Navicular Bursa Injection Technique

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Aims
A. Review navicular bursa anatomy
B. Case Selection and Imaging
C. Indications for navicular bursa injection
D. Injection of the navicular bursa
   a) Palmar approach
   b) Lateral approach
E. Expected Outcomes
F. Questions

A. Relevant anatomy around the navicular bursa
   – Navicular Bone
   – Collateral sesamoidean ligaments (CSL)
   – Deep digital flexor tendon (DDFT)
   – Distal interphalangeal joint (DIP)
   – Digital flexor tendon sheath (DFTS)
   – Distal sesamoidean impar Ligament (Impar)
   – T-ligament
B. Case Selection and Imaging

Lameness
- Unilateral or bilateral lameness
- Acute or Chronic
- Grade 1-5 (AAEP)
- Localize lameness with local anesthetic
  - Peri-neural: palmar digital or basi-sesamoid nerve block
  - Intra-articular: DIP joint (coffin) or Navicular Bursa

Radiography
- Four standard views recommended
  - Latero-medial
  - Dorso-palmar
  - Dorso-proximal palmaro-distal 60° oblique
  - Palmaro-45°proximal palmaro-distal oblique
- Recommended reference:
  - Radiological interpretation of the navicular bone. Sue Dyson. Equine Veterinary Education (2011) 23 (2) 73-87
B. Case Selection and Imaging

Radiographic Pathology
- Enlarged synovial invaginations
- Medullary sclerosis
- Loss of cortico-medullary distinction
- Enthesopathy at attachment of collateral sesamoidean ligament
- Flexor cortex lucent zones
- Fragments/fracture

Loss of cortico-medullary distinction

Flexor cortex lucent zones

Enthesopathy at attachment of collateral sesamoidean ligament
B. Case Selection and Imaging

Magnetic Resonance Imaging

- MRI has improved our understanding of palmar heel pain
- Cost and patient factors prohibits MRI in all cases

*One example of when MRI helpful:*

- Unilateral acute lameness
- Localized with local anesthetic
- Normal radiographic exam

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B. Case Selection and Imaging

MRI Pathology

- DDF tendonitis
- DIP collateral ligament desmitis
- Navicular Bursitis
- Navicular bone lesions (edema+/sclerosis, cystic structures, enthesopathy)
- Adhesions
- Distal sesamoidean impar ligament lesions

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B. Case Selection and Imaging

MRI showing lesion in dorsal aspect of deep digital flexor tendon (ARROW)

Navicular bone

DDFT

Navicular bursoscopy showing tear of the DDFT associated with MRI lesion on left
C. Indications for injection

1. Administer therapeutic due to lameness
   - Hyaluronic acid + Triamcinolone
   - IRAP
   - Stem cells
2. Synoviocentesis – septic arthritis
3. Distend bursa for imaging
   - MRI
   - Radiography

2. Synoviocentesis – septic arthritis
   - Solar puncture/foreign body
C. Indications for injection

Distend Bursa for Imaging: MRI

D. Injection of the navicular bursa

Palmar Technique:
1. Sedation
2. Abaxial nerve block
3. Clip hair between heel bulbs
4. Sterile Prep
5. Position radiograph machine for lateral view
6. Insert 20G spinal needle between heel bulbs
7. Advance towards a point midway between dorsal and palmar coronary band, 1cm distal to the coronary band.
8. Take radiograph to confirm placement
9. Adjust needle position as needed
10. Use contrast (2:1, saline:omnipaque solution) to confirm placement
D. Injection of the navicular bursa

**Lateral Technique**

1. Sedation
2. Abaxial nerve block
3. Clip hair on lateral aspect of limb from coronary band to mid pastern, dorsal to midline and palmar to midline
4. Sterile Prep

**LANDMARKS FOR INJECTION SITE:**
- Collateral cartilage
- DDFT
- Neurovascular Bundle

5. Position radiograph machine for lateral view

6. Insert 20G spinal needle into the limb just above the collateral cartilage, avoid the neurovascular bundle if possible

45 degrees to the ground
D. Injection of the navicular bursa

6. Advance needle along this angle and take radiograph

7. Needle should lie close to midline. A Dorso-palmar radiograph can be performed but is not necessary

8. Aspirate synovial fluid
   Success rate:
   • 50% of cases

9. Inject contrast to confirm placement
D. Injection of the navicular bursa

**Palmar Technique**
- Technically easier than lateral technique
- Penetrates DDFT
- Not suitable when potential contamination palmar to DDFT
- Requires radiographs

**Lateral Technique**
- Technically more challenging
- Avoids DDFT – reduces any risk of cumulative damage
- Suitable when there is contamination palmar to DDFT
- Requires radiographs
- Performed in a standing position

Radiolucent tissue seen palmar to DDFT following solar puncture with nail
D. Injection of the navicular bursa

Lateral Technique
– When there is severe DIP joint distension, there is a high risk of the needle penetrating the palmar DIP joint capsule.
– When there is severe tendon sheath effusion there is a low risk of the needle penetrating the sheath lining.
– This is only clinically significant when dealing with potential septic joints/sheaths.

E. Expected Outcomes

– Response to therapy depends on:
  • Where injury/lesion is located e.g.
    – Flexor surface erosions have a worse prognosis
    – Bursitis carries a good prognosis
  • Degree of pathological variation
  • Duration of lameness
    – <6 months better outcome than >6 months
  • Intended use

F. Questions