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

Chronic Mechanism

Acute Mechanism

Ulnar Collateral Ligament: 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)

Note: all images from the textbook *Fundamentals of Musculoskeletal Ultrasound* are copyrighted by Elsevier Inc.
UCL: tears

- Partial-thickness tear
- Full-thickness tear
- Normal

Full-thickness UCL tear: chronic

- Neutral
- Valgus stress

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
- Non-displaced tear
- Displaced Full-thickness Tears

Stener Lesion: dynamic

- White arrows = adductor aponeurosis
- Yellow arrows = Stener lesion

**Melville D. et al. Skeletal Radiology 2013; 42:667**
Stener Lesion

Long Axis

Normal


Stener Lesion

Long Axis

Normal


Stener Lesion

Long Axis

Normal


Adductor Aponeurosis Injury

Long Axis to UCL

Radial Collateral Ligament Tear: PIP joint

Long Axis

Coronal T1w
**Pulley Tear**

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

*Radiology 2002; 222:755

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**A2 – 4 Pulley Injury**

- Normal
- Proximal Phalanx
- Middle Phalanx
- A2
- A4

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**A4 Pulley Injury: bowstringing**

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

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**Trigger Finger: A1 pulley**

- Case #1
- Case #2
- MC
- PP

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**Trigger Finger: thumb**

- Case #1
- Case #2

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**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-Bon 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

Tenosynovial Giant Cell Tumor
- Similar in histology to pigmented villonodular synovitis
- 2 forms:
  - Diffuse: florid or proliferative synovitis
  - Focal: nodular tenosynovitis
  - Giant cell tumor of tendon sheath
  - Most common form
  - Hand, volar digits #1 - 3

Jelinek et al. AJR 1994; 162:919

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

Dinur PA et al. Radiographics 2007; 27:173
**Glomus Tumor**

**Sagittal T2w MRI Normal**

**Distal Phalanx**

**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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