

# ELBOW INJURIES IN ATHLETES

Steven Klepps, MD



# AGENDA

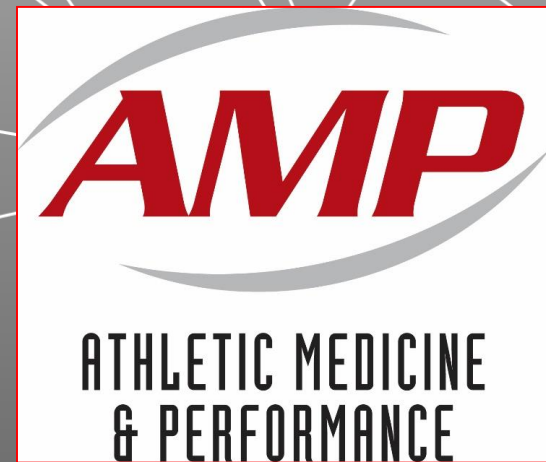
Dislocation

Tennis elbow

OCD lesion capitellum

Distal Biceps

UCL Injury

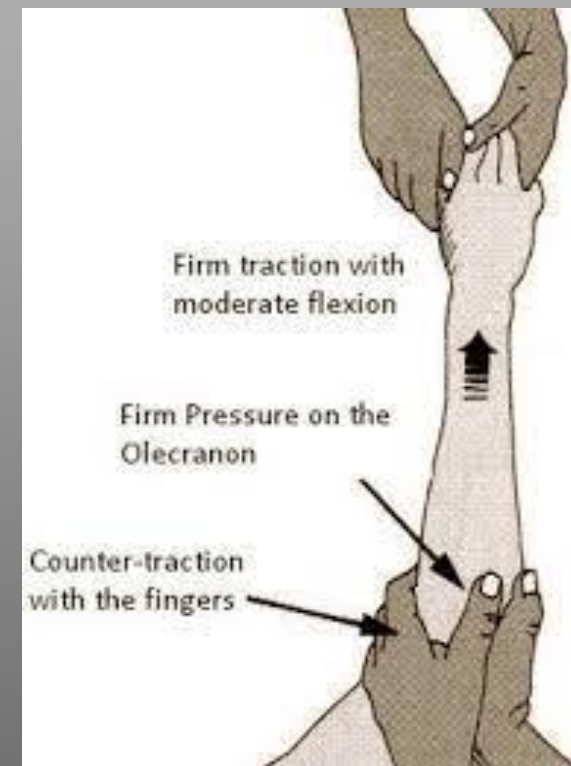


# DISLOCATION N



**Elbow Dislocation**  
How to Reduce a Dislocated Elbow

FIFA MEDICAL NETWORK

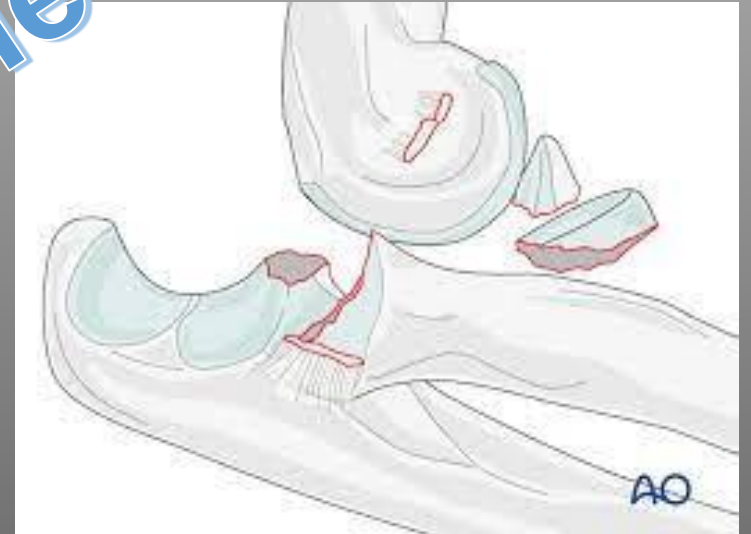


2<sup>nd</sup> most common joint in sports  
MCL > LCL (MRI)  
-U Tube Study  
- Valgus/Extension

# Simple Complex



**Terrible Triad**





# TREATMENT- SIMPLE

Early

- Immobilization
- Edema control

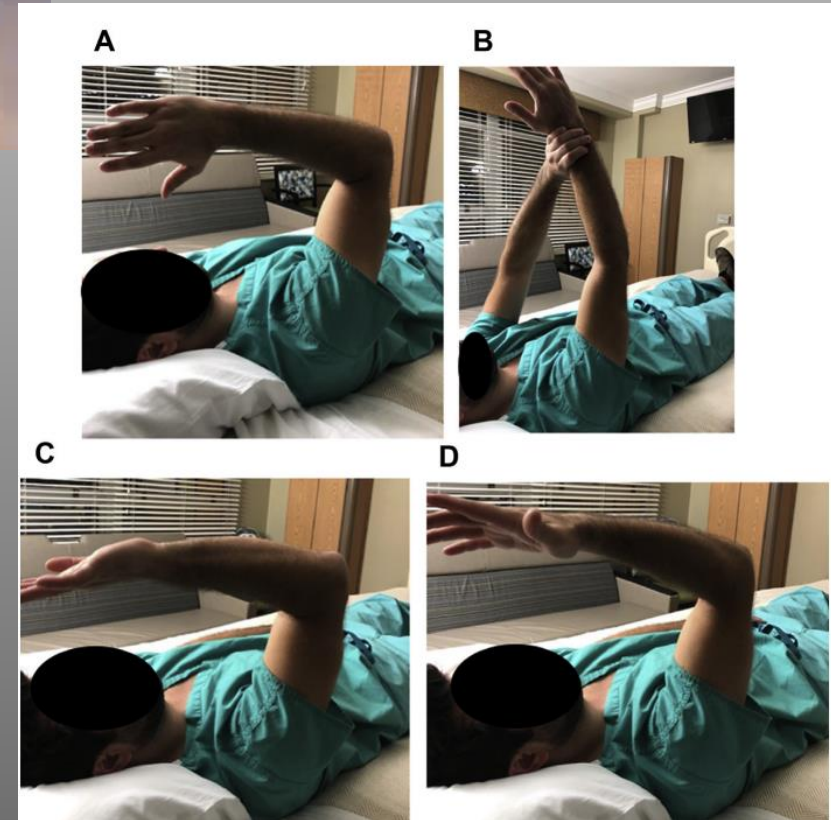
Middle

- ROM
- Hinge Brace

Late

- Strength
- Functional Brace

**EXAM**



# Elbow Dislocation



Nima Rezaie, MD\*, Sunny Gupta, MD, Benjamin C. Service, MD, Daryl C. Osbahr, MD

## KEYWORDS

- Simple elbow dislocation • Complex elbow dislocation • Posterolateral instability
- Posteromedial instability • Chronic dislocation

## KEY POINTS

- Acute simple elbow dislocations largely are treated conservatively. If surgical intervention is required, then early motion rehabilitation is advocated.
- Some elbow dislocations with ligament-only injuries may be considered complex dislocations due to the extent of the soft tissue trauma.



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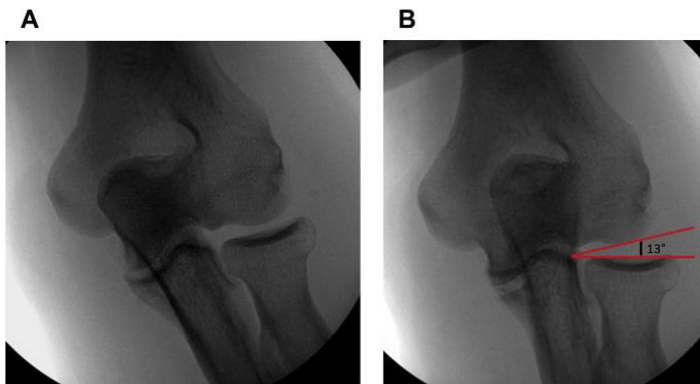


Fig. 7. (A) Anteroposterior fluoroscopic image of a concentric elbow joint. (B) Varus stress applied with the elbow in extension showing a 13° widening of the radiocapitellar joint.

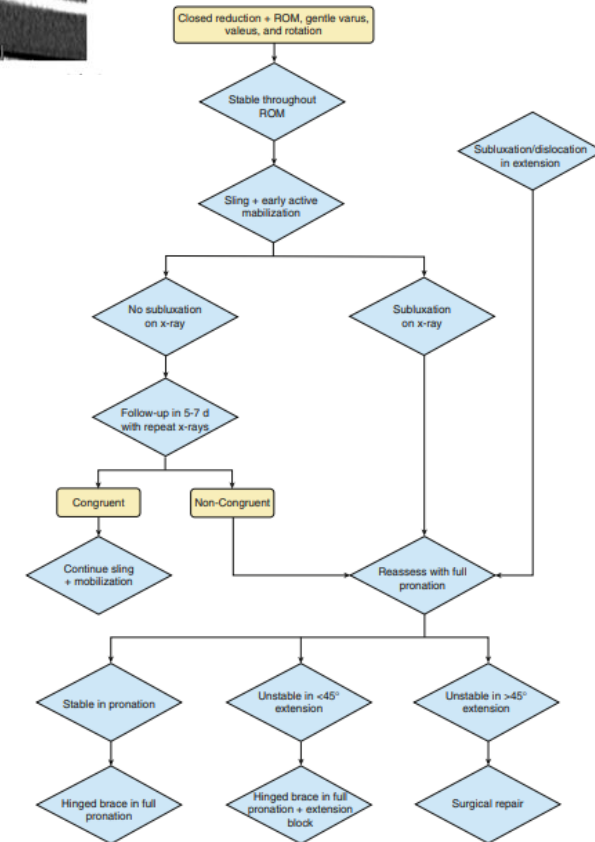


Fig. 8. Simple elbow dislocation algorithm. ROM, range of motion.

# TREATMENT-COMPLEX

Usually Surgical

- ORIF Bone
- Ligament Repair
- 

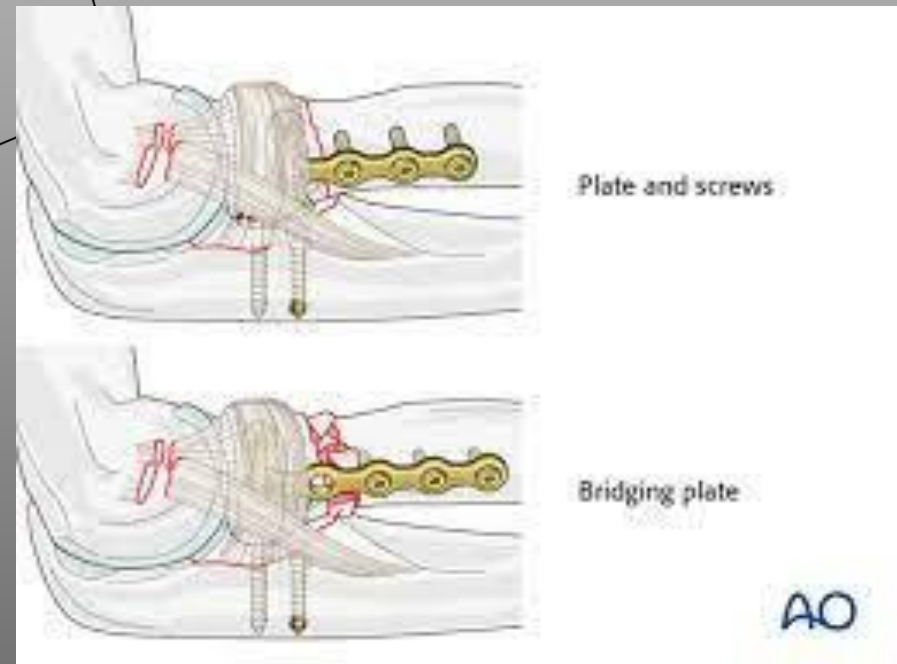
Rehab

- Slow-- Stiffness issues
- Functional Brace

Screw fixation of the radial head + screw and plate fixation of the coronoid + ligament repair



Replacement of the radial head + screw fixation of the coronoid + ligament repair





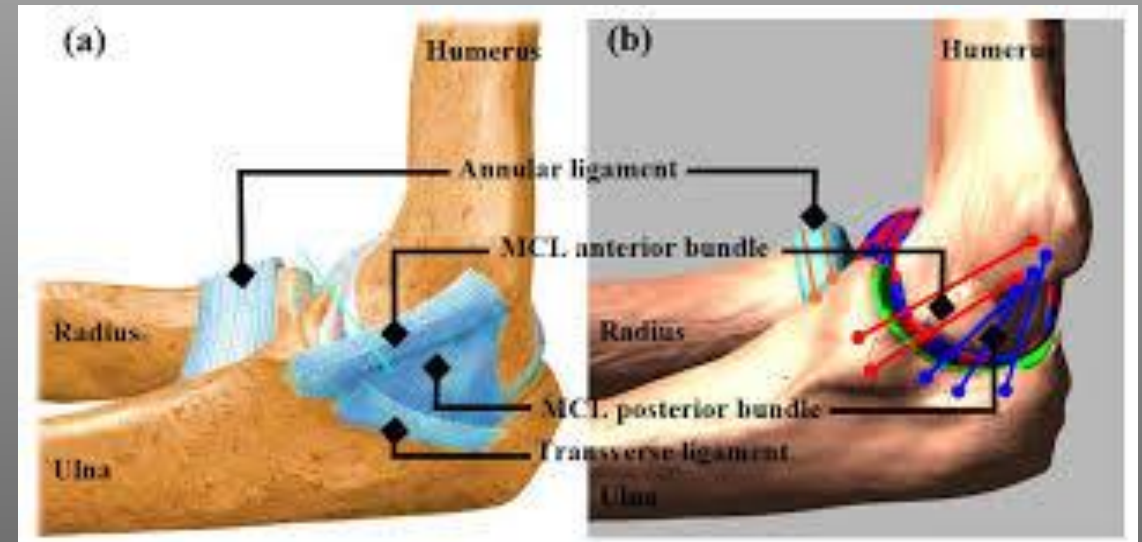
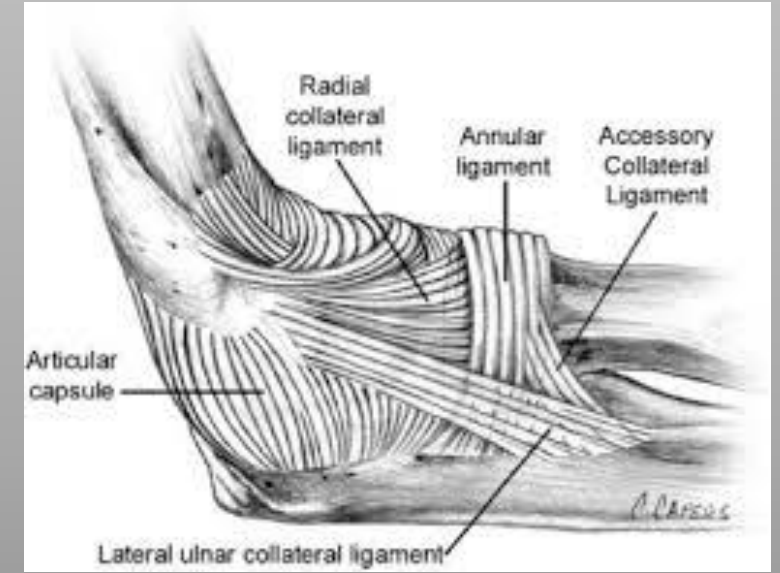
# TREATMENT- CHRONIC SYMPTOMS



- MRI
- PT not real helpful
- No one wants to wear a brace forever

## Surgery

- Multi-ligament repair





# TENNIS ELBOW EXAM

Not much tennis

- Trauma
- Overuse

Rehab

- Stretch, NSAIDS
- Counterforce brace
- Injection
  - PRP vs Cortisone
- Time
- Other



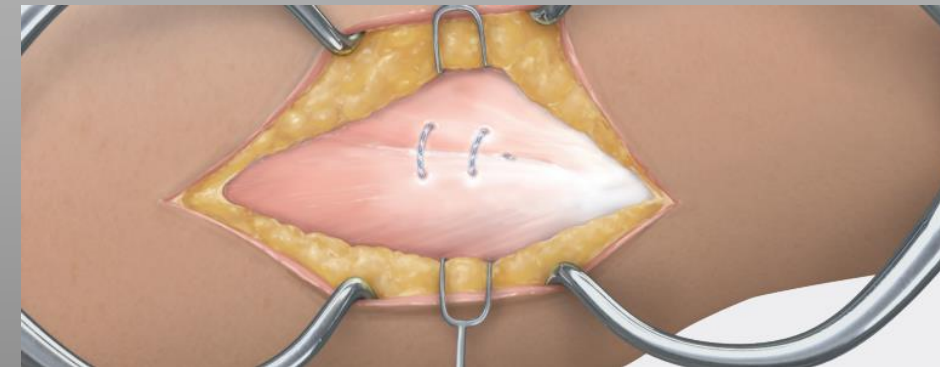
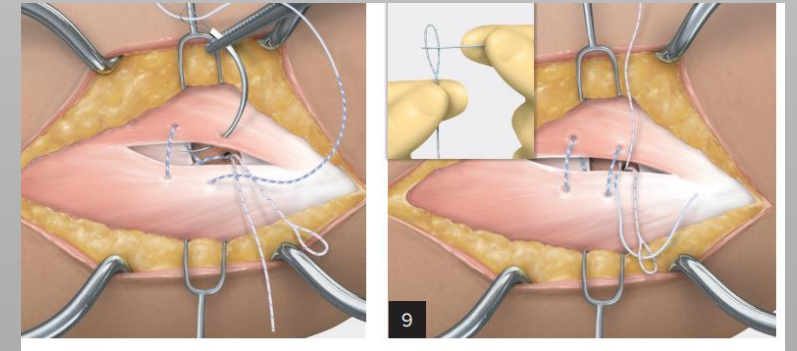
# TENNIS ELBOW

Sometimes surgery


Rehab

- Injection

- PRP vs Cortisone




J Shoulder Elbow Surg (2022) 31, 1533–1544



REVIEW ARTICLES

**A systematic review on the efficacy of different types of platelet-rich plasma in the management of lateral epicondylitis**

Shangzhe Li, MD, Guang Yang, MD, Hailong Zhang, MD, PhD, Xu Li, MD, Yi Lu, MD, PhD\*



*Review*

**Effectiveness of Platelet-Rich Plasma for Lateral Epicondylitis**

**A Systematic Review and Meta-analysis Based on Achievement of Minimal Clinically Important Difference**

Pawel Niemiec,\* PhD, Karol Szyluk,<sup>†‡</sup> MD, PhD, Alicja Jarosz,<sup>\*§</sup> MSc, Tomasz Iwanicki,\* PhD, and Anna Balcerzyk,\* PhD

The Orthopaedic Journal of Sports Medicine, 10(4), 23259671221086920  
DOI: 10.1177/23259671221086920  
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# OSTEOCHONDRAL DEFECT CAPITELLUM





# OCD CAPITELLUM--TREATMENT

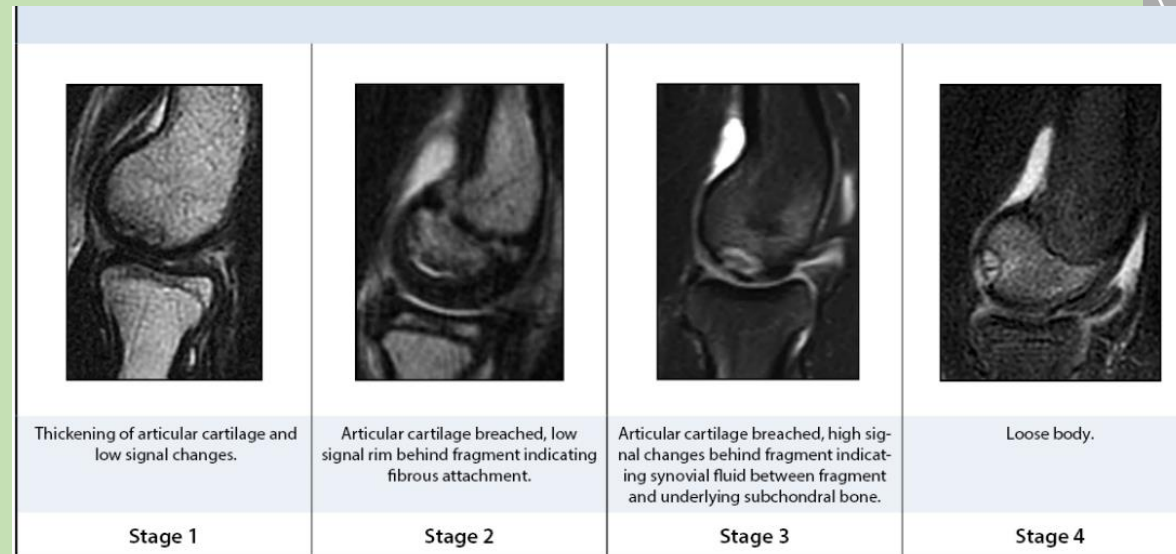
## Patient Dependent

Young, no mechanical Sxs → Conservative : Rest, Sport change

Mechanical SX → Surgery

MRI → Unstable → Surgery

Failed RX → Surgery



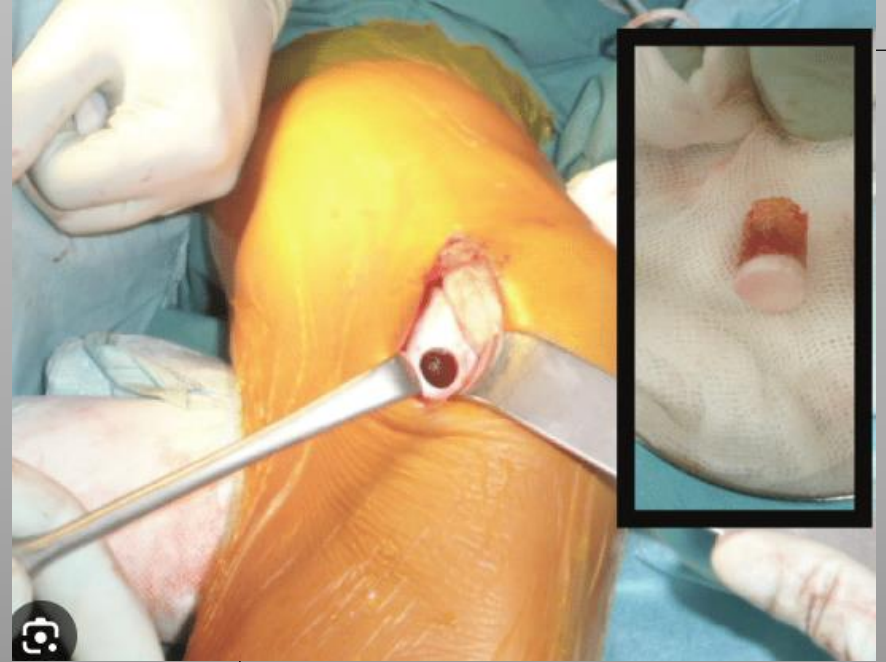
Surgery: Debridement

Repair

Osteochondral Graft

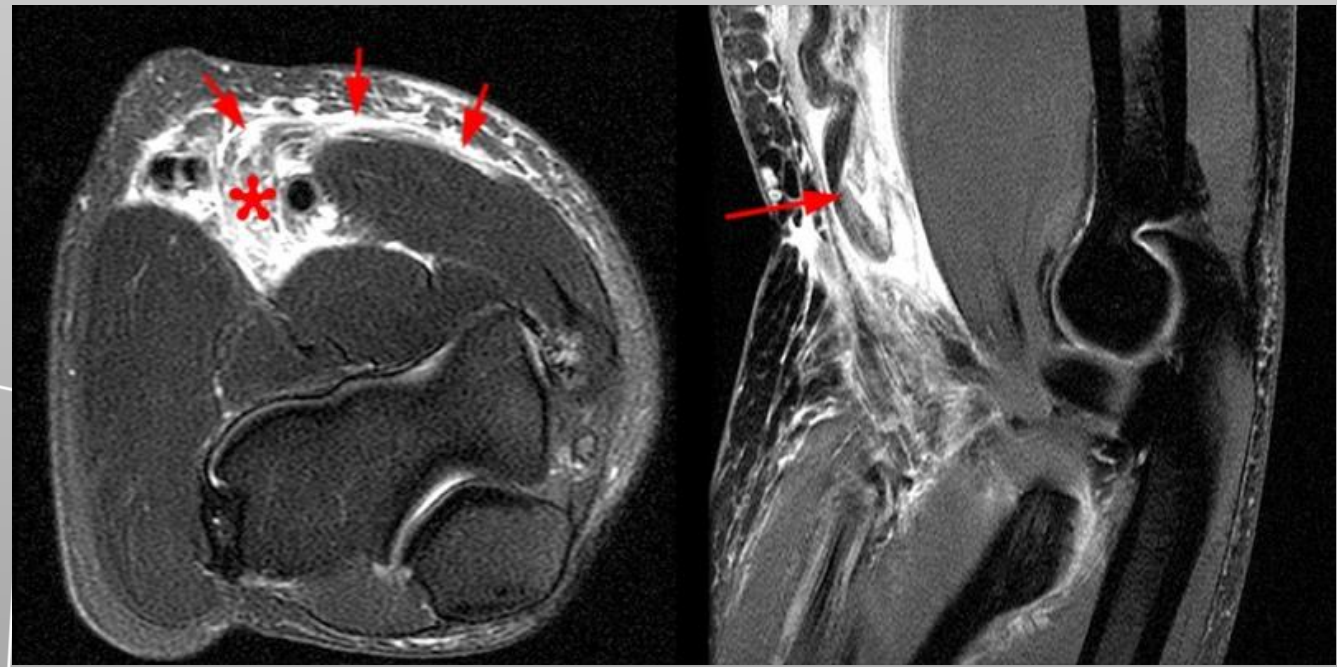


# SURGERY OCD CAPITELLUM



## My Experience

# Distal Biceps Tear



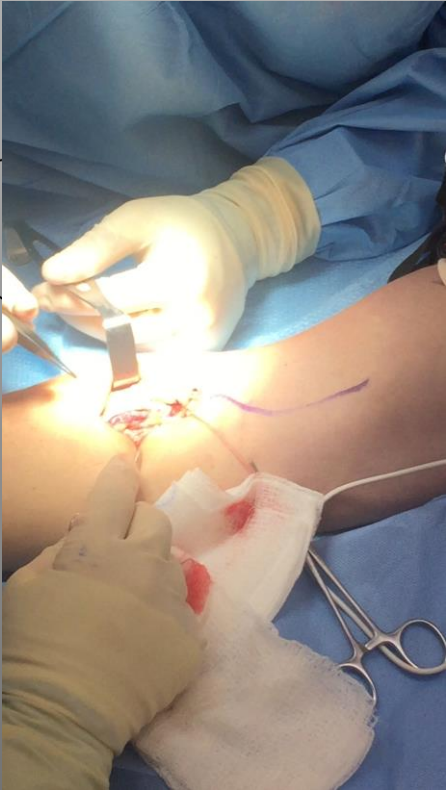


# TREATMENT

## Non-op vs Surgical

# Complications

- Nerve issues
  - #1 Lateral Antebrachial Cutaneous Nerve LABC
  - Superficial radial nerve
- Heterotopic Bone



# REHAB- BICEPS REPAIR

## Postoperative Distal Biceps Tendon Repair Rehabilitation Protocol

### ACUTE REPAIR

#### PHASE I: 1-3 WEEKS

- For the first post op week, the patient is in a posterior splint that is not to be removed. Beyond that point, the patient wears a removable posterior splint or a hinged elbow brace locked at 90 degrees.
- This brace is removed or unlocked for the exercises as described here.

#### Clinical Goals

- Elbow ROM from 30 degrees of extension to 130 degrees of flexion
- Maintain minimal swelling and soft tissue healing
- Achieve full forearm supination and pronation

#### Testing

- Bilateral elbow and forearm ROM

#### Exercises

- Patient should perform **passive** ROM exercises from 30 degrees of extension to 130 degrees of flexion 5-6 times per day for 25 repetitions.
- Apply ice after exercise sessions.
- A sling or "cuff and collar" may be used for the splint or hinged brace respectively. Shoulder ROM exercises are encouraged.

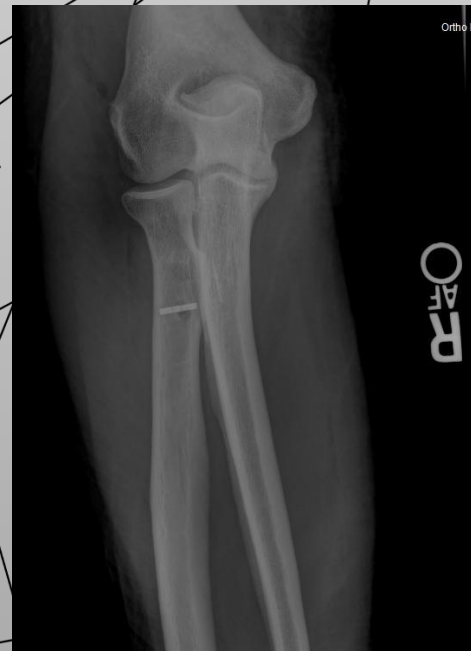
#### PHASE II: 3-6 WEEKS

#### Clinical Goals

- Full elbow and forearm ROM by 6 weeks.
- Scar management.

#### Testing

- Bilateral elbow and forearm ROM
- Grip strengthening at 4-6 weeks



- Phase I
  - Allow early active ROM
  - Limit Extension to 30
- Phase II
  - 10 lbs lifting
- Phase III
  - Strengthening



# ULNAR COLLATERAL LIGAMENT INJURY

(Tommy John)

\*\*\* NOT ALL BASEBALL!!



# TOMMY JOHN INJURY

## EXAM

### Tear Type

- Complete Tear
- Partial Tear

### Patient Age

- Adolescent
- College
- Professional



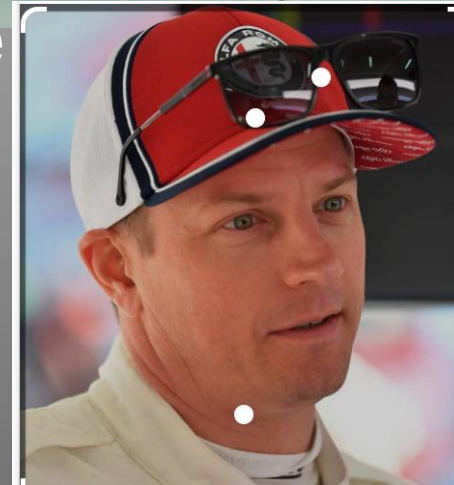
# ULNAR COLLATERAL LIGAMENT INJURY

Non-op Treatment

Rest, Rest, Rest → Counseling

Therapy program to include Shoulder

Throwing program





# THE TO-DOUCHE LIST

A Step-by-Step Primer for Douchebags

← 21. Drink Jagerbombs

23. Spray Tan Like A Mofo →

## 22. TIE: Sunglasses on Back of Neck vs. Bluetooth in Public?

JUN 10 Posted by [joshxanderson](#)



GO

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### DOUCHEBAG SOLIDARITY



- 27. Sport These Dope Ass Kims
- 26. Pump Your Fist, Arbitrarily, Sweatily
- 25. Your Favorite Bar Has Hair Gel in the Bathroom
- 24. Be LeBron James
- 23. Spray Tan Like A Mofo
- 22. TIE: Sunglasses on Back of Neck vs. Bluetooth in Public?
- 21. Drink Jagerbombs
- 20. Tip Poorly
- 19. And take photos in front of your mom's bangin' Swedish doll collection.
- 18. And Wear Your Hair Like This.
- 17. And Wear Headbands.
- 16. Wear Diamond Earrings. Period.
- 15. Think Maxim Magazine is Fresh, Son!
- 14. Get Your GTL On
- 13. Pose for Photos with Liquor Bottle(s)
- 12. If You Have to Wear A Shirt, You Have Three Choices
- 11. Wear A Visor
- 10. You're Congressman Weiner
- 9. Post Facebook Updates About Your Workout
- 8. The Less Shirt, the Better. For Shizzle.
- 7. Wear a Flat Brim Hat
- 6. ALWAYS Stick Your Tongue Out. Especially in Photographs.
- 5. Pop Your Collar(s)
- 4. Wear A Thumb Ring
- 3. Your Name is Chad
- 2. Appear On 'The Bachelorette'
- 1. Wear White Sunglasses



# ULNAR COLLATERAL REPAIR

# ULNAR COLLATERAL RECONSTRUCTION

Palmaris Longus  
\*\*most common  
Others:  
FCR, Gracilis

# ULNAR NERVE MANAGEMENT

## Tricky

- Rarely an isolated problem
- Leave alone if asymptomatic
- Move if subluxing or symptomatic
- Often 'a little' symptomatic

I'd say 50% transposed



# REHABILITATION

Early – Usually Occupational Therapy with office visits

- Immobilization
- Hinged Brace at 1-2 weeks X 8 weeks
- Passive ROM
- Ulnar N. Program

Middle (8-12 weeks)

- Active ROM
- Light activity

Late (12-16 weeks)

- Strengthening → Shoulder > Elbow – Often add Physical Therapy



# REHABILITATION

Go to the Gym

Throwing Program

- 6 months

\*\* Repair

- 8 months

\*\* Reconstruction

Return to Baseball  
9-12 (14) months  
(Pitchers)



Throw 3 days per week, follow the following schedule:

| Week 1               |                      |                      |
|----------------------|----------------------|----------------------|
| Session 1            | Session 2            | Session 3            |
| *Warm-up throwing    | *Warm-up throwing    | *Warm-up throwing    |
| *25 throws @ 30 feet | *25 throws @ 30 feet | *25 throws @ 45 feet |
| Rest 2-3 minutes     | Rest 2-3 minutes     | Rest 2-3 minutes     |
| 25 throws @ 80 feet  | 25 throws @ 80 feet  | 25 throws @ 45 feet  |
|                      | Rest 2-3 minutes     |                      |
|                      | 25 throws @ 30 feet  |                      |
| Week 2               |                      |                      |
| Session 1            | Session 2            | Session 3            |
| *Warm-up throwing    | *Warm-up throwing    | *Warm-up throwing    |
| *25 throws @ 45 feet | *25 throws @ 60 feet | *25 throws @ 60 feet |
| Rest 2-3 minutes     | Rest 2-3 minutes     | Rest 2-3 minutes     |
| 25 throws @ 45 feet  | 25 throws @ 60 feet  | 25 throws @ 60 feet  |
| Rest 2-3 minutes     |                      | Rest 2-3 minutes     |
| 25 throws @ 45 feet  |                      | 25 throws @ 60 feet  |
| Week 3               |                      |                      |
| Session 1            | Session 2            | Session 3            |
| *Warm-up throwing    | *Warm-up throwing    | *Warm-up throwing    |
| *25 throws @ 75 feet | *25 throws @ 75 feet | *25 throws @ 90 feet |
| Rest 2-3 minutes     | Rest 2-3 minutes     | Rest 2-3 minutes     |
| 25 throws @ 75 feet  | 25 throws @ 75 feet  | 25 throws @ 90 feet  |
|                      | Rest 2-3 minutes     |                      |
|                      | 25 throws @ 75 feet  |                      |





Clinical Viewpoint

## The Use of the Internal Brace to Repair the UCL Injury of the Elbow in Athletes

Kevin E Wilk, PT, DPT, FAPTA<sup>1,2</sup>, Zachary M Thomas, PT, DPT, OCS, CSCS<sup>3</sup>, Christopher A. Arrigo, MS, PT, ATC<sup>5</sup>, Ashley M Campbell, PT, DPT, SCS<sup>4,6</sup>, Amir Shahien, MD<sup>7</sup>, Jeffrey R Dugas, MD<sup>8</sup>

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Keywords: UCL, elbow, UCL repair

<https://doi.org/10.26603/001c.39614>

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Return to play tests:

1- PROM entire UE

2- Manual muscle testing entire UE

3- Satisfactory clinical exam

4- Functional tests

- single arm prone ball drops
- ball throws into the plyoback from 20 ft
- single leg squats
- prone plank test



Figure 11. One hand plyometric wall throws at 90-90 (2lb plyo ball) with end range rhythmic stabilization.

surgery, if the athlete is ready.<sup>24,26,27</sup> In most cases, pitchers will progress to throwing from a mound approximately 8 to 10 weeks after initiation of an ITP.<sup>28</sup>

A series of return to play tests is performed before ini-



Figure 12. One of the functional tests we perform: single arm ball drops with shoulder at 90 degrees of abduction and palm down.

The final phase (16+ weeks) of the rehabilitation process is the return-to-activity phase. During this phase, the goal is to allow the athlete to progressively return to full activity and competitive throwing. Gradual return to competitive throwing begins 5 months following UCL repair with internal brace, in contrast to 9 to 12 months following UCL reconstruction.<sup>15,29</sup> During this return to competition phase, the athlete is instructed to continue the throwers ten +4 program to maintain ROM and strength for the entire body (Appendix A).

The outcomes demonstrated thus far using this procedure and rehabilitation program have been encouraging. UCL repair with internal brace has been performed at our center since 2013 with approximately 527 procedures performed to date. Dugas et. al examined outcomes in 111 overhead athletes, 92% (102/111) of those who desired to return to the same or higher level of competition were able to do so at a mean time of 6.7 months.<sup>19</sup> Recently, Rothermich et al presented results of 40 non-throwing athletes who had undergone UCL repair with a minimum follow up of 2 years, the results indicated a 95% return to play rate with the average time to play occurring at 7.4 months.<sup>30</sup> Based on our clinical observations, the success rate of 92-95% appear to be sustained for the long term (5-7 years and beyond).

### SUMMARY

The UCL is frequently injured in overhead athletes and these injuries continue to increase in number, particularly



# THANKS

Steven Klepps, MD

