

28 M footballer – presents with post-traumatic Boutonniere deformity

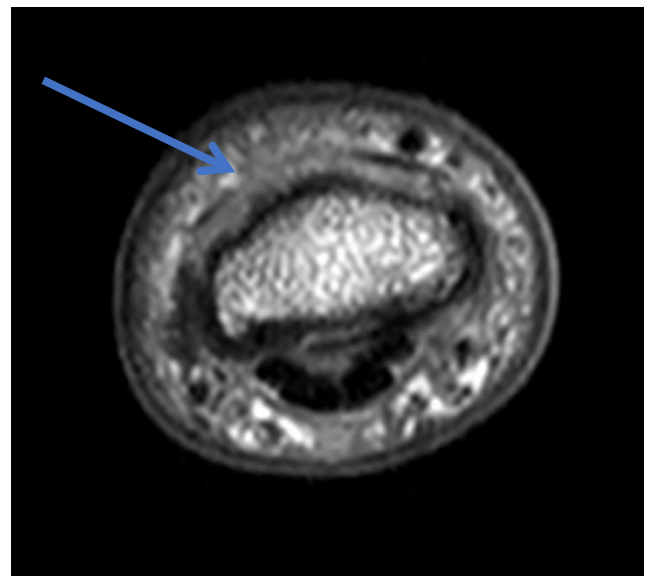
MRI Findings:

- Thickening, hyperintensity and delamination of the extensor sheath just proximal to the central tendon insertion
- Proximal splitting of the extensor hood with small fluid-filled defect
- Small joint effusion
- No chondral injury
- Incidental volar plate injury, but no displacement

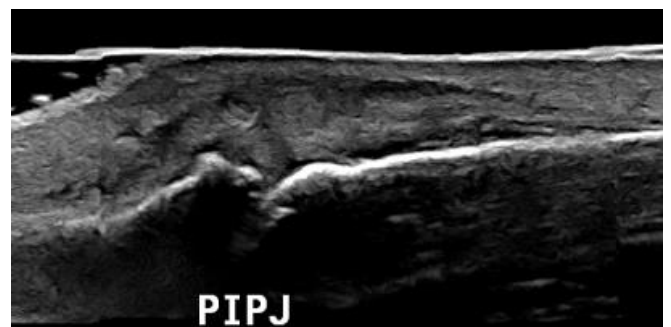


Sagittal PD SPAIR:

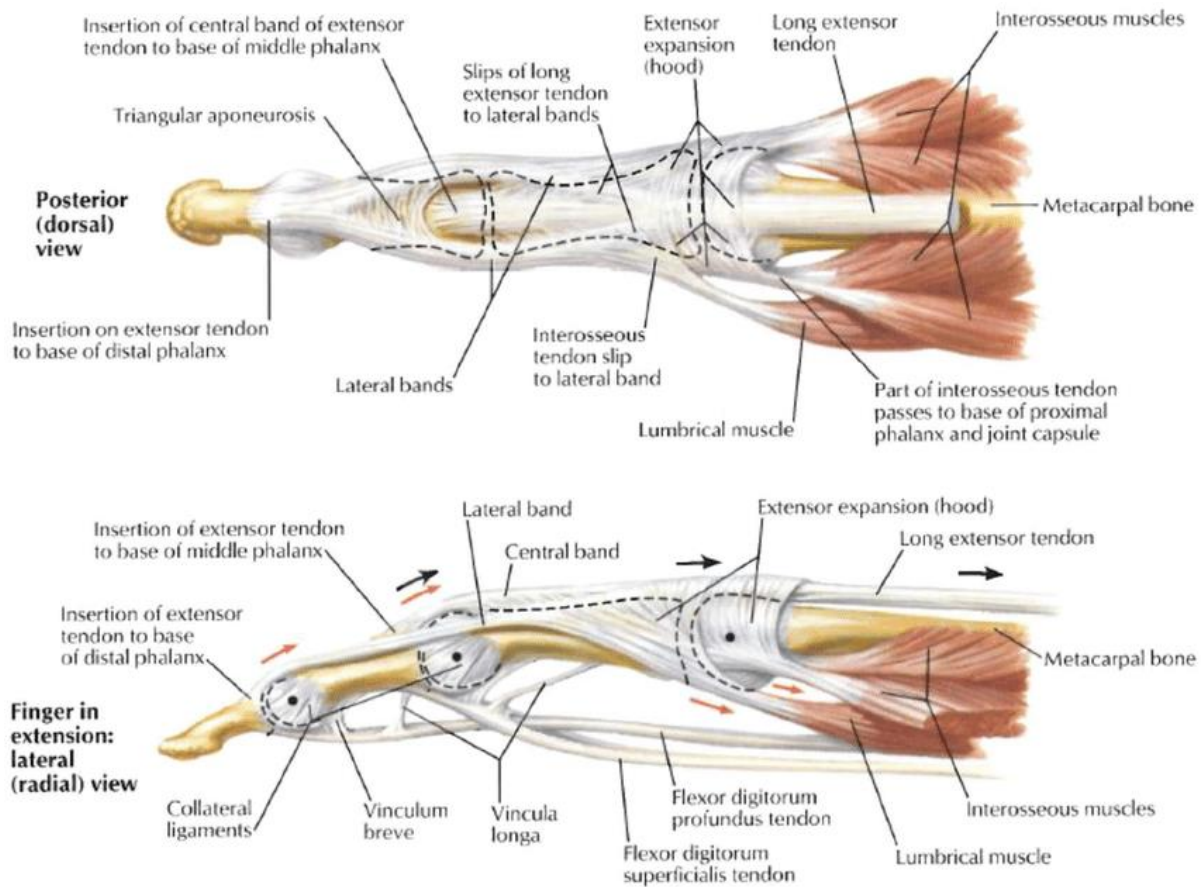
The red arrow shows the tendon injury to the central slip.



Axial PD SPAIR: Axial imaging through the plane of the central tendon shows absence of the central tendon insertion, consistent with tear. Part of the saggital band remains intact.



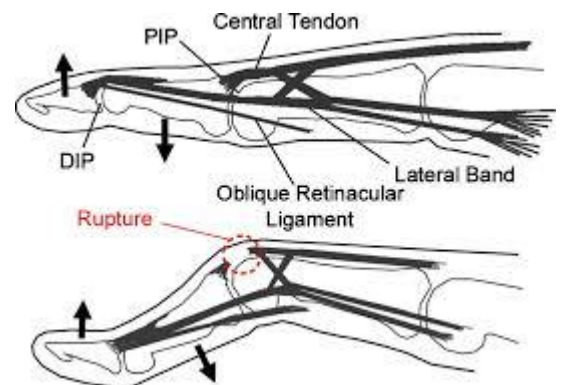
Ultrasound Correlation: Central tendon injury, with surrounding fluid, haematoma, granulation tissue



Revision of the extensor mechanism of the finger (surgical anatomy): Image above shows the extensor mechanism of the finger from both a dorsal and sagittal view. Image taken from Netter's Anatomy, 2002; doi:10.1371/journal.pone.0094533.g001

Discussion

- Creation of Boutonniere finger secondary to rupture of the central tendon slip of the extensor hood
 - Characteristic PIP flexion, DIP extension deformity
 - Is secondary to the complex finger anatomical relationships
- Rapid overview of normal extensor mechanism
 - Extensor digitorum communis tendon inserts as central slip on dorsal base of middle phalanx and PIP capsule
 - EDC also gives 2 lateral slips which fuse to adjacent lateral bands of interossei/lumbricals to form conjoined tendons
 - Lateral bands of EDC insert into dorsal distal phalanx, banded together by triangular ligament to avoid lateral subluxation
 - Extensor mechanism held in place at level of MCP by sagittal bands (attached to volar plate) to stop lateral EDC subluxation
- Boutonniere deformity
 - Central slip rupture → lack of PIP extension
 - Lateral bands sublux volar and lateral due to unopposed pull of lumbricals → PIP flexion, DIP extension
 - Volar plate injury may represent sagittal band injury



Boutonniere Deformity – anatomical relationships causing classic appearance. Image taken from Rentschler et al, J. Med Devices, 2010, medicaldevices.asmedigitalcollection.asme.org/article.aspx?articleid=1474024>

Further Reading:

- Sneally W., Extensor tendon injuries of the finger, Radsources MRI Web Clinic, 2006
 Berquist TH. MRI of the Hand and Wrist. Philadelphia, PA: Lippincott, 2003
 Clavero JA, Alomar X, Monill JM, Esplugas M, Golano P, Mendoza M, Salvador A. MR Imaging of Ligament and Tendon Injuries of the Fingers. Radiographics 2002; 22:237-256.
 Clavero JA, Golano P, Farinaas O, Alomar, X, Monill JM, Esplugas, M. Extensor Mechanism of the Fingers: MR Imaging " Anatomic Correlation. Radiographics 2003; 23:593-611.