Thumb Sprains

Hand Therapy Training Programme

YanShan LU 2015

Thumb Sprain

"Capsular injuries involving the metacarpophalangeal joint of the thumb are common and often result in significant disabilities affecting both power grasp and precision pinch"

Posner, Retaillaud 1992

Content

- MP Joint Anatomy

- Specific Injuries – assessment & management
  - Skier’s thumb
  - Stener lesion
  - Radiocollateral Ligament Injuries
  - Dorsal Dislocation
  - Sesamoid Dislocation

Thumb MP Joint

Anatomy

- Condyloid Joint
- Primary function is the ability to maintain stability whilst in any position of flexion and extension
- Primary Motion - Flexion/Extension
- Secondary Motion - Abduction/Adduction, Rotation
- MP joint motion variable

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Thumb MP Joint Injuries

Anatomy

- Stability due to shape of metacarpal head and its cartilage, capsular, ligamentous and musculotendinous structures
- **Lateral stability** – accessory and proper collateral ligaments – radial and ulnar
- Arise from metacarpal and insert into the volar plate and sesamoid bones
- Accessory taut in extension
- Proper taut in flexion

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Thumb MP Joint

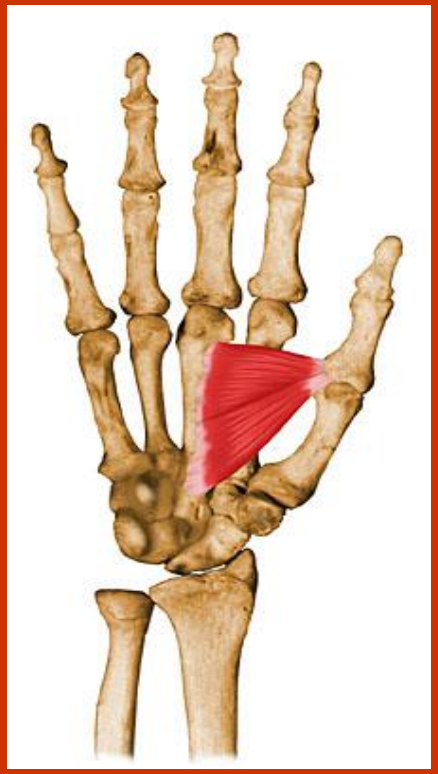
Anatomy

- Volar Stability - volar plate and collateral ligaments
- Differs from PIPJ volar plate complex as there is no flexor sheath proximal to MP joint therefore no strong check rein ligaments
- Sesamoid bones play a part in both dynamic and static joint stability
- Additional volar support is by thenar intrinsic muscles that insert into sesamoid bones embedded in distal volar plate

Thumb MP Joint

Anatomy

- Adductor pollicis inserts into ulnar sesamoid



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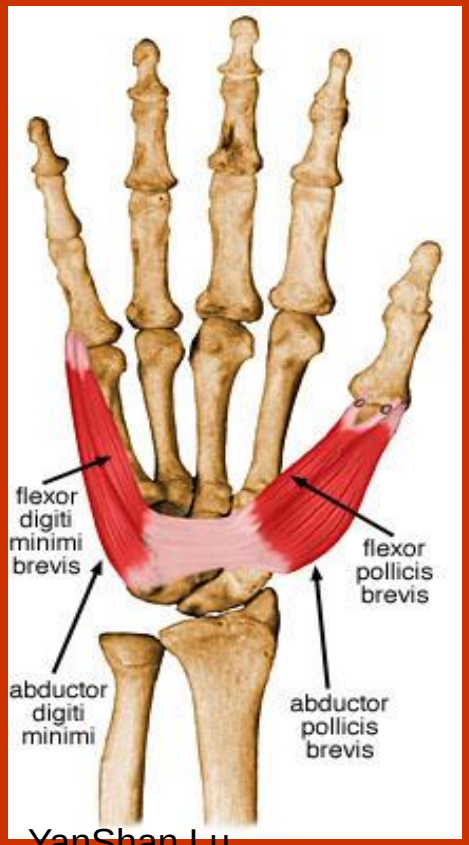
Thumb MP Joint

Anatomy

- FPB and APB insert into the radial sesamoid
- Both insert into the extensor mechanism



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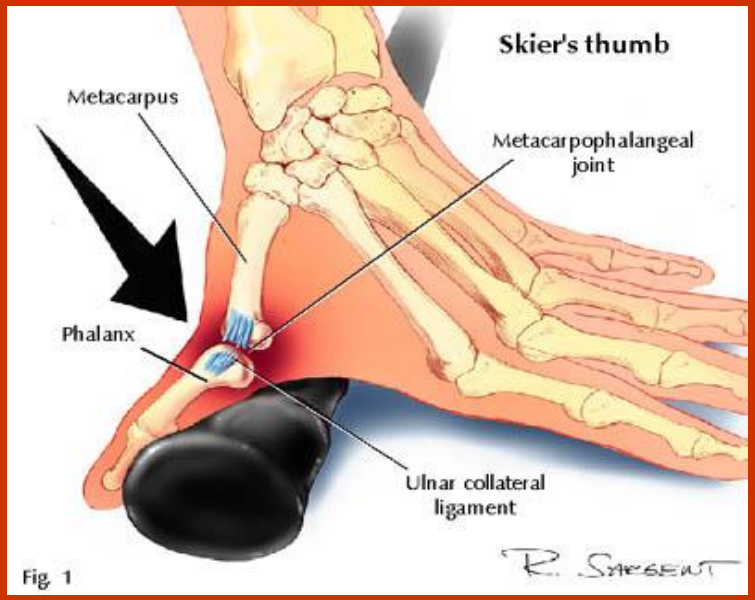
Thumb MP Joint Injuries

Injuries

- Common among ball handlers and skiers
- Dorsal Dislocations – volar plate
- Sesamoid bone – fracture, dislocation - rare
- Radial and Ulnar Collateral Ligament Injuries
- Ulnar collateral ligament injuries are more frequent than radial collateral ligament
- Ulnar collateral ligaments are commonly known as Skier's thumb or Gamekeeper's thumb

Skier’s thumb

- Acute Injury
- Mechanism – forced radial deviation



Skier's thumb

- **Partial** – Grade 1 or Grade 2

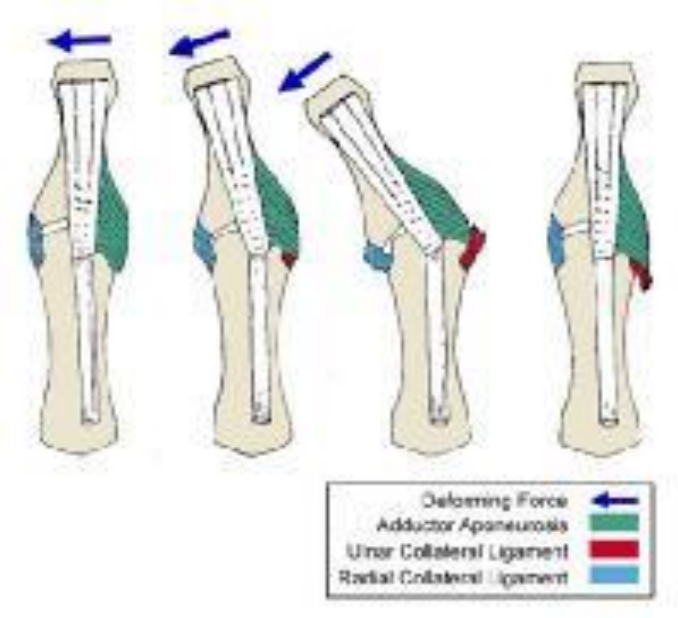
  Grade 1 – microscopic tearing

  Grade 2 – partial tear

- **Complete** – Grade 3
  - Avulsion
  - Avulsion +bone fragment
  - Mid substance rupture
  - Rupture with Stener lesion

Stener Lesion

- Adductor aponeurosis interposed between distally avulsed ligament and its insertion into base proximal phalanx



Thumb MP Joint Injuries

Assessment

Subjective – mechanism injury

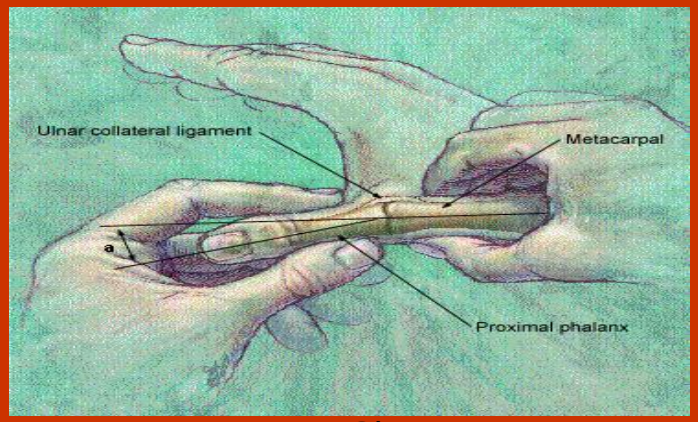
Observation – swelling, tenderness, bruising

X-ray if suspicious of complete rupture before stress testing

Palpation for tenderness of ulnar collateral and volar plate as this may indicate severity

Stress testing

- Perform stress test in extension and 30 degrees flexion



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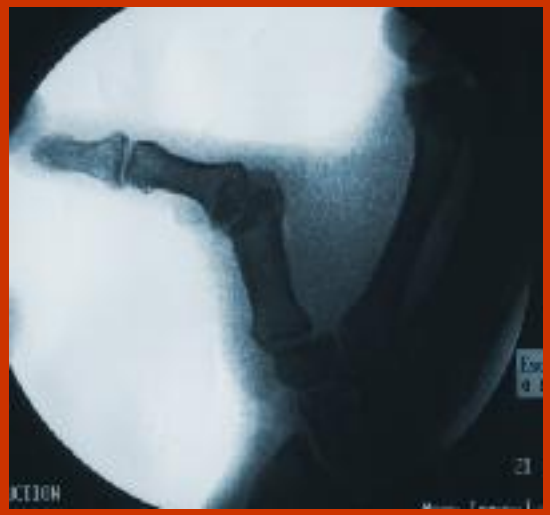

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Skier's Thumb

Treatment

Grade 1

- Taping or splinting (butterfly or similar), splint in slight flexion to place no stress on healing ligament until asymptomatic

Grade 2

- Splinting for 4 weeks, wean off splint and restore ROM
- Avoid Isometric tip to tip pinch and power grip until 8/52

Grade 3

- Most advocate surgical repair within the first 3/52 of injury
- Direct suture ligament
- Pull out suture repair of ligament to bone
- Fixation via periosteal and bone flap
- Repair ligament to volar plate
- Repair dorsal capsule +\- K-wire in mild flexion and ulnar deviation
- Chronic instability – either delayed Acute or Gamekeeper's thumb will require ligament reconstruction

Thumb MP Joint Injuries

Post Surgical Management

- Immobilisation for 4/52
- Followed by hand therapy for active range of motion exercises, graduated strenthening programme from 6-8/52 and eventual return to contact sport
- Avoid tip to tip pinch until 8/52

Radial collateral Ligament

- Rarer
- No known Stener lesion therefore Grade 3 ruptures may respond better to immobilisation

Dorsal Dislocations – Volar Plate

- Treatment with dorsal blocking splint of MPJ

Sesamoid Bone Dislocation

- Will require reduction

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Thumb MP Joint Injury

- May require ongoing splint, soft cast or taping to prevent reinjury when returning to sport

Conclusion

- Injuries to the MP joint of the thumb are complex.
- Full function relies upon accurate diagnosis, appropriate and timely management to maximise stability.