AAEP Case Study

A case of front limb lameness

Signalment

- 8 year old Thoroughbred x Quarter Horse Chestnut mare
- Used for dressage and eventing
History

- Resides in a training barn
- Purchased 16 months prior to lameness
- Right front intermittent lameness – 4 months duration
- Periods of rest and non steroidal anti-inflammatory therapy
- No previous lameness examination

Clinical Findings

- Physical Examination
  - No significant joint effusion or soft tissue swelling
  - Flat steel shoes on all four feet
  - Hoof tester examination
    - No abnormal response; right front & left front
Clinical Findings

• Lameness Examination
  - Grade 2/5 lame (AAEP scale) – Right front (RF)
  - Best seen on firm ground & clockwise direction
  - RF distal limb flexion - Negative
  - RF carpal flexion - Negative

Diagnostic Plan

• Regional Anesthesia
  – Palmar digital (PD) perineural anesthesia
    ▪ RF Lameness resolved – 100% improvement

• Intrasynovial Anesthesia
  – Three hours elapsed prior to intrasynovial anesthesia
Diagnostic Plan

• Intrasyovial Anesthesia
  - Distal interphalangeal (DIP) anesthesia
    • 5 min- 50% improvement
    • 15 min- 70% improvement

• The following day, the digital tendon sheath was blocked to further investigate the right front limb lameness

Diagnostic Plan

• Digital flexor tendon sheath anesthesia
  – 25% improvement
Problem List

• Right front lameness that is localized to the palmar aspect of the right front foot

Differential Diagnosis

• Coffin joint arthrosis/synovitis
• Deep digital flexor (DDFT) tendonitis
• Navicular bursitis
• Navicular syndrome
• Palmar heel pain
• Distal sesamoidean impar ligament desmitis
• Combination
Diagnostic Plan

• Digital radiographic foot series was performed

Radiographic Examination

• Navicular bone (NB)
  – Several enlarged central synovial fossae
  – Good cortical-medullary definition with central flexor cortex shadowing
• Findings considered normal variant for age and breed
• Results of lameness localization & radiographs inconclusive
• Recommendation
  – Ultrasound of palmar pastern and foot
Ultrasound Examination

- Deep digital flexion tendonitis - RF
- Navicular bursa & fibrocartilage of flexor surface of navicular bone (RF) measured less than contralateral limb

Magnetic Resonance Imaging

- To characterize DDFT tendonitis and evaluate potential concurrent lesions, MRI was recommended
- MRI was conducted using 1.5 T Siemens Magnetom Espree at Alamo Pintado Equine Medical Center
Magnetic Resonance Imaging

Adhesion between DDFT and navicular bursa

Deep digital flexor tendon tear

Navicular bone flexor cortex erosion

Diagnosis

• Right fore DDFT tear at level of the proximal navicular bursa with adhesions to navicular bone

• Right fore navicular flexor cortex erosion and articular cartilage loss
Treatment Options

- Intrasynovial medications
- Extracorporeal shockwave therapy
- Stem cells
- Bursoscopy
- Intrabursal tissue plasminogen activator (tPA) injection

Bursoscopy

- Surgical approach – via digital flexor tendon sheath
- Navicular bursa entrance – transection of the T ligament

Endoscopic view of normal navicular bursa
Bursoscopy

• Surgical Findings
  – Multiple adhesions between the bursa and deep digital flexor tendon

• Intraoperative therapy
  – Arthrocare® coblation technique

Arthrocare® Coblation

• Use of radiofrequency to break molecular bonds within tissue

• Results in removal of target tissue at relatively low temperatures (40-70°C) with minimal damage to surrounding tissue
Post Operative Therapeutic Plan

- Non steroidal anti-inflammatory medications
- Tissue plasminogen activator injection (fibrinolytic agent) into navicular bursa
- Adipose-derived stem cell injection to navicular bursa
- Rehabilitation period
- Follow-up MRI

Navicular Bursa Injection

- Midline palmar approach to navicular bursa
- Radiographic guidance of 500µg of tissue plasminogen activator performed at 4 and 6 days post operative
- Unknown quantity of tPA leakage due to communication of tendon sheath during bursoscopy
Adipose-Derived Stem Cells

- Tail-head collection technique
- 6 million total cells
- Radiographic guidance - Injection to navicular bursa performed on day 20 post operation

Rehabilitation Period

- Stall rest for 14 days followed by stall rest with 10 min hand-walking for 14 days
- At 28 days post surgery, tack walk - 10 min for 7 days, 20 min for 7 days, & 30 min for 7 days
- Increase exercise slowly if no lameness is present

*All times are in reference to surgery*
Outcome

- Current exercise - Flatwork with increasing intensity
- No lameness reported 4 months after operation

Follow up Recommendations

- Follow up MRI - 8 months post operative to assess deep digital flexor tendon tear & adhesions to navicular bursa
- Return to full work dependent on MRI findings & re check evaluation
Further Reading