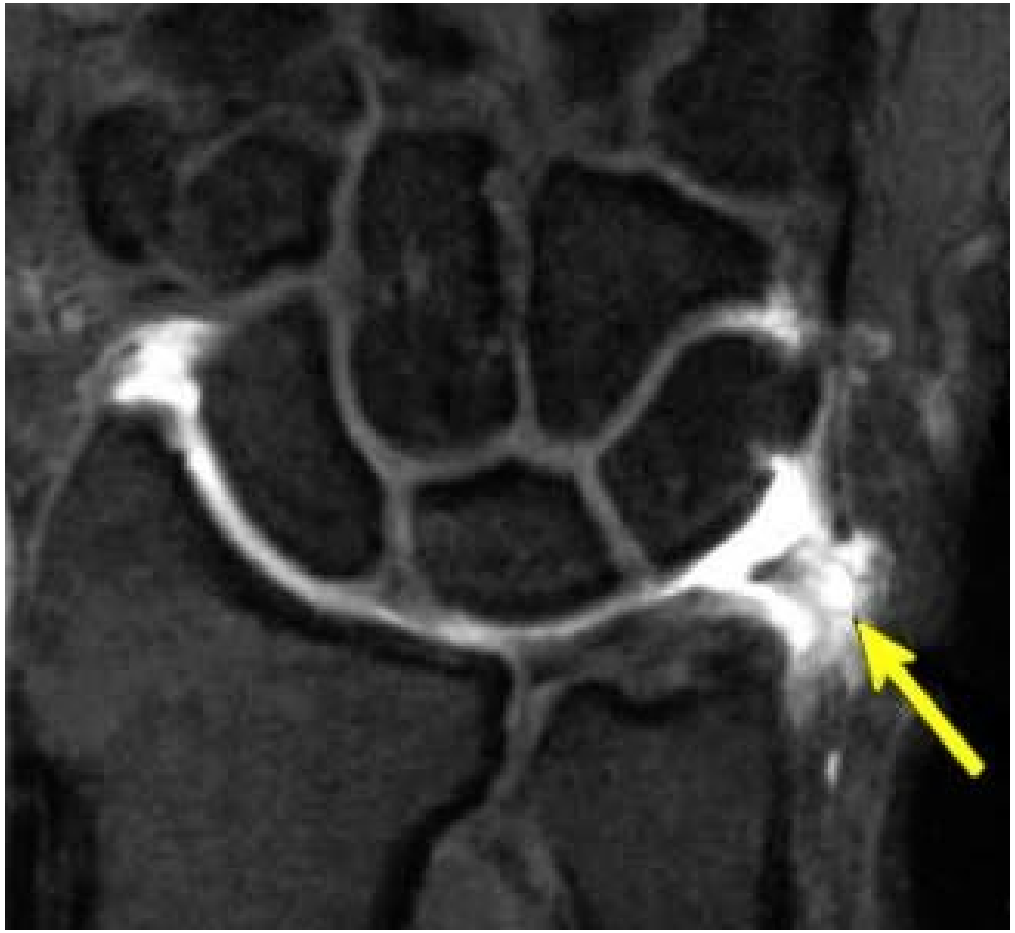
Approach to Ulnar sided wrist pain

- A 19-year-old football player suffers a fall onto a pronated, extended wrist.
- He has pain with resisted ulnar deviation and is tender to palpation just distal to the ulnar styloid.
- He has no tenderness over the extensor carpi ulnaris (ECU) tendon.

- Current radiographs are shown below

- MRI of the wrist is attached as well



- What is the most likely diagnosis & what is your differential diagnosis ?

- The most likely diagnosis is :

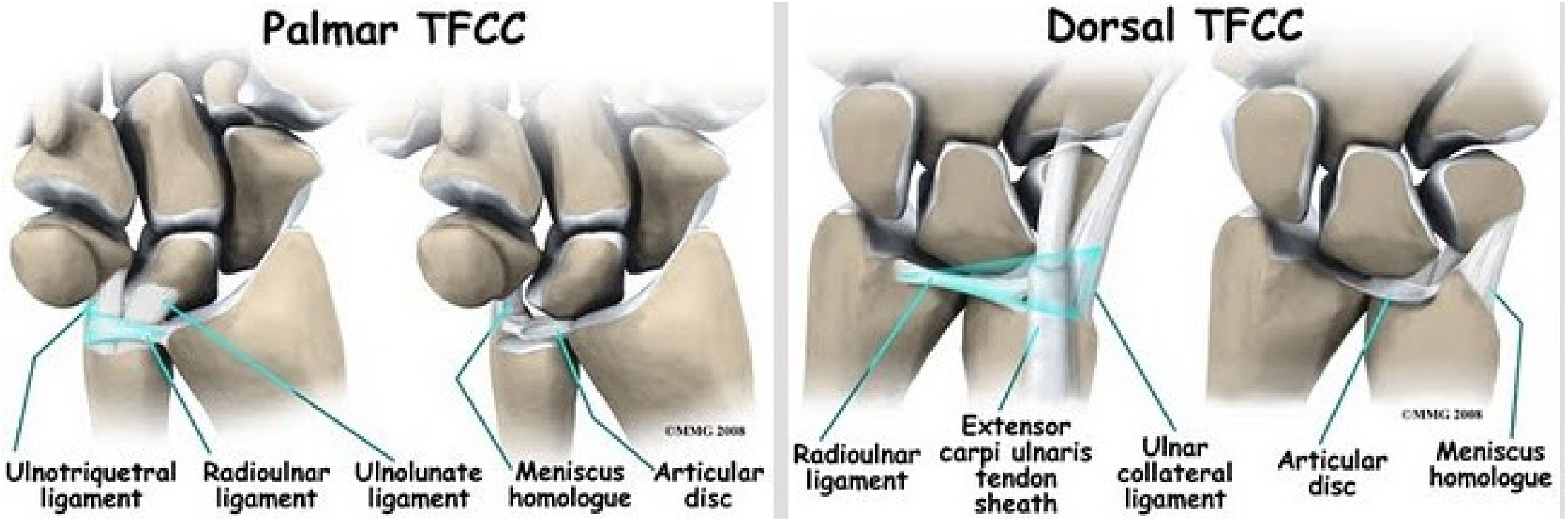
Triangular fibrocartilaginous complex (TFCC) tear

- List of differential diagnosis :

1. Ulnocarpal abutment syndrome
2. Ulnar styloid impaction syndrome
3. ECU tendonitis
4. Hook of hamate fracture
5. Ulnar tunnel syndrome
6. Pisotriquetral arthritis

- Our case discussion will be regarding TFCC injury

- What does TFCC stands for & what are the components of this complex ?


Palmar TFCC
Ulnotriquetral ligament
Radioulnar ligament
Ulnolunate ligament
Meniscus homologue
Articular disc
©MMG 2008
Dorsal TFCC
Radioulnar ligament
Extensor carpi ulnaris tendon sheath
Ulnar collateral ligament
Articular disc
Meniscus homologue
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- TFCC : (Triangular fibrocartilaginous complex) made up of

1. Dorsal and volar radioulnar ligaments

A. deep lig, known as ligamentum subcruentum, attach to the ulnar fovea

B. superficial fibers attach to the ulnar styloid

2. Central articular disc
3. Meniscus homolog
4. Ulnar collateral ligament
5. ECU subsheath
6. Origin of ulnolunate and ulnotriquetral ligaments

- Describe the mechanisms of TFCC injury ?

- Type 1 traumatic injury

1. most common is fall on extended wrist with forearm pronation
2. traction injury to ulnar side of wrist

- Type 2 degenerative injury
- associated with positive ulnar variance
- associated with ulnocarpal impaction

- How to classify each type of them ?

Class 1 - Traumatic TFCC Injuries	
1A	Central perforation or tear
1B	Ulnar avulsion (without ulnar styloid fx)
1C	Distal avulsion (origin of UL and UT ligaments)
1D	Radial avulsion

Class 2 - Degenerative TFCC Injuries	
2A	TFCC wear and thinning
2B	2A + Lunate and/or ulnar chondromalacia
2C	2B + TFCC perforation
2D	2C + Ligament disruption
2E	2D + Ulnocarpal and DRUJ arthritis

- How to approach this case of wrist pain ?

- By :

1. History
2. Physical examination
3. Radiological work up

History

- Pt C/O wrist pain
- painful turning a door key

Physical examination

1. positive "fovea" sign

(95% sensitivity and 87% specificity for foveal disruptions of TFCC or ulnotriquetral ligament injuries)

2. pain elicited with ulnar deviation (TFCC compression) or radial deviation (TFCC tension)

- Describe fovea sign ?

- Tenderness in the soft spot between the ulnar styloid and flexor carpi ulnaris tendon, between the volar surface of the ulnar head and the pisiform

Radiological work up

1. Radiographs

usually negative

zero rotation PA view evaluates ulnar variance

dynamic pronated PA grip view may show pathology

2. Arthography

joint injection shows extravasation

3. MRI

has largely replaced arthrography

tear at ulnar part of lunate indicates ulnocarpal impaction

sensitivity = 74-100%

- How to manage this condition ?

Nonoperative

Immobilization, NSAIDS, steroid injections

- indications

1. all acute Type I injuries
2. first line of treatment for Type 2 injuries

Operative

1. Arthroscopic debridement
2. Arthroscopic repair
3. Ulnar diaphyseal shortening
4. Wafer procedure
5. Limited ulnar head resection
6. Darrach procedure

1. Arthroscopic debridement

- Indicated in type 1A

2.Arthroscopic repair

- Indicated in acute, athletic injuries type 1B, 1C, 1D

3.Ulnar diaphyseal shortening

- osteotomy of the diaphysis or metaphysis followed by plate fixation

- Indicated in Type II with ulnar positive variance is > 2mm

4. Wafer procedure

- Indicated in :

1. Type II with ulnar positive variance is < 2mm
2. type 2A-C

5. Limited ulnar head resection

- removal of approximately 2-4 mm of bone under the TFCC
- distal ulnar burred through central TFCC defect
- Indicated in:
- type 2D