

**COMMON ELBOW INJURIES**

**In The Athlete**

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Professor of Orthopedics  
UTHSCSA



Professor of Orthopedics  
Mayo Clinic

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**COMMON SPORTS INJURIES of the ELBOW**

**Disclosure**

**Potential conflicts**

- Zimmer – royalties, consultant
- Sbi – royalties
- Tenex – Medical director

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**COMMON SPORTS INJURIES of the ELBOW**

**OUTLINE**

- Muscles/tendons
- Ligaments
- Articulation

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**COMMON SPORTS INJURIES of the ELBOW**

**QUESTIONS**

- Diagnosis – how hard is it
- Does it have to be fixed
- Does technique matter
- How long to protect/ rehab
- If fixed, what can pt expect

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**COMMON SPORTS INJURIES of the ELBOW**

**Muscles/Tendons**

- Biceps
- Triceps
- Epicondylitis

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## BICEPS TENDON INJURY

### Partial Tear

- **History - Presentation: acute/chronic**
  - Pain with repetitive rotation
- **Physical - Mild flexion weakness**
  - Moderate supination weakness
  - Crepitus may be present

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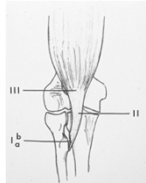
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## BICEPS TENDON INJURY

### Classification

- **Musculotendinous - Rare**
- **Intratendinous - Rare**
- **Detachment**
  - partial - Uncommon
  - complete



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## DISTAL BICEPS TENDON RUPTURE

### Diagnosis

- **Clinical**
  - Weakness
    - Supination



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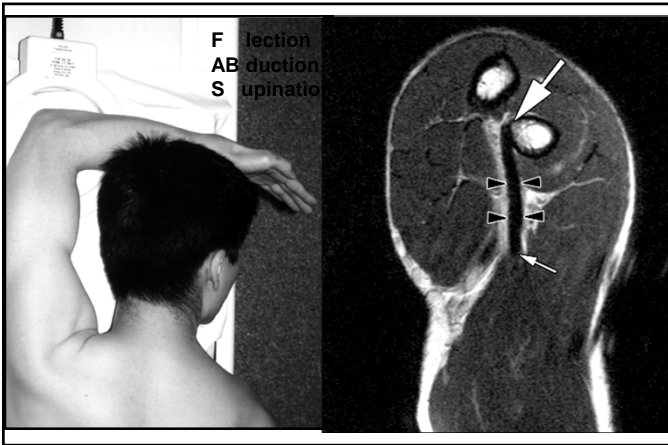
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**DISTAL BICEPS TENDON RUPTURE**

**QUESTIONS**

- Diagnosis – how hard is it
- Does it have to be fixed? No and Yes (Obama)
  - Lose ~ 10 -15% flexion strength
  - Lose > 50% supination strength

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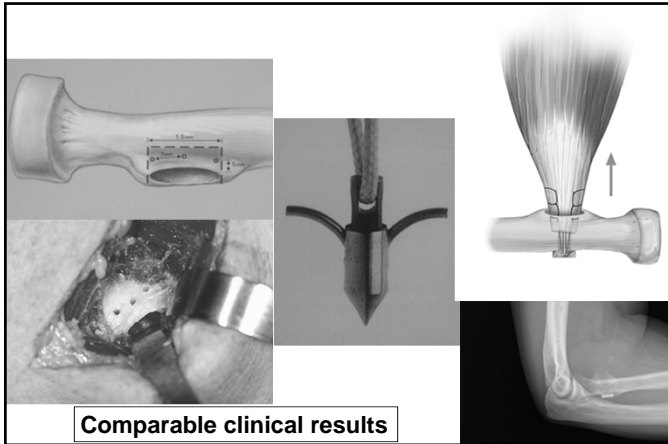
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Comparable clinical results

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**DISTAL BICEPS TENDON RUPTURE**

**QUESTIONS**

- Diagnosis – how hard is it
- Does it have to be fixed
- Does technique matter
- How long to protect/ rehab
  - Depends on security of repair
    - Immobilize: 3-4 days
    - Active assisted motion: 5-10 days
    - Against gravity: 10 -21 days
    - Progress to full activity 1-4 months

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**DISTAL BICEPS TENDON RUPTURE**

**QUESTIONS**

- Diagnosis – how hard is it
- Does it have to be fixed
- Does technique matter
- How long to protect/ rehab
- If fixed, what can pt expect
  - > 90% are >90% normal

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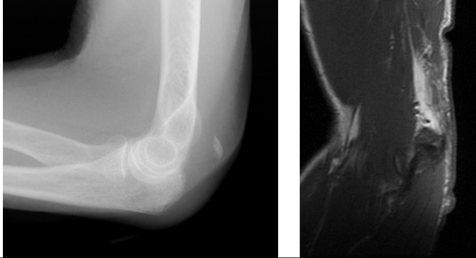
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## TRICEPS TENDON RUPTURE

### QUESTIONS

- Diagnosis – Central attachment: MRI



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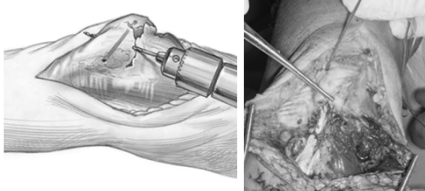
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## TRICEPS TENDON RUPTURE

### QUESTIONS

- Diagnosis – Central attachment: MRI
- Does it have to be fixed - Yes
- How should it be fixed – Bone tunnels



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## TRICEPS TENDON RUPTURE

### QUESTIONS

- Diagnosis – Central attachment: MRI
- Does it have to be fixed - Yes
- How should it be fixed – Bone tunnels
- How long is the rehab period - 1 year!!!
- What can pt expect - >90/90, if acute

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**COMMON SPORTS INJURIES of the ELBOW**

**Muscles/Tendons**

- Biceps
- Triceps
- Epicondylitis

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**Epicondylitis: Where are we, really?**

**QUESTIONS**

- What are the trends
- What works?
- Anything new?

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**Epicondylitis: Where are we, really?**

**Rx Trends**



Office or ASC



Less Invasive – Quick Recovery



Image Guidance - Ultrasound



Validated Effectiveness



Cost Effective



Safe

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## Epicondylitis: Where are we, really?

### Options

- **Physical therapy (or leave it alone)**
  - **Eccentric exercise** (Stanish, 1986)  
**The Gold standard**
- **Effective – multiple sites (achilles)**
- **Safe**
- **Prolonged**
- **Cost +/-**

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## Epicondylitis: Where are we, really?

### Options

- **Cortisone**  
**Lateral epicondylitis: RCT, 165 pt ; FU = 1yr**
    - **Eccentric exercises**
- VS**
- **Steroid injection**
- At one year the cortisone group statistically inferior**

Coombes, et al JAMA, 2013

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## Epicondylitis: Where are we, really?

### Platelet Rich Plasma (PRP)

- **Current Concepts in Sports Med**  
**Popularity based on safety and attractiveness**  
**Not on the scientific evidence of effectiveness**



Hall, et et; JAAOS, 2010

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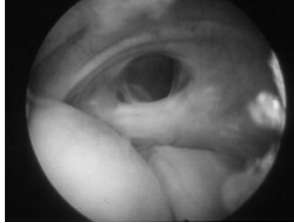
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## Epicondylitis: Where are we, really?

### Arthroscopy

- Effective: 80 – 90%
  - Added value?
  - Cost effective?



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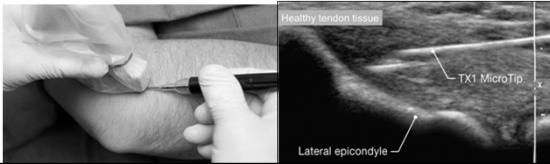
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## Epicondylitis: Where are we, really?

### Tx1

- Technique
  - Can be in office
  - Local anesthetic
  - Approx 40 – 60 sec of energy



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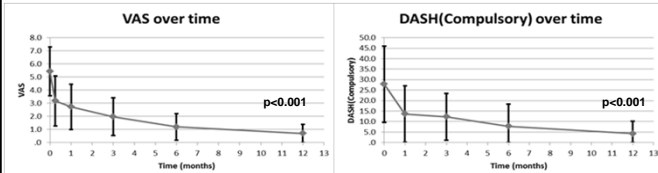
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## Epicondylitis: Where are we, really?

### Effectiveness

Koh, et al; AMJS, March, 2013



95% (19/20) patients satisfied  
No device-related complications  
No patient-related complications

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## Epicondylitis: Where are we, really?

### Tx1

- Results – cost effectiveness ?
  - Worker's compensation analysis
- Tx1 vs Surgery
  - Earlier return to work
  - Less expensive than surgery
  - Saving for definitive surgery ~ \$16,000

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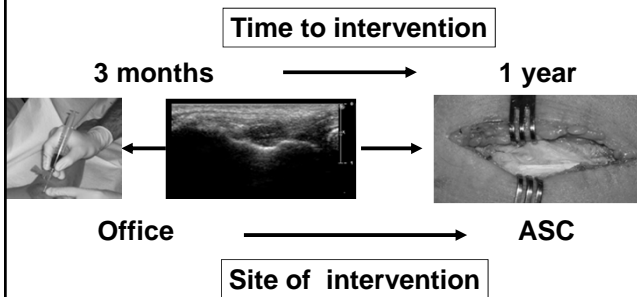
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## Epicondylitis: Where are we, really?



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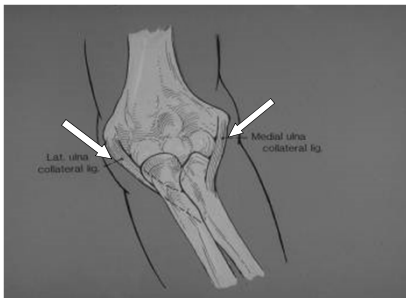
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## COMMON SPORTS INJURIES of the ELBOW

### Ligaments

- MCL
- LCL



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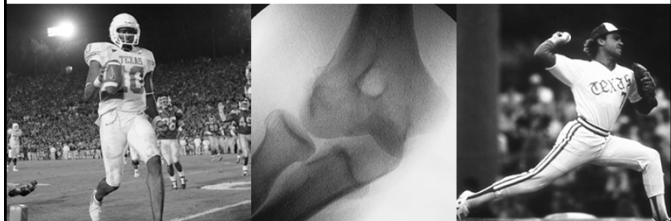
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## MCL Deficiency at the Elbow

### QUESTIONS

- Etiology? Spectrum
  - Single event; trauma
  - Repetitive; throwing



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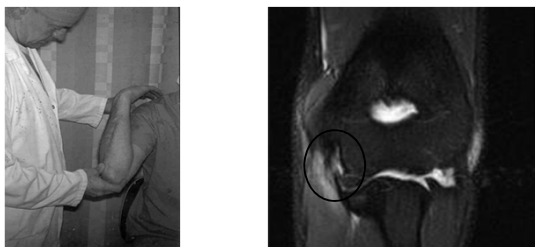
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## MCL Deficiency at the Elbow

### QUESTIONS

- Diagnosis – how hard is it



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## MCL Deficiency at the Elbow

### QUESTIONS

- Does it have to be fixed
  - Only one study
  - 45% heal without surgery

Rettig, A; Am J Sp M: 2001

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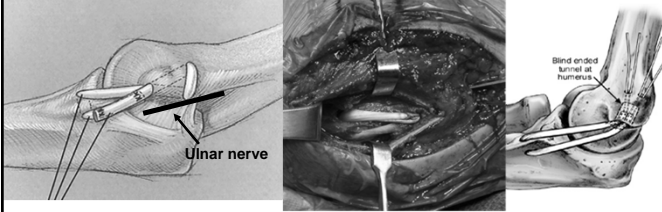
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## MCL Deficiency at the Elbow

**Technique: MUCL**

Docking concept preferred



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## MCL Deficiency at the Elbow

### QUESTIONS

- When to operate
- How to fix it
- Has the rehabilitation program changed?
  - No, still 12 months (10 -12)
- Expected outcome
  - Athlete: 70%
  - Non – athlete: 90%

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## COMMON SPORTS INJURIES of the ELBOW

### Articular

- Plica
- Osteophyte
- Articular - OCD

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**COMMON SPORTS INJURIES of the ELBOW**

**Plica**

- Snapping easy
  - Rolls over the head in flexion (60 deg)
  - Snaps back when going into extension

**BUT**

- May mimic epicondylitis !!!

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**COMMON SPORTS INJURIES of the ELBOW**

**Plica**



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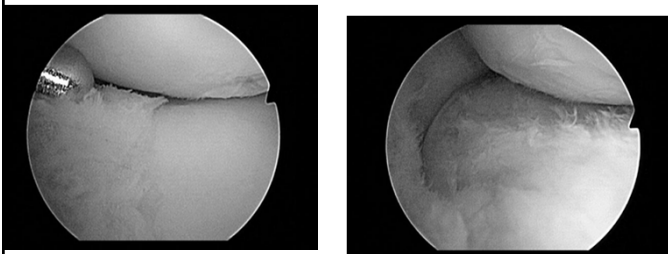
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**COMMON SPORTS INJURIES of the ELBOW**

**Plica**



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**COMMON SPORTS INJURIES of the ELBOW**

**Articular**

- Plica
- Osteophyte - impingement

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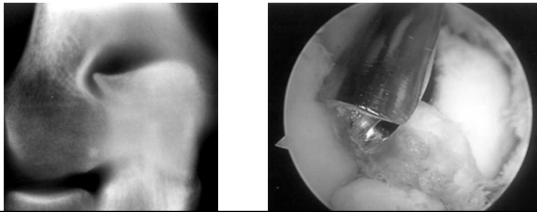
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**COMMON SPORTS INJURIES of the ELBOW**

**Impingement**

- Symptoms – extension pain
- How much should be removed



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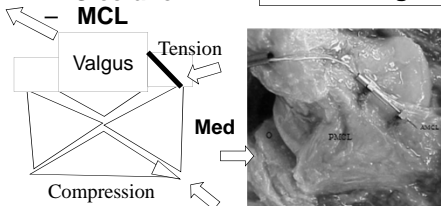
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**COMMON SPORTS INJURIES of the ELBOW**

**Rationale**

- Valgus
  - Olecranon
  - MCL

Sensitivity  
**3 mm** resection med corner  
increases lig strain!!



Kamineni, ELAttrache et al:  
JBJS, Am, 2005

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**COMMON SPORTS INJURIES of the ELBOW**

**Articular**

- Plica
- Osteophyte
- Articular - OCD

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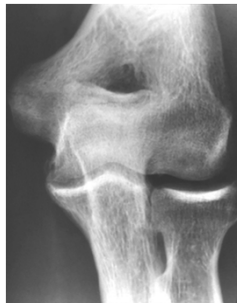
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**Osteochondritis of the Elbow**

**QUESTIONS**

- When to treat
- How to treat
- When can pt return to sport



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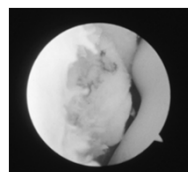
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**Osteochondritis of the Elbow**

**How to Rx**

- Intact cartilage – drill
- Flap – sew back down
- Detached – graft/ micro fx



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## Osteochondritis of the Elbow

### QUESTIONS

- When to treat
- How to treat
- When can pt return to sport
  - When healed
  - When asymptomatic with progressive sports related activity

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## Osteochondritis of the Elbow

### Beware!

- Do NOT allow mechanical Sx to persist



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## Radial Head Fracture in the Athlete

- This is an unexplored question with an unknown answer



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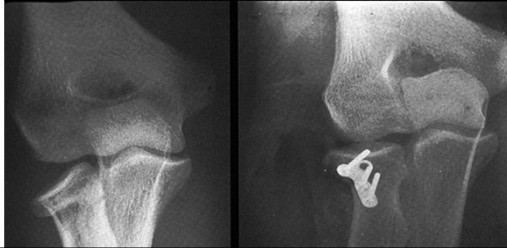
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### Radial Head Fracture in the Athlete

- What to do –  
Fix if you can



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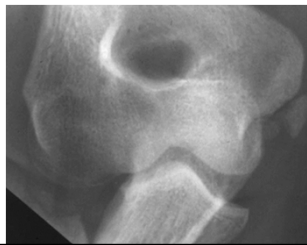
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### Radial Head Fracture in the Athlete

- What not to do?  
Excise if MCL deficient



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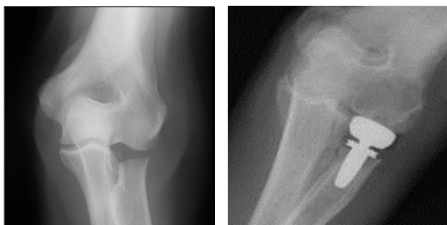
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### Radial Head Fracture in the Athlete

- What not sure of?  
If cant fix, excise or replace



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## Fracture of the Radial Head

Resection

Author	Yr	No	FU/yr	Sat/%	Comment
Morrey	1976	34	20	88	all Type III
Wallenbeck	1997	27	17	81	III,IV- poorer
Janssen	1998	20	23	95	all Type III
Sanchez-Sotelo	2000	10	5	90	all type IV

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## Fracture of the Radial Head

Resection

- Madrid Study – 26 pt < 40 y/o
    - Mason II - 6
    - III – 20
- F/U 25 yr ( 15 – 35)  
Pain: o, mild – 23/26  
Satisfactory – 91%



Antuna et al , JBJS, 2010

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## Radial Head Fracture in the Athlete

- Little direction from the literature when stratified by age and activity



**Under investigation**

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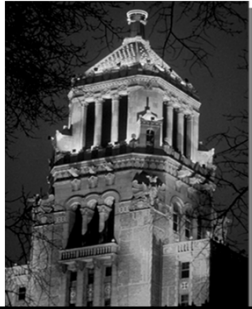
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## COMMON SPORTS INJURIES of the ELBOW

### Summary

- Spectrum of pathology
- Reliable rx options
- Know when to refer
- Know what to refer
- Know to whom to refer



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**COMMON SPORTS INJURIES of the ELBOW**  
**Injuries to the Throwing Athlete**

**Summary**

- Spectrum of pathology
- Reliable rx options
- Requires expertise



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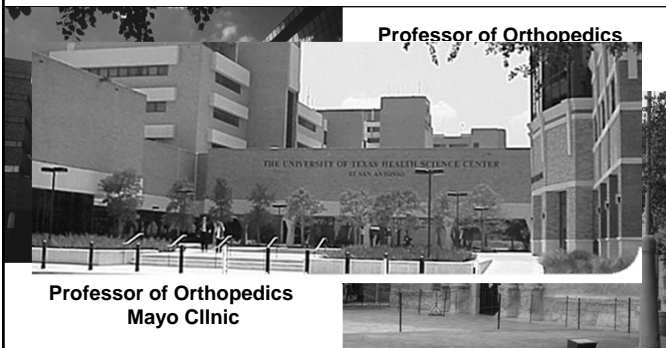
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**COMMON ELBOW INJURIES**  
**In The Athlete**  
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Professor of Orthopedics



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Mayo Clinic

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## ARTHROSCOPY of the ELBOW Osteochondritis Dissecans

### SUMMARY



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### Collateral Ligaments and Elbow Instability

#### Considerations

- Repair vs reconstruction:  
If tissue adequate – repair  
Use #5 non-absorbable suture

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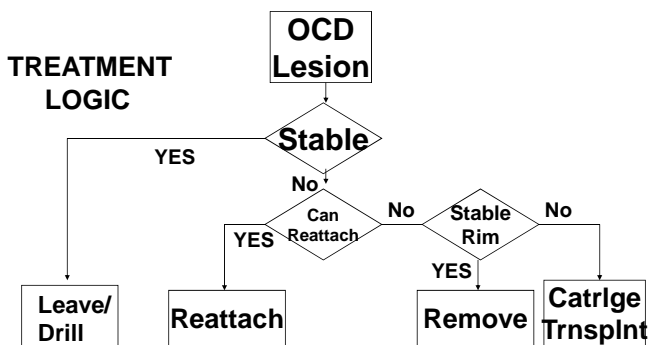
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### Osteochondritis of the Elbow

#### TREATMENT LOGIC



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**THANK YOU**



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**ARTHROSCOPY of the ELBOW  
Osterchondritis Dissecans**

**TREATMENT**

- **Type I: stable = Rest**
- **Type II -**
  - **Loose body, smooth bed: excise**
  - **Detached, rough bed: debride**

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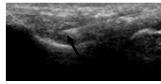
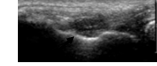
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**TENDONOPATHY at the ELBOW**  
**Rationale for this Treatment/Study**

Ultra sound  
Dx/Rx

- **Accurate diagnosis, localization**
    - Improves with experience
  - **Intervention - Indications**
    - Alternate to steroid injection
    - Alternate to surgical intervention
  - **Unique attribute**
    - Removal of diseased tissue
- Major advance – if safe and cost effective



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