Gamekeeper's Thumb and Finger Pathology

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Disclosures:
- Consultant: Bioclinica
- Advisory Board: Philips
- Book Royalties: Elsevier
- Not relevant to this talk

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Gamekeeper's Thumb

- Injury of the ulnar collateral ligament (UCL) of the thumb
  - Historically, chronic injury in Scottish gamekeepers
  - Frequently, due to acute MCP joint hyperabduction
  - Skier's thumb: up to 86% of thumb base injuries

Gamekeeper's Thumb:

- Injury to ulnar collateral ligament of 1st MCP joint
  - Abnormally hypoechoic & thickened
  - Differentiate partial-thickness or non-displaced full-thickness tears from displaced tear (Stener lesion)

Ulnar Collateral Ligament: thumb

Note: sliding of adductor aponeurosis with isolated interphalangeal joint flexion

Radiographics 2006;26:1007
Stener Lesion:
- Displaced proximal stump of torn UCL
  - Hypoechoic & round
  - Proximal to MCP joint
  - At proximal edge of adductor aponeurosis
- No tissue spanning MCP joint
- "Yo-yo on a string" sign
- Ultrasound: 100% accuracy


Stener Lesion: variations
- Normal
- 1. Non-displaced tear
- 2. Displaced Full-thickness Tears
- 3. Non-displaced tear
- 4. Displaced Full-thickness Tears

Stener Lesion: dynamic
- White arrows = adductor aponeurosis
- Yellow arrows = Stener lesion

“Yo-yo on String”
Stener Lesion


Stener Lesion


Adductor Aponeurosis Injury

Long Axis to UCL

Capsular Avulsion: 1st MCP Joint

Radial Collateral Ligament Tear: PIP joint

Normal RCL
Pulley Tear

- A2 and A4 pulleys: most important
- Sagittal image
  - Bowstringing
  - Hypoechoic edema / hemorrhage
- Dynamic evaluation*

*Radiology 2002; 222:755

A2 – 4 Pulley Injury

Normal

A4 Pulley Injury: bowstringing

Normal: < 1 mm; incomplete rupture: 1 – 3 mm; complete: 3 mm

Trigger Finger: A1 pulley

Case #1
Case #2

Boxer Knuckle

Short Axis
Knuckle Pads
- Subcutaneous hypoechoic soft tissue thickening
- IP > MCP joints
- Idiopathic hyperplasia
- Associated with palmar fibromatosis
- May clinically simulate synovitis

Lopez-Ben et al. Skeletal Radiol 2006; 35:823

Mucous Cyst
- Arises from DIP joint
  - Osteoarthritis
  - Pedicle
- Often extends to nail bed
- Subungual mass
- Middle-age or older women
- Recur

Baek HJ et al. Radiographics 2010; 30:1621

US: foreign body echogenicity

Wooden Foreign Body: finger

Fibroma of Tendon Sheath
- 82%: fingers, hands, wrists
- Men 2x more than women
- Ages 20 – 50 years
- Hypoechoic solid mass
- Associated with tendon sheath
- Variable blood flow
- Simulates giant cell tumor of tendon sheath

Dinour PA et al. Radiographics 2007; 27:173

Giant Cell Tumor Tendon Sheath
- Similar in histology to pigmented villonodular synovitis
- 2 forms:
  - Diffuse: florid or proliferative synovitis
  - Focal: nodular tenosynovitis
    - Most common form
    - Hand, volar digits #1 - 3

Jelinek et al. AJR 1994; 162:919
Glomus Tumor

Pitfalls: Gamekeeper’s thumb

• Not scanning in correct plane
  – Use bone contours for guidance
• Misinterpretation of adductor aponeurosis as intact fibers
  – Passively flex interphalangeal joint
• Not recognizing Stener lesion:
  – Round area proximal to joint
• Not scanning the entire thumb

Syllabus on line and other educational material:
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