



15yo high school lacrosse player with  
mid-dorsal wrist pain for 2 years.  
Relieved by rest. Exacerbated by  
loadbearing and hyperextension.



AP





R 13K



L 1MK





# Ulnar Abutment Syndrome aka Ulnar Impaction Syndrome

A spectrum of degenerative conditions arising from chronic impaction of the ulnar head, TFCC, and ulnar carpus.

# Ulnar Abutment Syndrome

## Clinical Features

- Ulnar-sided wrist pain
- Swelling
- Limited ROM
- Exacerbated by activity, especially positions that increase axial loading to the ulnar aspect of the wrist (grip, pronation, ulnar wrist deviation)

*Caution: Long ddx for ulnar-sided wrist pain (e.g. OA, fracture, dislocation, ligamentous injuries, AVN etc.)*

# Ulnar Abutment Syndrome

- Usually occurs in positive ulnar variance
- Predisposition
  - Congenital positive ulnar variance
  - Malunion of distal radius fracture
  - Premature physeal closure of the distal radius
  - H/o radial head resection
  - Unrecognized Essex-Lopresti leading to gross instability of DRUJ

# Ulnar Abutment Syndrome

## Radiographic Features

- Positive ulnar variance
- Subchondral sclerosis, cystic changes, later advanced degenerative changes in:
  - ulnar head
  - proximal ulnar aspect of the lunate
  - proximal radial aspect of the triquetrum

# Ulnar Abutment Syndrome

## MRI Features

- Cartilage fibrillation in the ulnar head and ulnar carpus
- Bone hyperemia
- Bone sclerosis
- TFCC tear
- Lunotriquetral ligament disruption

# Palmer Classification of TFCC Abnormalities

Class 1: Traumatic	Class 2 Degenerative (Ulnocarpal abutment syndrome)
A: Central perforation	A: TFCC wear
B: Ulnar avulsion	B: A + Lunate and/or ulnar chondromalacia
With distal ulnar fracture	C: TFCC perforation
Without	+ Lunate and/or ulnar chondromalacia
C: Distal avulsion	D: C + LT ligament perforation
D: Radial avulsion	E: D + Ulnocarpal arthritis
Without sigmoid notch fracture	
Without	

# Ulnar Abutment Syndrome

## Proper PA Radiograph of the Wrist



Wrist in neutral forearm rotation

Elbow flexed 90°

Shoulder abducted 90°

Elbow at shoulder height

Smooth carpal arcs x3

ECU groove projects radial to base of ulnar styloid.



# Ulnar Abutment Syndrome

## Pronated Grip View



<http://juniperpublishers.com/oroaj/pdf/OROAJ.MS.ID.555593.pdf>

In asymptomatic individuals, ulnar variance increases an average of **1.95 mm** in pronated grip view.

Similar numbers in symptomatic individuals.

# Ulnar Abutment Syndrome

## Ulnar Variance – General Concepts

- Maximum positive ulnar variance occurs in  
Forearm pronation + Grip
- In the native forearm, Radius : Ulna share approximately  
80:20 axial loading
- Increased ulna loading in wrist pronation, flexion, and ulnar  
deviation (*Ekenstam Acta Orthop Scand 1984*)
- Weak correlation between positive ulnar variance and increased  
ulnar force transmission in surgery-naive forearms. However,  
surgical radius-shortening or ulnar-lengthening does lead to  
statistically significant increase in ulnar loading. (*Werner J Hand Surg Am  
1992*)
- Inverse relationship between ulnar variance and TFCC thickness.  
(*Palmer J Hand Surg Am 1984*)
- ... ..

Intricate, dynamic force distribution in the distal forearm at different positions of rotation of the radius around the ulna, with dynamic changes in TFCC morphology, and other anatomic considerations.

Ulnar variance is only one player.

# Ulnar Abutment Syndrome

## Ulnar Variance - Clinical Application

- Positive ulnar variance is associated with poorer outcome following TFCC debridement alone. (Minami *J Hand Surg* 1996)
- In patients with persistent ulnar wrist pain following TFCC debridement and no significant ulnar variance, second-stage ulnar shortening has been shown to be effective. (Hulsizer *J Hand Surg Am* 1997)
- Ulnar shortening osteotomy alone has been shown to be efficacious in treatment of TFCC tears associated with positive ulnar variance (Minami *J Hand Surg* 1998)

Recommendation: Obtain both neutral forearm rotation and pronated grip for treatment planning of causes of ulnar-sided wrist pain that may be affected by ulnar variance.

# References

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