IMPORTANT CONSIDERATIONS

• Signalment
• History
• Symmetry
• Progression of signs
• Painful vs non-painful

SURGICAL CONSIDERATIONS

• Specific region of TL spine
• Differences in size and shape of articular processes
• Caudal and accessory processes “hug” the cranial process
• Vessels generally ventral to accessory process
• Accessory process starts to move laterally at T11/T12
• Tributary vessel between accessory and cranial processes
• Sinus bleeding-surgicel vs gelfoam
**GRACIE - 7 MONTH OLD F YORKSHIRE TERRIER**
- Acute onset, rapid progression of tetraparesis
- Progression to nonambulatory status over several days
- Neck pain apparent
- Radiographs

**GRACIE’S MRI AND CT**
- Severe displacement of C2 in relation to C1
- Severe compression of spinal cord

**ATLANTOAXIAL (AA) INSTABILITY**
- Toy/miniature breeds
- Usually young (<2yrs), wide age range
- Congenital absence or hypoplasia of dens
AA INSTABILITY-CLINICAL SIGNS

- Acute or gradual, may wax and wane
- Neck pain
- Cervical myelopathy-varying severity

TREATMENT OF ATLANTOAXIAL INSTABILITY

- Difficult disorder to treat
- Medical—about 50-60% success rate
- Surgical—about 80-90% success rate
- Which sounds better?

ATLANTOAXIAL (AA) INSTABILITY

- Ventral approach preferable
- Skin staple pre-op for efficiency
- Pins, screws, combinations
- Relax Gelpis frequently
SURGICAL COMPLICATIONS

- Intra-operative, peri-operative death
- Worsening neurologic status
- Implant migration (usually manageable)
- Fixation failure

ATLANTOAXIAL (AA) INSTABILITY

- #12 blade for incising joint capsule and other connective tissue
- Reduce and stabilize one side with smooth pin, threaded on opposite side
- Angle of pins and landmarks (alar notch)

ATLANTOAXIAL (AA) INSTABILITY

- Screws in ventral arch of C1
- PMMA
AA INSTABILITY-POSTOPERATIVE CARE

- Treat them like their heads may fall off
- Very strict confinement for 8 wks
- Splints?
- Sedation if necessary

ATLANTOAXIAL INSTABILITY: PROGNOSIS

- Generally good
- >80% surgical success rate
- Length of clinical sign and neurologic severity preop inversely related to outcome

CONGENITAL DISORDERS OF THE THORACOLUMBAR SPINE

- Spinal arachnoid diverticulum ("cyst")
- Kyphotic vertebral malformation ("hemivertebrae")
- Caudal articular process hypoplasia/aplasia and stenotic myelopathy
**SPINAL ARACHNOID DIVERTICULUM (“CYST”)**

- More diverticulum than cyst
- Probably congenital, other theories
- Large breeds tend to be cervical
- Smaller breeds tend to be TL
- Cranial cervical and caudal thoracic spine common locations

**SPINAL ARACHNOID DIVERTICULUM (“CYST”)**

- May be concurrent spinal abnormality
- Variable age range, most young adults
- Middle-aged to older Pugs may be d/t facet hypoplasia/aplasia
- Tendency for slow progression of clinical signs

**SPINAL ARACHNOID DIVERTICULUM (“CYST”)**

- Diagnosis via myelography, CT, or MRI (preferably)
- “Tear-drop” shape typical
- Treatment via surgical excision +/- marsupialization of meninges
- Prognosis favorable
CASE CHALLENGE: “SUZIE”

- 8 y.o. FS Pug dog
- Progressive paraparesis
- Recent worsening, non ambulatory

SUZIE’S LATERAL RADIOGRAPH

- Radiograph? This is 2018!
- What do you see?
- What don’t you see?

“SUZIE’S” MR IMAGES

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CONSTRICTIVE MYELOPATHY OF PUG DOGS

- Recently described
- Limited information
- Combination of disk protrusion, subarachnoid diverticulum, syrinx
- TL region

- Due to dysplasia (hypoplasia/aplasia) of caudal articular processes (facets)
- Thought to involve chronic instability and arachnoid adhesions

- Reported surgical outcomes poor
- Based on 5 operated cases
- Decompressive surgery
CONSTRICTIVE MYELOPATHY OF PUG DOGS—IS THIS COMMON?

- Retrospective study—Cornell, VSES Rochester, Long Island Vet Specialists (LVS)
- 53 dogs: 42 Pugs, 11 Pug mixes
- 32 Pugs with dysplasia (76%); 3 Pug mixes with dysplasia (27%)

“SUZIE’S” SURGERY

“SUZIE” POST-OPERATIVELY
POSTOPERATIVE CARE
- Pain management
- Bladder care
- Rehabilitation/Physical therapy
- Gastrointestinal protectants if needed

THORACIC VERTEBRAL KYPHOSIS/KYPHOSCOLIOSIS
- Congenital malformations
- Developmental errors of vertebral segmentation and ossification
- Etiology not fully understood, multiple factors

THORACIC VERTEBRAL KYPHOSIS/KYPHOSCOLIOSIS
- Terminology confusing
- New comprehensive classification system available (Gutierrez-Quintana, et al, 2014)
- Ventral aplasia most common
KYPHOTIC THORACIC VERTEBRAL BODY MALFORMATION

- Commonly referred to as "hemivertebrae" and "butterfly" vertebrae
- Typically in screw-tailed breeds
- Most incidental findings
- We are interested in the other ones

KYPHOTIC THORACIC VERTEBRAL BODY MALFORMATION

- Wide age range: 60% less than 1 yr, 40% over 1 yr
- Mid to caudal thoracic vertebral region
- Most commonly T6-T9

KYPHOTIC THORACIC VERTEBRAL BODY MALFORMATION

- Cobb angle
- Typically over 35° if clinical signs
KYPHOTIC THORACIC VERTEBRAL BODY MALFORMATIONS

- Many opinions on this
- Absolutely no need to effect “realignment” likely to traumatize cord needlessly
- Decompress and stabilize
- Anatomic guidelines for body implants

KYPHOTIC THORACIC VERTEBRAL BODY MALFORMATIONS

- Hemilaminectomy - precautions in this area
- Stabilization options - vertebral body implants, modified segmental fixation (stapling)

KYPHOTIC THORACIC VERTEBRAL BODY MALFORMATIONS: HYBRID TECHNIQUE

- Hemilaminectomy
- Unilateral vertebral body implants on hemilaminectomy side
- Segmental fixation (staple) on opposite side
KYPHOTIC THORACIC VERTEBRAL BODY MALFORMATIONS: PLACING VERTEBRAL BODY IMPLANTS

- Caution! Don’t get tunnel vision
- French Bulldogs often have mild kyphotic anomalies
- They also rupture lumbar disks
- Don’t operate the wrong thing

KYPHOTIC THORACIC VERTEBRAL BODY MALFORMATIONS

- Inherently rigid region
- Not as commonly encountered
- Articular processes blend with dorsal lamina-important!
- Angles of implant insertion also important
- Some pointers I have learned

CRANIAL-MID THORACIC FRACTURE/LUXATION

- Inherently rigid region
- Not as commonly encountered
- Articular processes blend with dorsal lamina-important!
- Angles of implant insertion also important
- Some pointers I have learned
CRANIAL-MID THORACIC FRACTURE/LUXATION

• May be consequence of overzealous dorsal decompression (luxation)
• Rib heads can also be used for additional stability

THORACOLUMBAR JUNCTION FRACTURE/LUXATION

• T10 through L2 popular area for fracture/luxation
• About 50% of all vertebral fracture/luxations
• Multiple methods of fixation

QUESTIONS?