

ИМПИНДЖМЕНТ-СИНДРОМЫ: ВЕРХНЯЯ КОНЕЧНОСТЬ

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IMPINGEMENT SYNDROMES: UPPER EXTREMITY

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SHOULDER

Impingement Syndrome: Types

- **Primary Extrinsic (Neer Hypothesis of Mechanical Impingement)**
 - Abnormalities in coracoacromial arch or AC joint (osteophytes >5mm).
 - Decreased coracohumeral space (Subcoracoid imping.)
- **Secondary Extrinsic:** To rotator cuff dysfunction or scapulothoracic instability
- **Internal:** Articular surface side (Posterosuperior, anterosuperior or anterior imping. syndromes)

ELBOW

- **Posteromedial impingement:**
Valgus Extension Overload and UCL insufficiency
- **Posterolateral impingement:**
Plyca Syndrome

WRIST

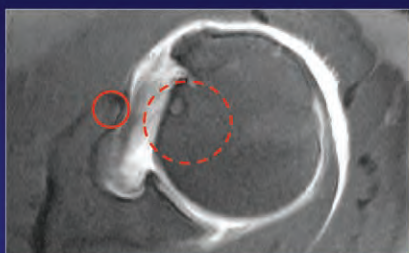
- **Ulnar-Sided Wrist impaction Syndromes**
 - 1.- Ulnar impaction syndrome
 - 2.- Ulnar impingement syndrome
 - 3.- Ulnar styloid impaction syndrome
 - 4.- Hamatolunate impaction syndrome
 - 5.- Combined ulnar and ulnar styloid impaction syndrome

Subcoracoid Impingement

Impingement of the coracoid process against the humerus (usually the lesser tuberosity) in a coracoid impingement position (humerus is flexed, adducted and internally rotated).

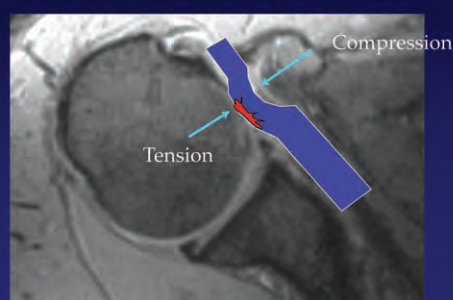
“Roller-Wringer Effect”

“Bowstringing” of the Subscapularis across a prominent coracoid process



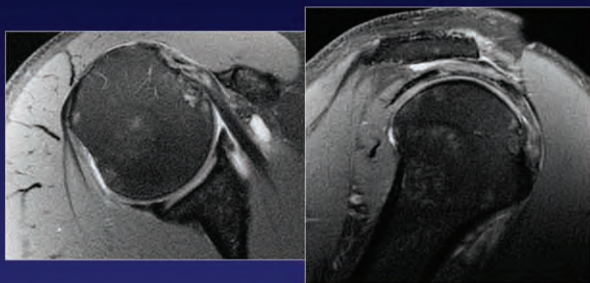
Lo and Burkhart, Arthroscopy, 19;2003:1142-1150.

TUFF's (Tensile under –surface fiber failure) lesion



Lo and Burkhart, Arthroscopy, 19;2003:1142-1150.

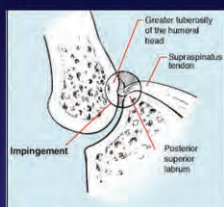
Partial tear SST



Internal (Posterosuperior) impingement: Overhead Athletes

Cardinal lesions:

- Articular sided rotator cuff tears
- Posterosuperior labral lesions
- GIRD
- "SICK Scapula " Syndrome
- Posterior humeral head lesions
- Posterior bony glenoid injury
- Bankart and IGHL lesions (rarely)



Internal impingement

Walch et al, 1993

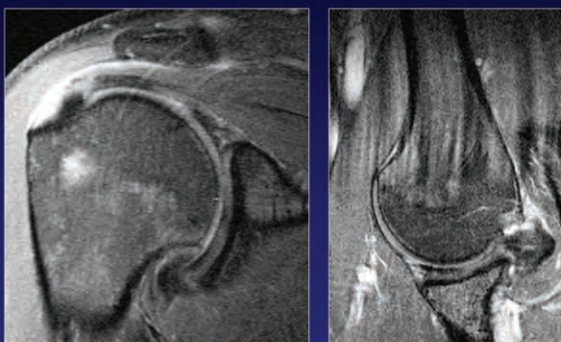
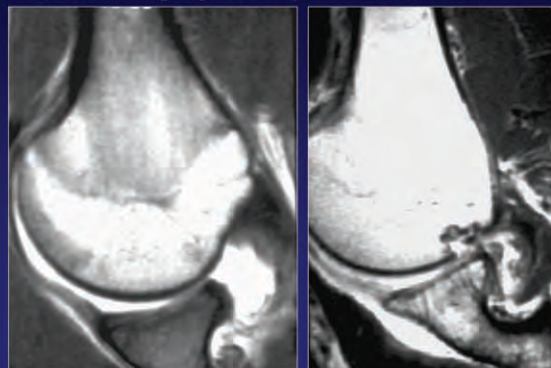
30 athletes assessed for shoulder pain, 16 throwing athletes underwent arthroscopic examination (isolated posterior SLAP tears, articular surface RC tears)

- Complex and dependant of multiple factors
- Directly observed via arthroscopy
- Impingement of the posterior aspect of the humeral head on the posterosuperior glenoid rim
- Area of impingement corresponded exactly with the location of lesions in the RC and labrum (arm in abduction and external rotation)

Posterosuperior impingement

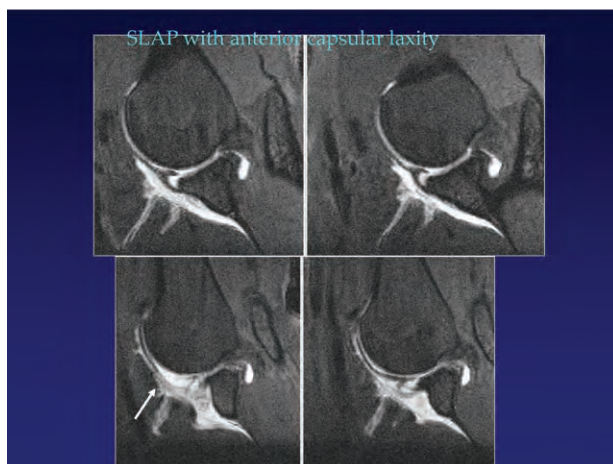
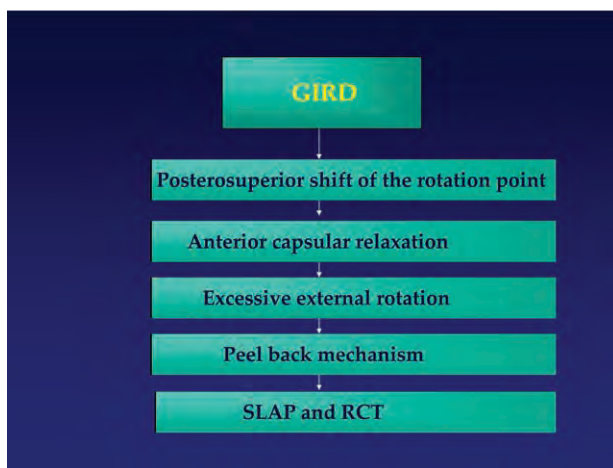
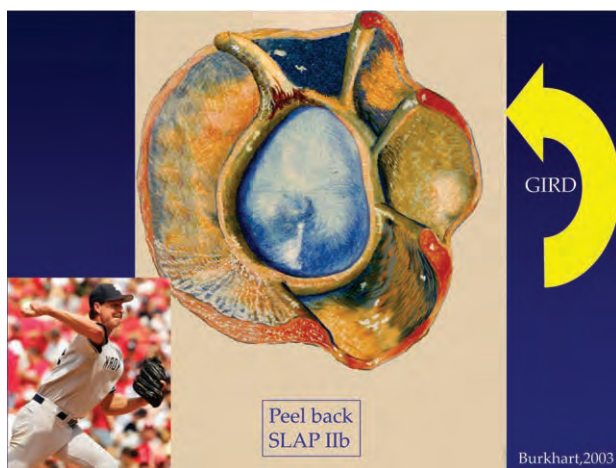
- SST entrapped between humeral head and posterosuperior labrum
- Articular sided partial thickness tears
- Posterosuperior or posterior labral tears (SLAP)

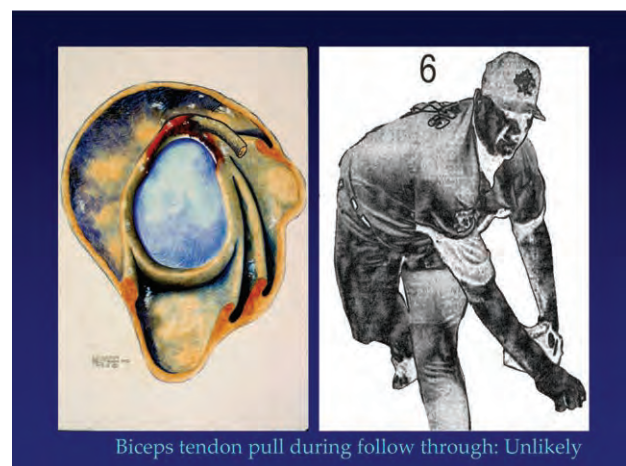
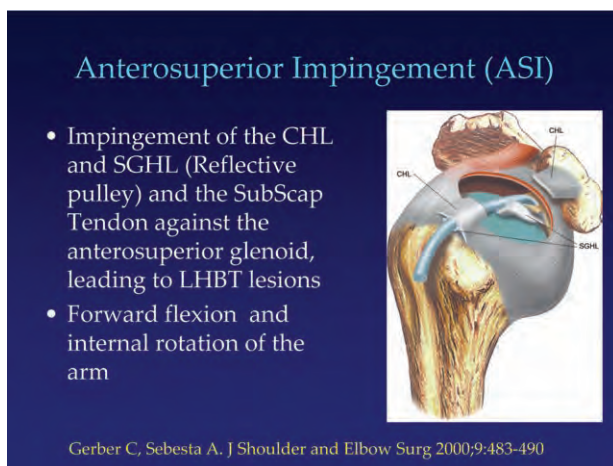
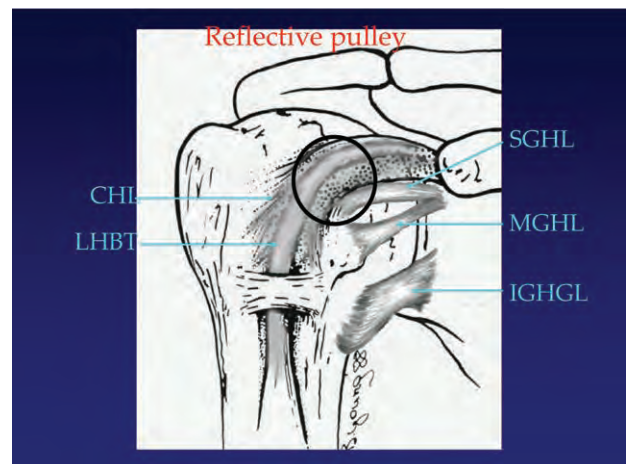
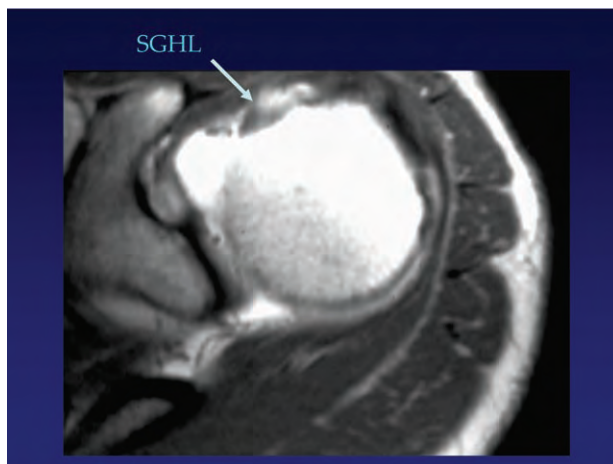
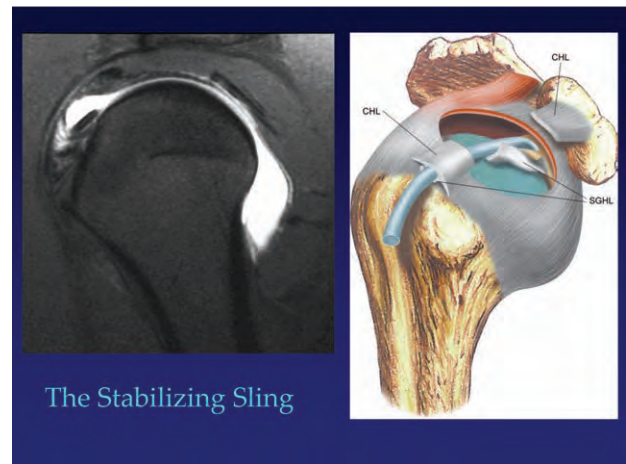
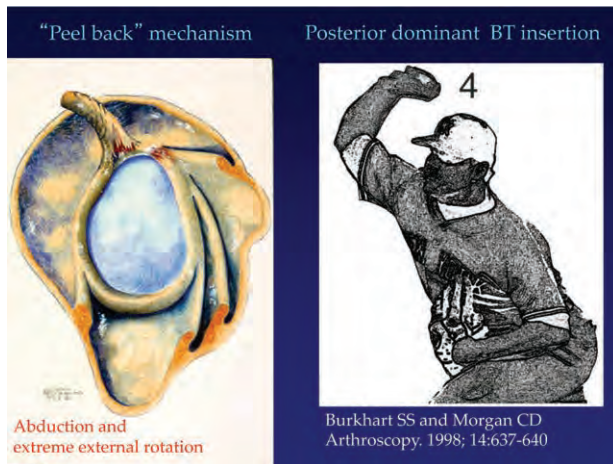
Posterosuperior Impingement Syndrome (Internal Impingement Syndrome) (Walch)



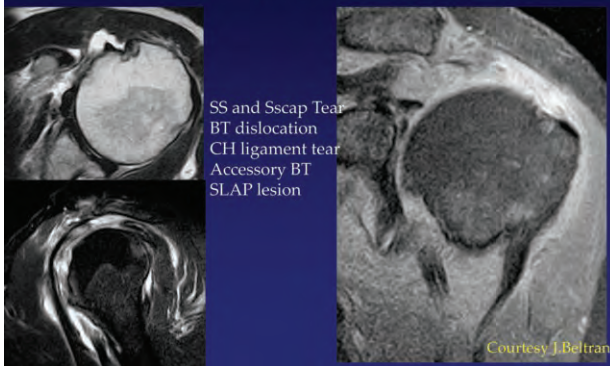
Glenohumeral Internal Rotation Deficit (GIRD)

- Fibrosis of the posterior capsule in throwers leading to internal rotation deficit.
- Tennis, Baseball, Javelin throwers.
 - Baltacci et al. J Sports Med Phys Fitness 2001;41:236-42
 - Ellenbecker et al. J Orthop Sports Phys Ther 1996;24:336-41
 - Tyler et al. Am J Sports Med 2000;28:668-73
 - Schmidt-Wiethoff et al. In J Sports Med 2004;25:154-8





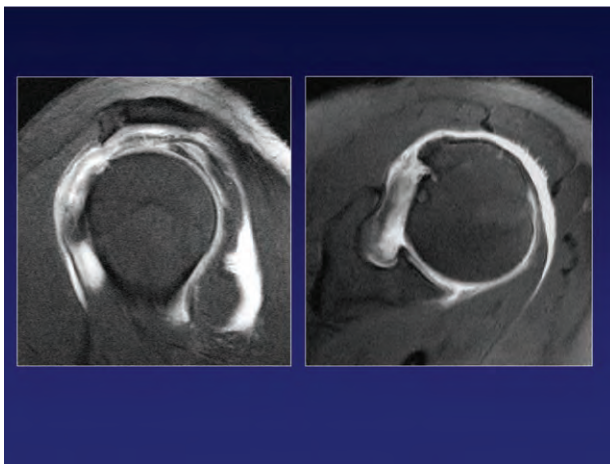
Habermayer type 4 lesion



Anterosuperior Impingement (ASI) MR Arthrography Features

Weishaupt et al Invest Radiol 1999;34:463-9

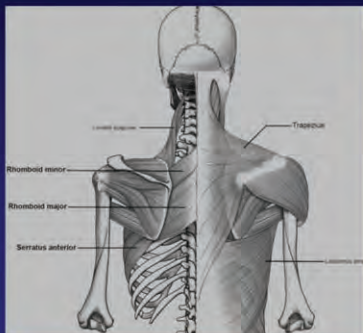
- Abnormalities superior border SScap T.
- Extrarticular contrast collection
- LHBT subluxation
- SGHL and CHL not seen
- 14 patients surgically proven ASI



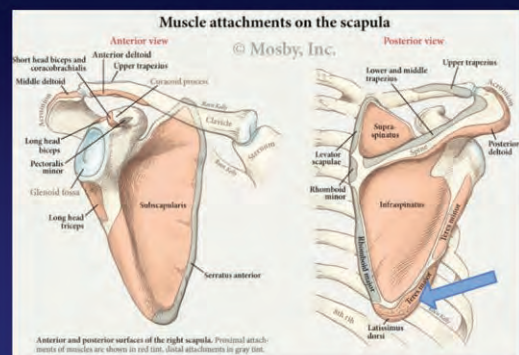
Scapulothoracic Coordination

- Synchronization with:
 - Latissimus dorsi
 - Pectoralis major
 - Serratus anterior
- 2:1 glenohumeral/scapulothoracic motion during abduction

Scapular stabilizers



Trapezius
Serratus anterior
Rhomboid
Levator scapulae
Latissimus dorsi



"Sick" Scapula

- Scapular malposition
- Alteration of the normal motion
- Repetitive overhead activity, overuse
- Injury of other structures of the shoulder
- Direct trauma
- Muscle strain

Most common in baseball pitchers and swimmers



Scapular Dyskinesis: Associated injuries

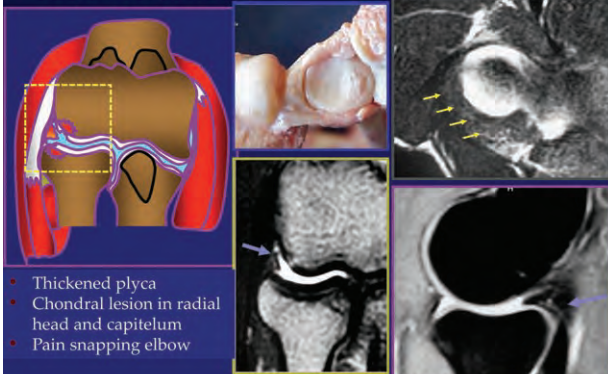
- glenohumeral instability
- rotator cuff pathology
- labral tears



ELBOW

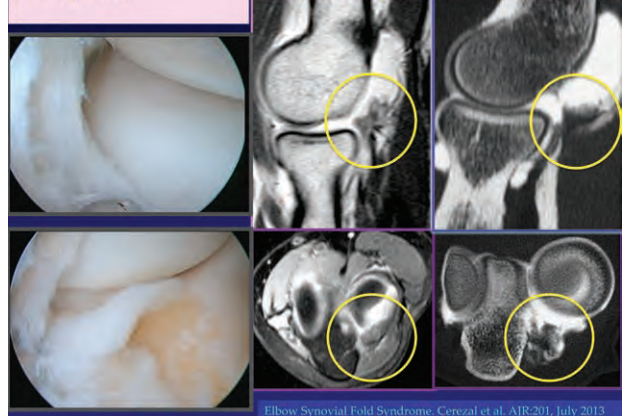
- **Posteromedial impingement:**
Valgus Extension Overload and UCL insufficiency
- **Posterolateral impingement:**
Plyca Syndrome

POSTEROLATERAL ELBOW IMPINGEMENT PLYCA SYNDROME



Ligaments and Plicae of the Elbow: Normal MR Imaging Variability in 60 Asymptomatic Subjects. Daniela B. Husarik MD, and cols. Radiology October 1, 2010; 257:1185-1194

POSTEROLATERAL IMPINGEMENT



Valgus Extension Overload Syndrome (VEOS)

- Partial or complete UCL tear (AOL) (mid substance lesion)
- Capitellar contusion, OCD
- Physeal injury in children
- Common flexor, pronator tendinosis, tear
- Ulnar nerve traction injury
- Posteromedial impingement (osteophytes)
- Loose bodies



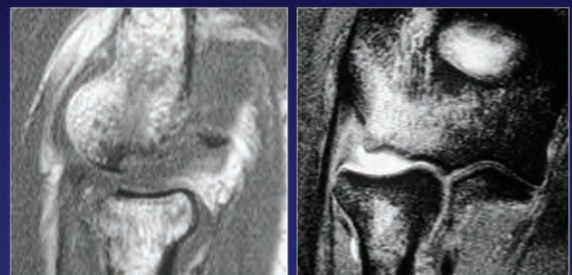
Valgus stress

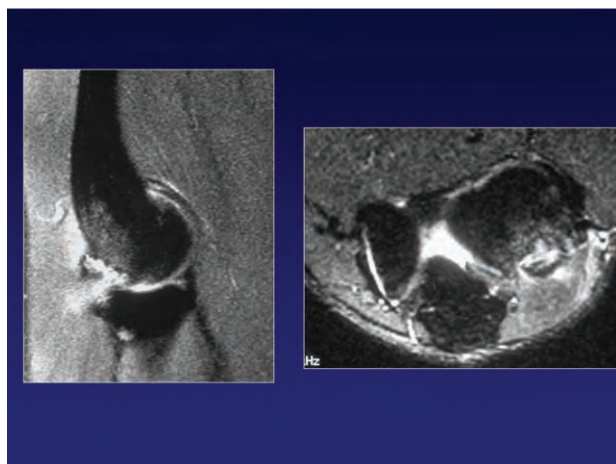
Lateral compression overload

- OCD capitellum or radial head
- Degenerative arthritis
- Loose body formation



Osteochondral Fx capitellum





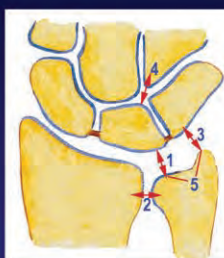
Ulnar sided wrist impaction syndromes

Degenerative condition of the ulnar side of the wrist related to excessive load bearing across the ulnar carpus, TFC complex, ulnar head and surrounding soft tissues resulting in bone and soft tissue lesions



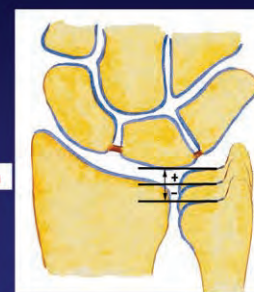
Clasification

1. Ulnar impaction syndrome (positive ulnar variance)
2. Ulnar impingement syndrome (short ulna)
3. Ulnar styloid impaction syndrome (nonunion of ulnar styloid)
4. Hamatolunate impaction syndrome
5. Combined Impaction.



Cerezal L, del Piñal F, Abascal F, García-Valtuille R, Pereda T, Canga A. Imaging findings in ulnar-sided wrist impaction syndromes. Radiographics 2002; 22: 105-121.

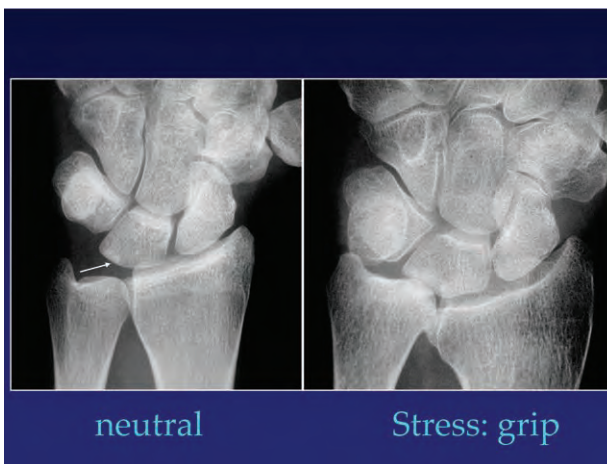
Ulnar variance: relative lengths of the distal articular surfaces of the radius and ulna



Maximum pronation: Increase in positive ulnar variance
Maximum supination: Decreases ulnar variance

Dynamic impaction

Forearm pronation with firm grip : increase in ulnar variance



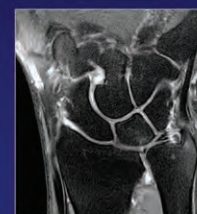
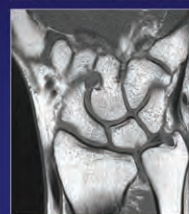
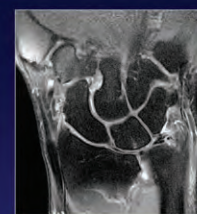
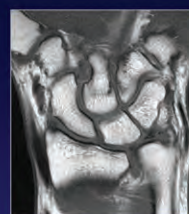
Ulnar impaction syndrome

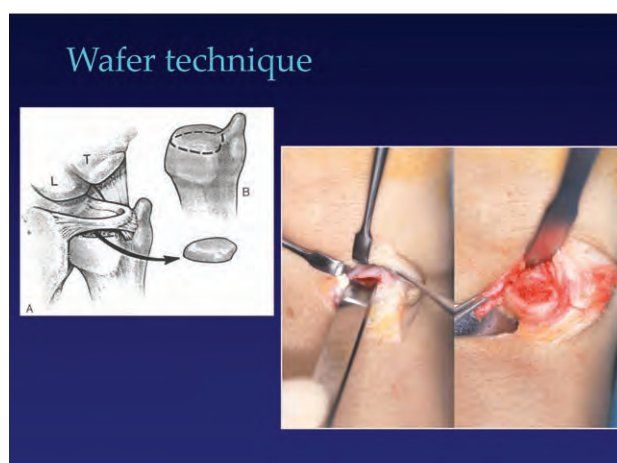
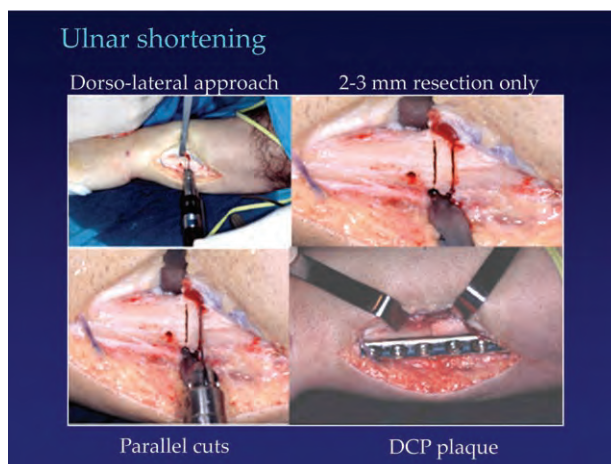
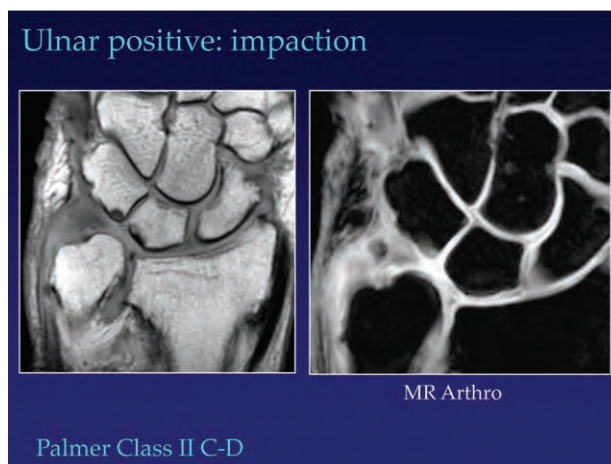
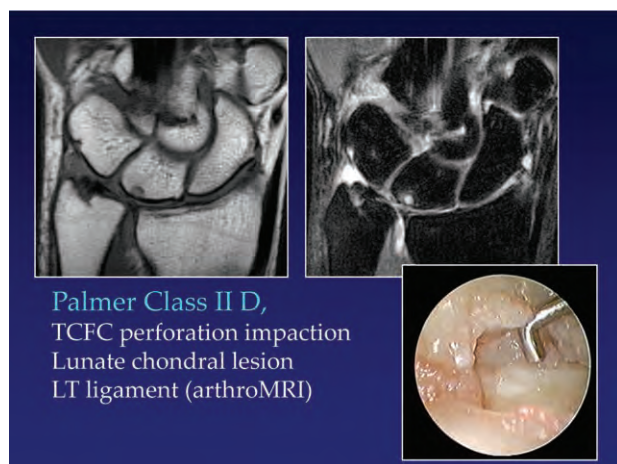
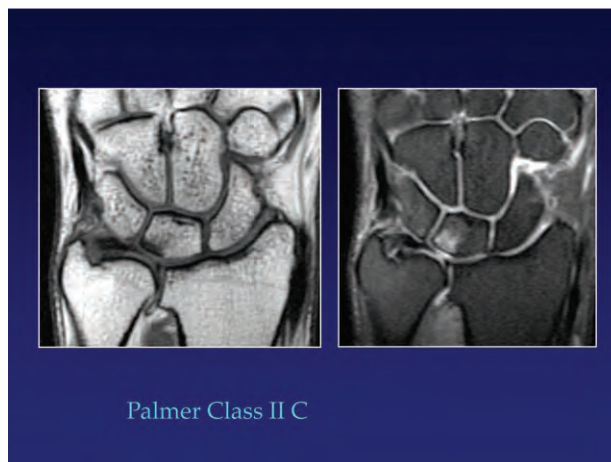
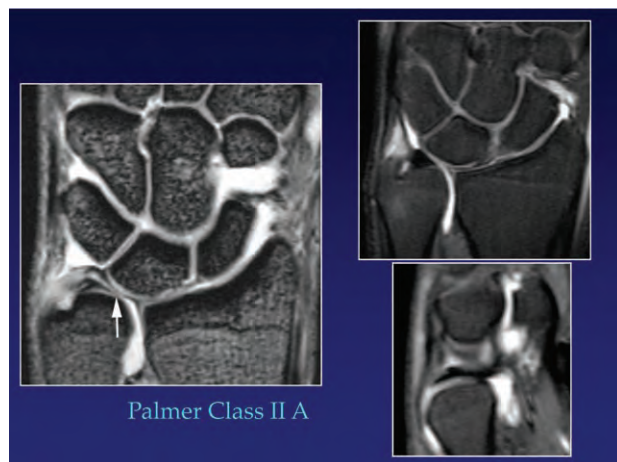
Degenerative condition characterized by ulnar wrist pain, swelling and limited motion related to excessive load bearing across the ulnar aspect of the wrist

Degenerative Class II

- II A
- II B Chondromalacia
- II C Perforation TFC
- II D Perforation luno-triquetral ligament
- II E Arthrosis

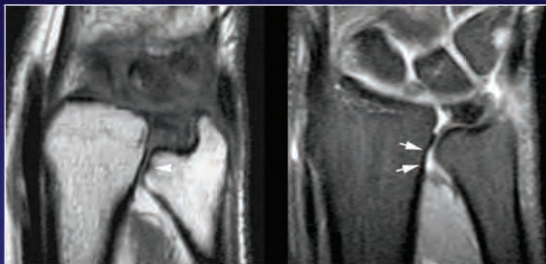
A, B OPEN SURGERY
C, D ARTHROSCOPY





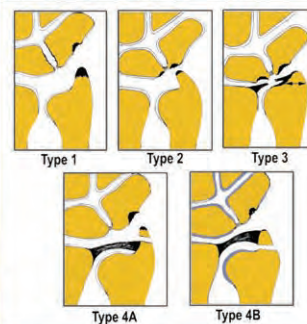
Ulnar impingement syndrome

Negative ulnar variance



Caused by a shortened distal ulna that impinges on the distal radius proximal to the sigmoid notch

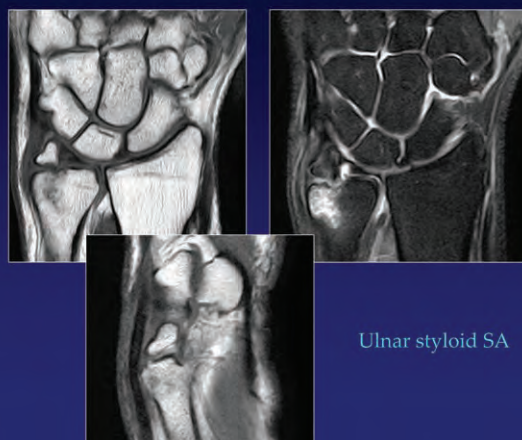
Ulnar styloid impaction syndrome



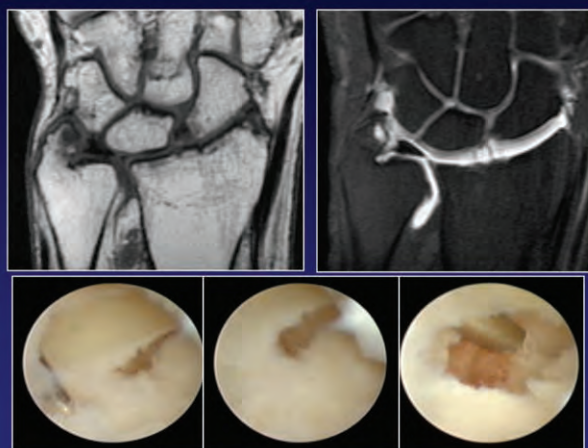
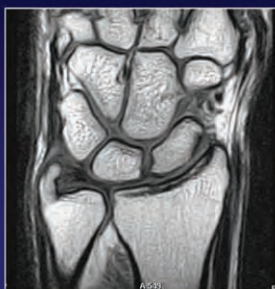
Cerezal L, del Piñal F, Abascal F. MR imaging findings in ulnar-sided wrist impaction syndromes. Magn Reson Imaging Clin N Am 2004;12:281-299.

Symptomatic nonunion of the ulnar styloid:

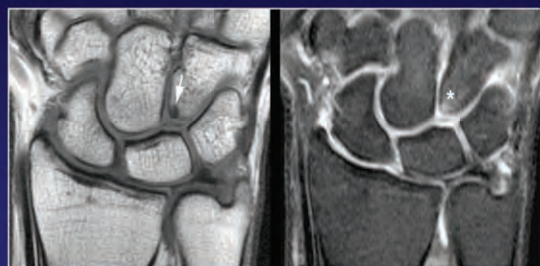
Nonunited fragment acts as an irritative loose body
Malaligned fibrous nonunion impinges ECU tendon
Associated TFC complex perforation
Complete rupture of the ulnar attachments of the TFC



Ulnar styloid SA



HAMATOLUNATE IMPACTION SYNDROME



Type II lunate

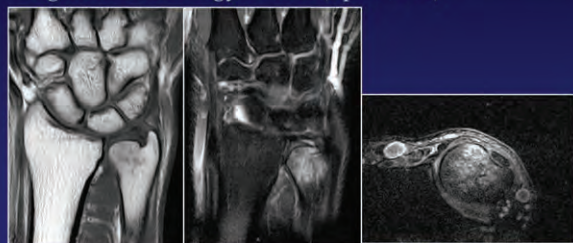
Chondromalacia of the proximal pole of the hamate

Combined impaction syndrome

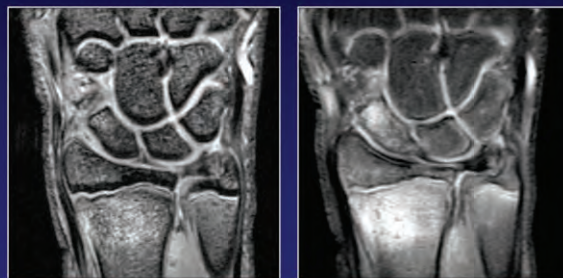


DORSAL IMPINGEMENT SYNDROMES

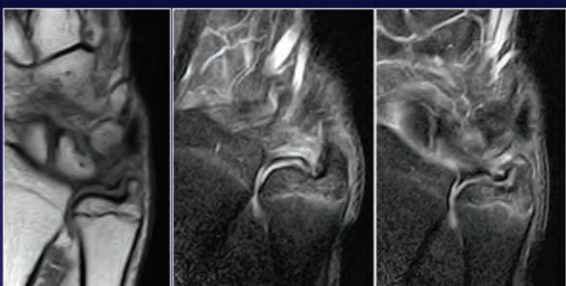
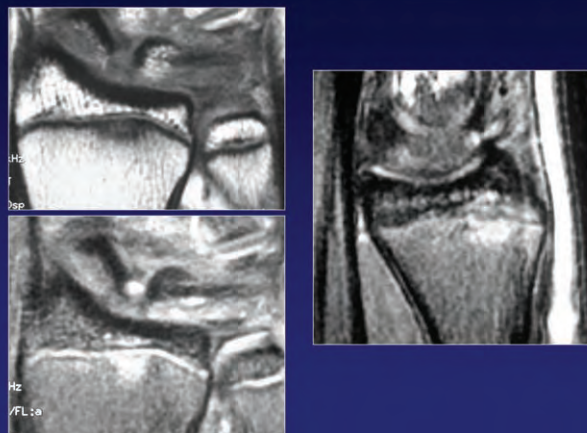
Repetitive dorsiflexion accompanied by axial loading.
High incidence in gymnasts (up to 50%)



Stress fx

GIMNAST'S WRIST

Growth plate arrest with shorten of radius leads to
ulnar impaction syndrome

**Gymnast's wrist injury includes:**

Distal radius and ulna stress fx
AVN of the capitate
Scaphoid stress fx
Dorsal impingement

Summary

- MRI is an excellent modality for visualizing the full spectrum of impingement syndromes
- Biomechanical approach is necessary in sport related injuries to the upper extremity joints
- Differential diagnosis in patients with ulnar wrist pain and limited motion is extensive

Подписные индексы:

Агентство «Роспечать» **57991**

Объединенный каталог «Пресса России» **42177**