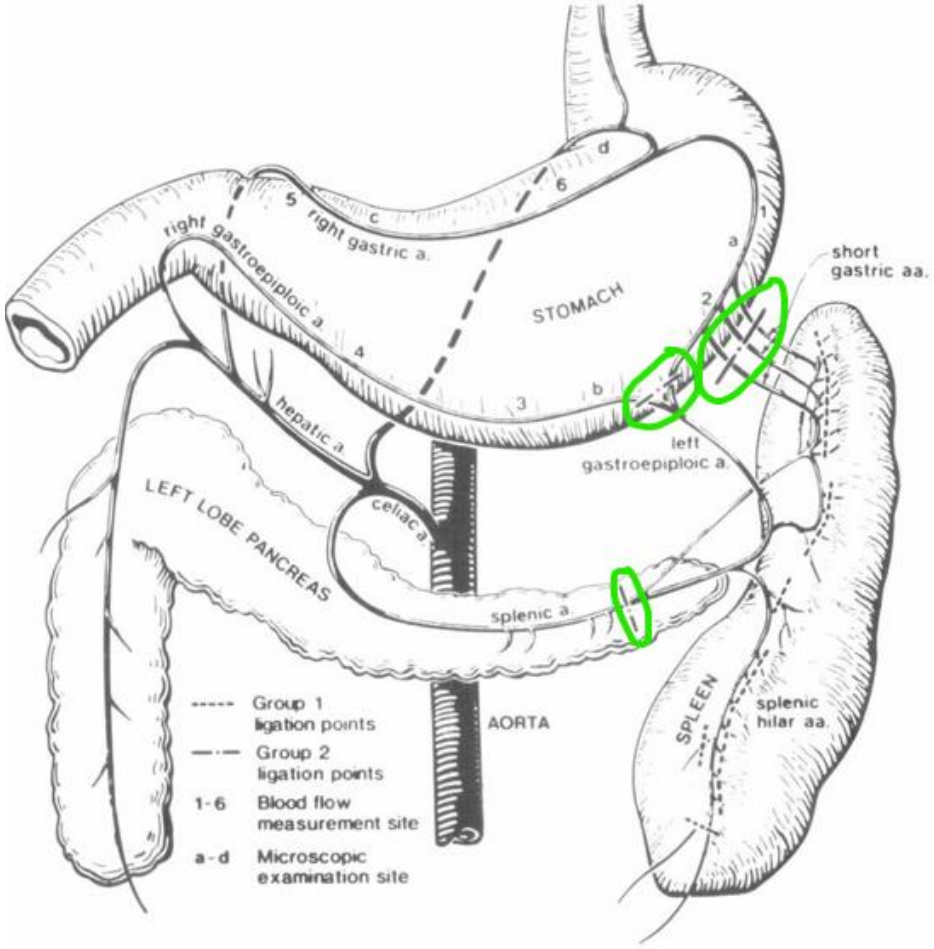
    - Hosgood 1989



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SPLENECTOMY

- Techniques
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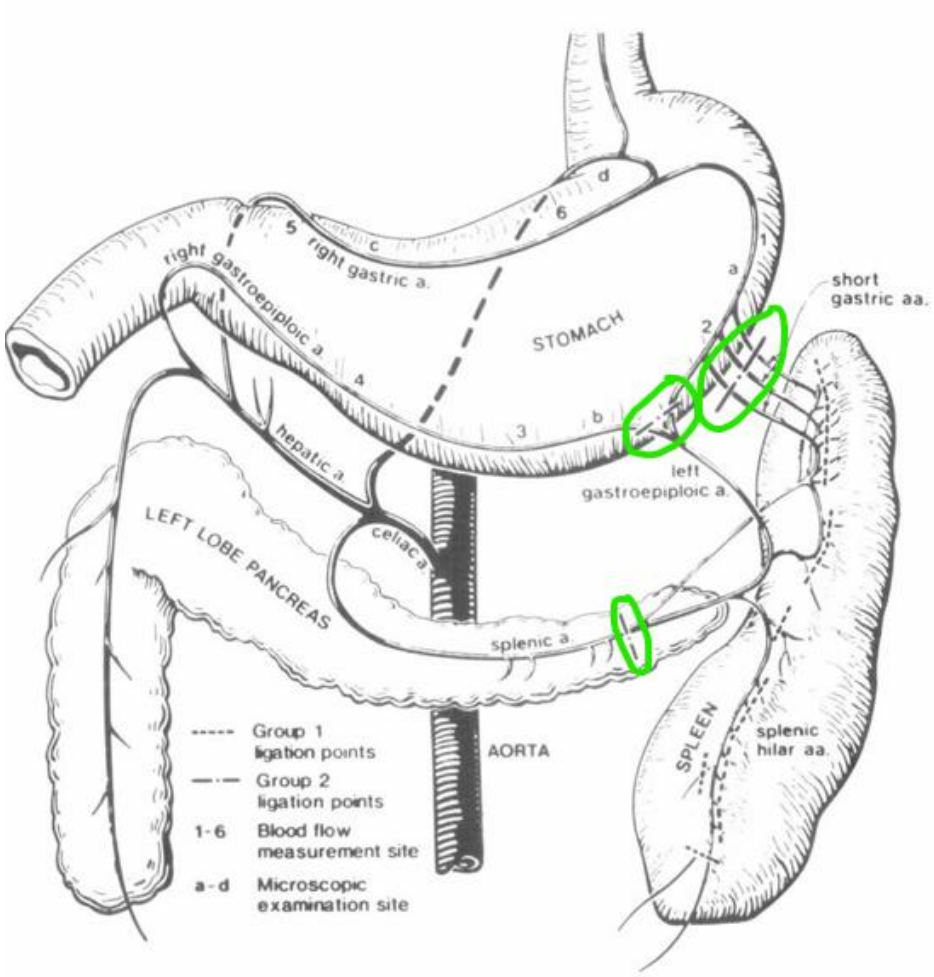
3 Ligations sites:
1. Short gastric arteries
2. Left gastroepiploic artery
3. Splenic artery



In Theatre

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- Techniques
  - Newer
    - Bipolar Vessels Sealing Device (Ligasure)
    - Monnet 2011
    - For vessels <7mm in diameter
    - Very useful for quick hilar technique

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In Theatre

SPLENECTOMY

- Other Tips
  - Immediate ligation/clamping of splenic artery in haemabdomen
  - Long laparotomy incisions
  - Radiographic swabs/sponges and swab counts
  - Don’t waste time exploring (if bleeding)
  - Use an assistant!

In Theatre

SPAY (OVARIOHYSTERECTOMY)

In Theatre

SPAY (OVARIOHYSTERECTOMY)

Case Example

- 8mo FS Poodle X
- Spayed 2 days earlier and procedure reported to be routine and uncomplicated
- Pollakiuria and stranguria post discharge
- Lethargic and vomiting this morning
- Currently receiving NSAIDs with the last dose the previous evening

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- AFAST shows potential extraluminal bladder neck obstruction
- Exploratory laparotomy recommended

In Theatre

SPAY (OVARIOHYSTERECTOMY)

Surgical Findings:

- Enlarged, inflamed and severely bruised bladder
- Extraluminal bladder neck constriction secondary to uterine body which was entangled in the peri-urethral fat

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Surgical

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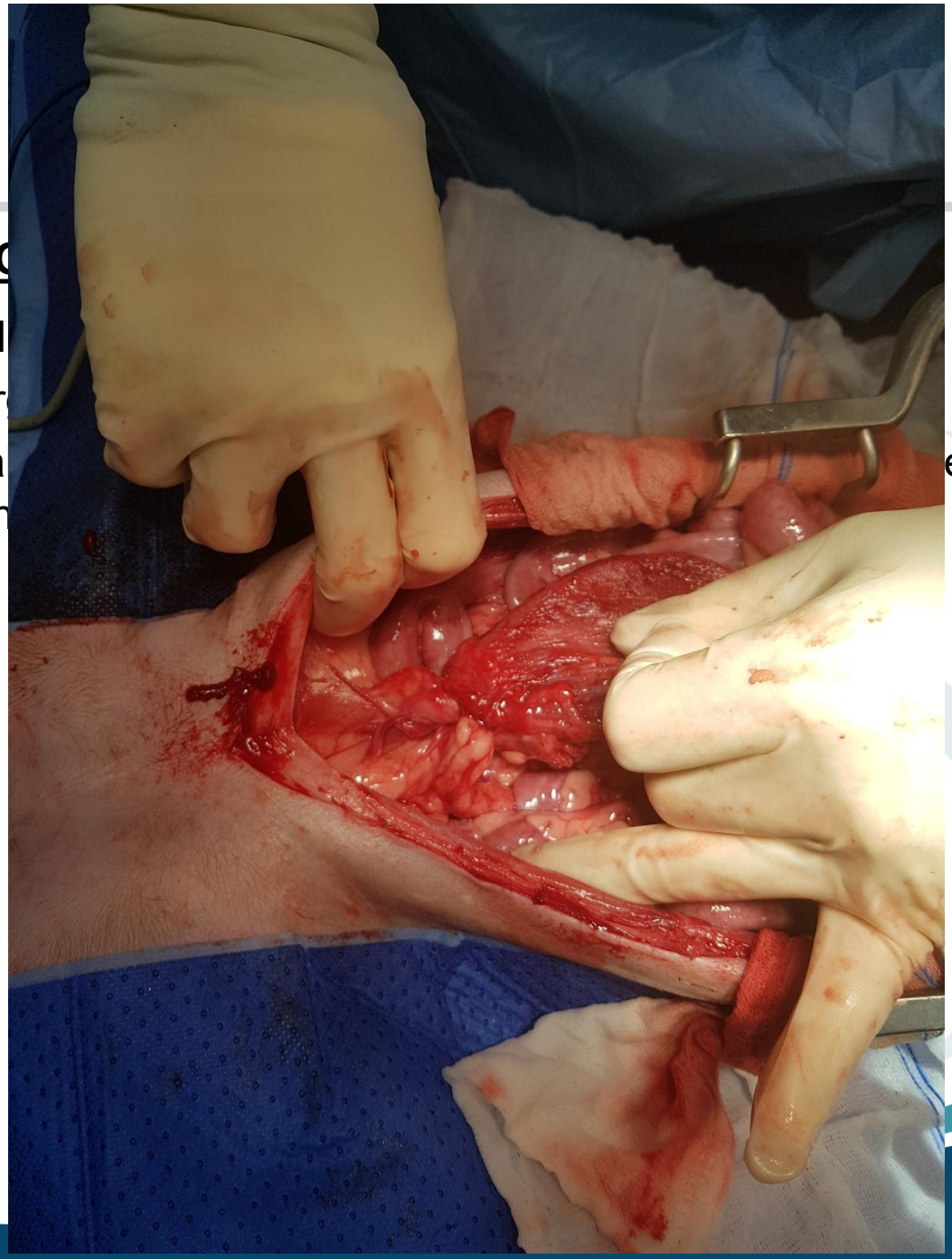

In Theatre

SPAY (OVARIOHYSTERECTOMY)

Conclusions:

- Unlucky complication associated with OVH
- Technically correct OVH performed
- OVH had been performed through small ventral midline incision
- Due to small abdominal incision surgeon unable to visualize passage of uterine body when released following ligation and transection
- Solution: **MAKE BIGGER LAPAROTOMY INCISION**
- No prizes for the shortest spay incision
- Longer incisions improve visualization, provide more space to work, ultimately lead to shorter surgery times, reduce complications

In Theatre

CRYPTORCHID CASTRATION

- Both inguinal and abdominal cryptorchids can present significant challenges
- Many potential complications associated with surgery
- Strong knowledge of the relevant anatomy is critical

In Theatre

CRYPTORCHID CASTRATION

- Both inguinal and abdominal cryptorchids can present significant challenges
- Many potential complications can be associated with surgery
- Strong knowledge of the relevant anatomy is critical

Case Example

- 18mo dog with bilateral abdominal cryptorchidism
- Difficulties intra-operatively locating right testicle
- Surgery aborted when urine encountered and patient immediately referred for specialist assessment

In Theatre

CRYPTORCHID CASTRATION

In Theatre

CRYPTORCHID CASTRATION

Tips for Cryptorchid Castration

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    a) Approach (inguinal VS abdominal)
    b) Systematic evaluation for testicles

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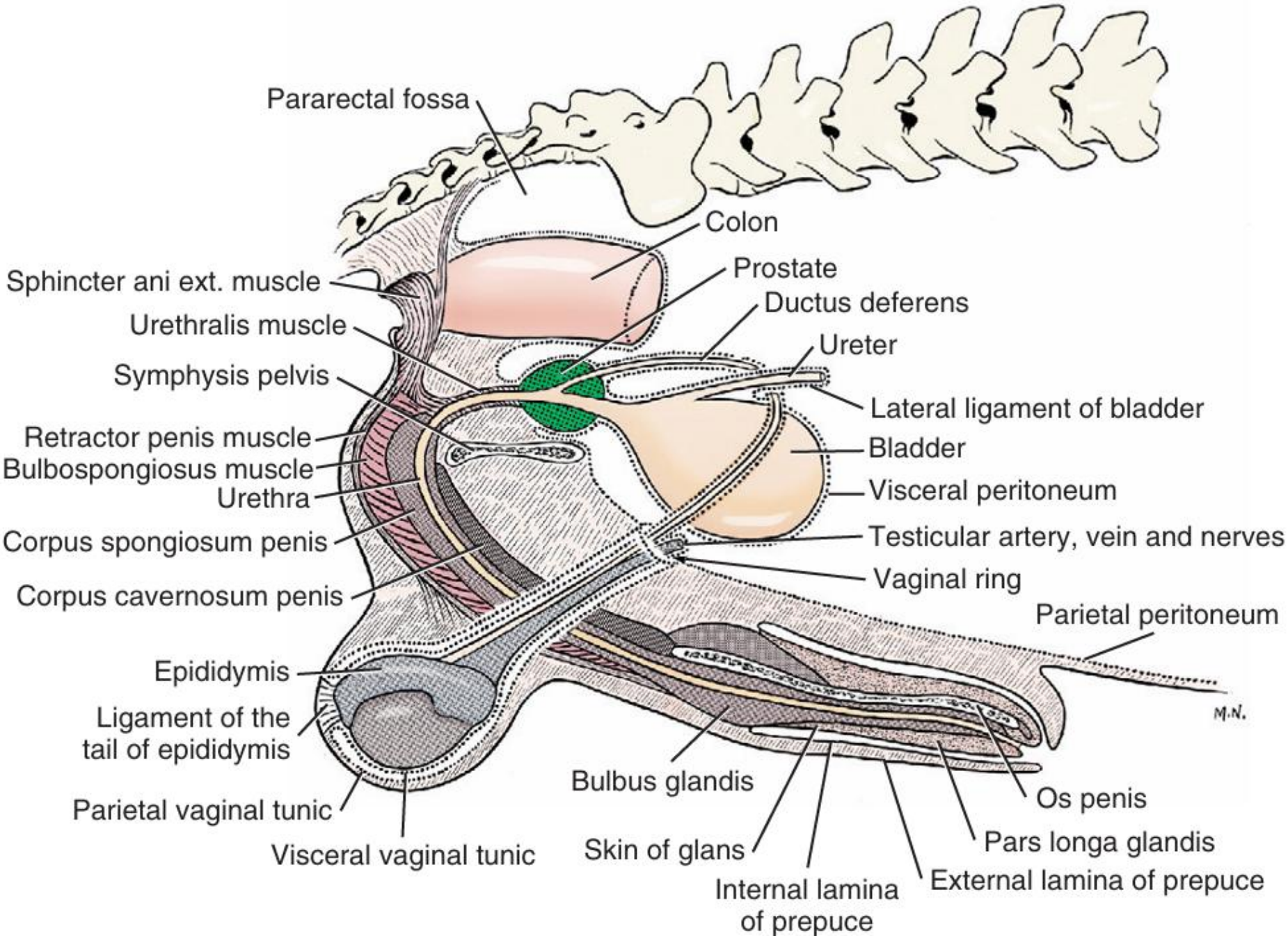
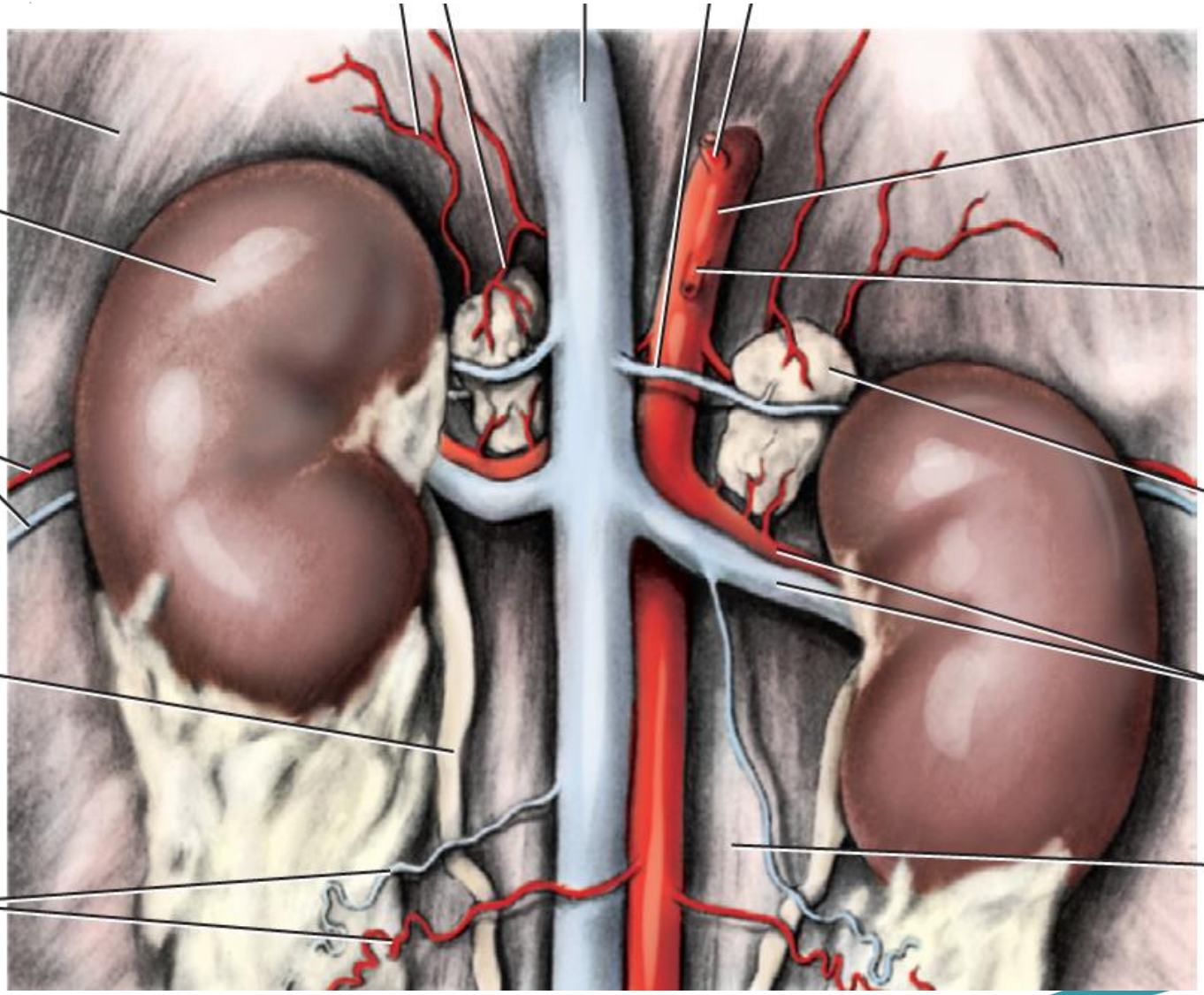

Pararectal fossa
Colon
Sphincter ani ext. muscle
Prostate
Ductus deferens
Urethralis muscle
Ureter
Symphysis pelvis
Lateral ligament of bladder
Retractor penis muscle
Bladder
Bulbospongiosus muscle
Visceral peritoneum
Urethra
Testicular artery, vein and nerves
Corpus spongiosum penis
Vaginal ring
Corpus cavernosum penis
Parietal peritoneum
Epididymis
Ligament of the tail of epididymis
M.N.
Bulbus glandis
Os penis
Parietal vaginal tunic
Pars longa glandis
Visceral vaginal tunic
Skin of glans
External lamina of prepuce
Internal lamina of prepuce


Diaphragm
Kidney
Cranial abdominal artery and vein
Ureter
Right testicular artery and vein
Aorta
Cranial mesenteric artery
Left adrenal gland
Renal artery and vein
Psoas minor muscle

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    a) Use known anatomical landmarks if teste not immediately apparent
    b) Atrophic testes are common!

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7. Send atrophic testes for histopathology

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- Keep trying your best for every patient

THANK YOU

ANY QUESTIONS?

waves

Western Australian Veterinary Emergency & Specialty