

Gamekeeper's Thumb and Finger Pathology

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1

Disclosures

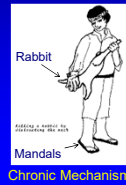
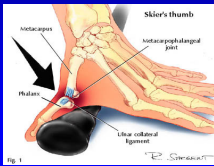
- Consultant: Bioclinica
- Contractor: POCUS PRO
- Book Royalties: Elsevier
- Not relevant to this talk

*Note: all images from the textbook
Fundamentals of Musculoskeletal Ultrasound are copyrighted
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2

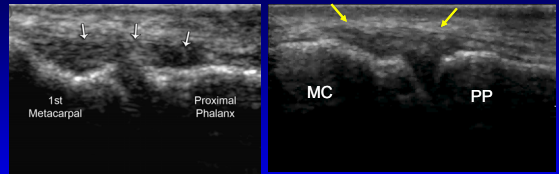
Gamekeeper's Thumb

- 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

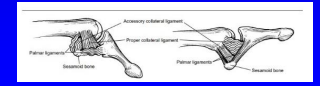


3

Ulnar Collateral Ligament: thumb

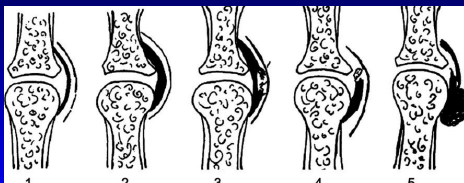


Note: sliding of adductor aponeurosis with isolated interphalangeal joint flexion



4

Ulnar Collateral Ligament: thumb



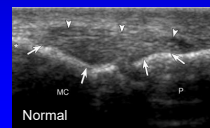
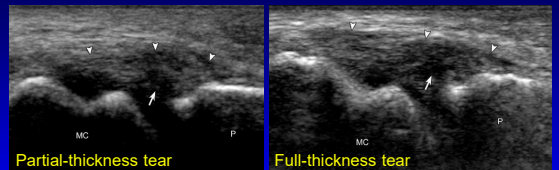
Normal Sprain Partial Tear Nondisplaced Complete Tear Displaced Complete Tear (Stener Lesion) (+ fracture)

RadioGraphics 2006;26:1007

RadioGraphics

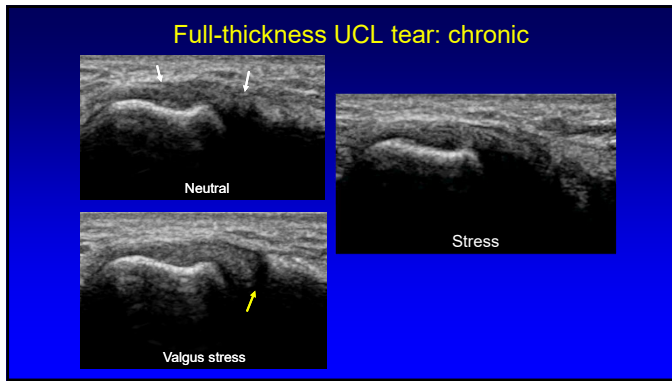
5

UCL: tears



Teaching Point:
90% of UCL injuries are distal

6



7

Stener Lesion

- Displaced proximal stump of UCL
 - Hypoechoic & round
 - Proximal to MCP joint
 - At proximal edge of adductor pollicis aponeurosis
- No tissue spanning MCP joint
- "Yo-yo on a string" sign
- Ultrasound: 100% accuracy

1st Metacarpal

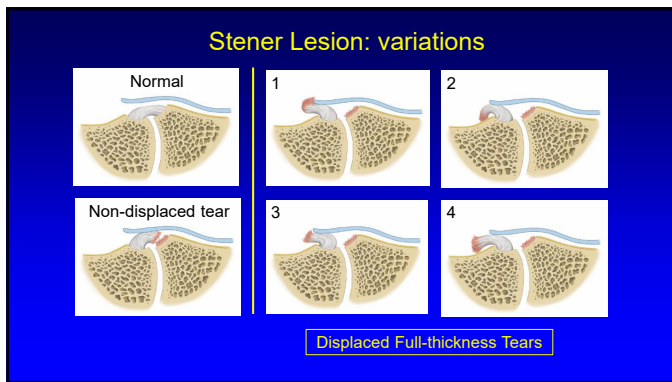
Proximal Phalanx

Yellow arrows: Stener

White arrows: aponeurosis

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

8



9

Stener Lesion: dynamic

1st Metacarpal

Proximal Phalanx

White arrows = adductor aponeurosis

Yellow arrows = Stener lesion

Teaching Point:
Note importance of active IP joint flexion at imaging showing aponeurosis

10

Stener Lesion

MC

P

Long Axis

Normal

From: Melville D. et al. Skeletal Radiology 2013; 42:667

11

Stener Lesion

MC

P

Long Axis

Normal

From: Melville D. et al. Skeletal Radiology 2013; 42:667

12

Stener Lesion

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

13

Adductor Pollicis Aponeurosis

- Superficial to UCL of 1st MCP
- Examine long axis to UCL with passive 1st IP joint flexion/extension
- Commonly injury with Gamekeeper's thumb
 - Hypochoic and thickened
- Isolated injury: uncommon
 - Diffusely hypochoic thickened

Long Axis to UCL

14

Pulley Tear

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

*Radiology 2002; 222:755
Radiology 1998; 206:339

15

A2 – 4 Pulley Injury

Normal

16

A4 Pulley Injury: bowstringing

From: Klausner A et al. *Radiology* 2002;222:755-761

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

17

Trigger Finger: thumb

Case #1

Case #2

18

Soft Tissue Foreign Bodies

- Wood and plastic: not radiopaque on radiographs
- **Echogenicity** initially hyperechoic
 - Pitfall: anisotropy
- **Halo**: hypoechoic inflammation
- **Artifact**:
 - Smooth and flat: reverberation
 - Irregular surface: shadowing

Radiology 1998; 206:45

Septic tenosynovitis

19

US: foreign body echogenicity

20

Glass Foreign Body

- Glass:
 - Opaque
 - Regardless of tint or color

Radiology 1998; 206:45

21

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

22

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

Dinaur PA et al. Radiographics 2007; 27:173

23

Glomus Tumor

- Hamartoma:
 - Neuromyoarterial glomus body
- 75% in hand: subungual
- Pain, tenderness, temperature sensitivity
- US:
 - Hypoechoic to isoechoic mass
 - Increased flow

Drape. Radiology 1995;195:507

24

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

25

Thank you!

Syllabus on line and other educational material:
www.jacobsonmskus.com

Twitter handle: @jjacobsn

26