Down, But Not Out

Traumatic Injuries to the Sacrum, Pelvis and Hips
Or, “Will my dog walk again?”

John Kiefer, BS, DVM
Resident in Small Animal Surgery

The Veterinary Forum, Leesburg, VA
October 18th, 2015
Hind Limb Trauma

Why this topic matters to you

• Triaging patients
• Warning signs to watch for
• Treatment concerns
• Prognosis
Hind Limb Trauma

What we’ll cover

• Triage
• General Exam
• Neurologic Exam
• Orthopedic Exam
• Imaging and diagnostics
• Treatment concerns
A client walks in carrying their dog...
History

• Cause of trauma / witnessed?
• Time since trauma occurred?
• Hemorrhage?
• Ambulatory status?
• Urination / defecation?
History

- Prospective analysis of all trauma cases presenting at 4 institutions over two month period.
- Trauma score via Animal Trauma Triage (ATT) Scale or Modified Glasgow Coma Scale (MGCS) was predictive for survival.
- Other factors: lactate, surgery, type of trauma.

- Evaluated all dogs presented at referral hospital following vehicular trauma over one year period.
- Assessed signalment, ATT score, treatments, length of hospital stay, costs and outcomes.
- Higher ATT significantly associated with death, euthanasia, and cost of care.

Figure 2—Distribution of injuries in 239 dogs with vehicular trauma.
General Assessment

• Temp / Pulse / Resp / CRT / Memb
• Blood Pressure / EKG
• Visual Assessment
  • Mental status
  • Rate / effort of breathing
  • Bruising / swelling / asymmetries
Initial Exam

- Thoracic auscultation
  - Lung Sound Assessment
  - Cardiac Assessment
  - Borborygmi
Initial Exam

• Abdominal Assessment
  • Distension / fluid wave
  • Decreased abdominal size
  • Urinary bladder

• Rectal Exam

• Bloodwork
Initial Diagnostics

• Thoracic Radiographs
  • Contusions
  • Fractures
  • Diaphragmatic Hernia
• Pneumothorax / hemothorax
Initial Diagnostics

• Abdominal Radiographs
  • Fractures
  • Hernias
  • Hemoperitoneum / pneumoperitoneum
  • Retroperitoneal space
  • Urinary bladder
Initial Diagnostics

- Contrast Radiographs
  - Excretory urogram
  - Retrograde cystourethrograph
- Abdominal ultrasonography
- Abdominocentesis
Neurologic Exam

Initial Steps
Neurologic Injury

C1-C5
C6-T2
T3-L3
L4-S1
S1-S3
Neurologic Injury

Neurologic Injury

Neurologic Injury

Neurologic Injury

Neurologic Injury

CANCEL OF FUNCTION

Proprioception, paresis, motor, bladder, sensation

RETURN TO FUNCTION

Adapted from Withrow SJ: Localization and diagnosis of spinal cord lesions in small animals: Part I. The compendium on Continuing Education for Practicing Veterinarians 2:466, 1980
Orthopedic Injury

Types of Orthopedic Injuries

• Fractures
• Joint Luxations
• Ligamentous Injuries
• Soft Tissue / Muscle Trauma
Orthopedic Exam

Initial Steps
Orthopedic Injury
Orthopedic Injury

Veterinary Surgical Centers
Sacral fractures in dogs: a review of 32 cases.

- Classified fractures as axial (17) or abaxial (15).
- 69% of dogs had neurologic deficits at presentation.
- Axial fractures were more likely associated with tail and perineal denervation, as well as urinary deficits.
- Abaxial fractures more likely associated with pelvic limb deficits.
- Axial fractures were associated with more severe neurologic deficits (0.00017)

I. Alar: Oblique fracture of the juxta-articular notch and terminating on the articular surface of the sacral wing.

II. Longitudinal: Longitudinal or oblique fracture through the 1st or 2nd sacral foramina.

III. Transverse: Transverse sacral body fracture

IV. Avulsion: Fracture of the caudal origin of the sacrotuberous ligament

V. Comminuted: Comminuted sacral fracture

- 103 cats with 264 pelvic fractures reviewed in 7 year period.
- Most cats <12m of age. Equal sex distribution.
- Majority included pelvic floor (90%)
- Sacroiliac luxations in 60%
- Association between ilial body fractures and sciatic nerve deficits.

- Review of 556 pelvic fractures over 10 years.
- 2050 different fractures identified.
- 76% of animals had >3 fractures.
- Developed novel AO-based classification system for pelvic fractures in small animals.

- Fluoroscopically-assisted iliosacral lag screw placement technique.
- Same screw position and length guidelines as open technique.
- Decreased patient morbidity associated with MI approach.
Sacroiliac Luxations

Veterinary Surgical Centers
Sacroiliac Luxations

Veterinary Surgical Centers

- Retrospective case series of 5 dogs treated for SI luxation.
- Mean reduction of the SI joint was 92.9+-6.6%.
- All dogs healed without significant complications.
- Owners assessment of recovery good or excellent.
The role of computed tomography in the classification and management of pelvic fractures.

- Prospective study of 25 pelvic trauma cases.
- CT Interpretation matched consensus 80% of time.
- Radiology matched consensus 70% of time.
- CT changed fracture classification in 60%, and treatment course in 29% of cases.

- Radiographs had 70-73% accuracy for sacral fractures.
- CT had 83%-97% accuracy for diagnosing sacral fractures.
- Sensitivity of 14-20% for radiographs, 43-100% for CT.
- Radiographs had 75-84% accuracy for pelvic fractures.
- CT 84-95% accuracy for diagnosing pelvic fractures.
- Sensitivity of 47-68% for radiographs, 70-90% for CT.
Pelvic Fractures

Veterinary Surgical Centers
Concerns for Technicians

• Monitoring
• Analgesia
• Cleanliness
• Positioning and Movement
• Urination and Defecation
Concerns for Technicians

• Owner Education
• Rehabilitation
• Follow-up
Care and Treatment

Rehabilitation at Veterinary Surgical Centers
Questions?

Veterinary Surgical Centers

Vienna / Leesburg / Winchester / Woodbridge

Contact us at VSC@VSCVets.com

www.VSCVets.comFacebook.com/AnimalSurgeons


