MANAGEMENT OF DISLOCATIONS FOR THE ATHLETIC TRAINER

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Binghamton University Team Physician

Management of Dislocations

for the

Athletic Trainer

Micah Lissy MD, MS PT, ATC, CSCS
Detroit Tigers Spring Training 2013

No Conflicts of Interest

I am a paid consultant for
Arthrex

I don’t own any stock in Orthopaedic Companies

Introduction

- Domain 3 (immediate / emergency care) of NATA description of athletic training services

2. Implement appropriate emergency injury and illness management strategies following a pre-established emergency action plan (e.g., CPR, AED, splinting, use of spine board, control of bleeding, control of body temperature, use of epinephrine for anaphylaxis)

- My experience

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Overview

- Dislocation
- Subluxation
- Separation

Understand the
Mechanism of injury
and the
Pathology of the Dislocated joint

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Why Reduce it?

- The quicker you reduce it the easier and less traumatic the reduction
- Keep the athlete in a controlled environment
- Minimize the athletes discomfort

Why NOT reduce it?

- No x-ray
  - Fracture, fracture / dislocation
  - Position of dislocation
- No analgesia / relaxation
- Possibility of iatrogenic injury
  - Fracture
  - Nerve injury
- Medico legal

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Dislocations I should mess with

- Common dislocations
  - Recurrent
  - Finger / shoulder
- Athlete preference
- Controlled situations
- Medical necessity

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Dislocations I should stabilize and transport

- Uncommon dislocations
  - Wrist, spine, hip
- Complicated dislocations
  - Fractures
  - Open wounds
  - Irreducible
    - Skin Dimpling
- Previous attempt at reduction
- Prolonged interval from injury
- Uncontrolled environment

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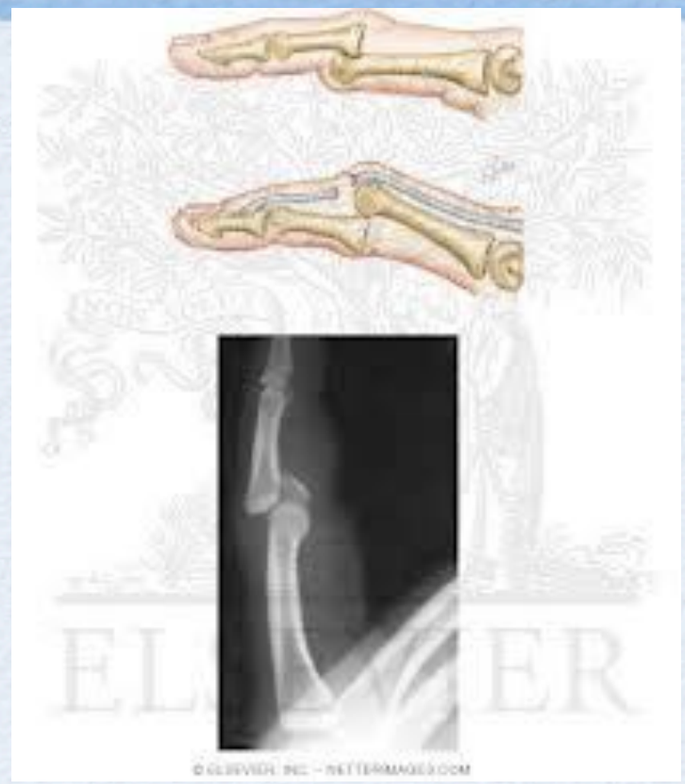
Finger Anatomy

Finger Dislocations

- DIP / PIP
  - Dorsal more common than Volar
    - Volar plate / FDP blocks reduction



- MCP
  - Dorsal due to hyperextension
  - Flex wrist push prox phalanx volarly
  - avoid traction / extension

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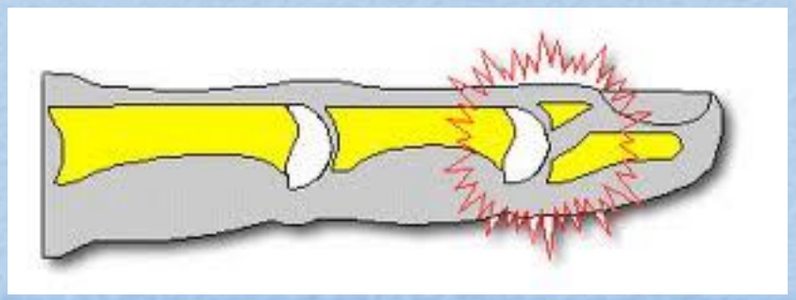
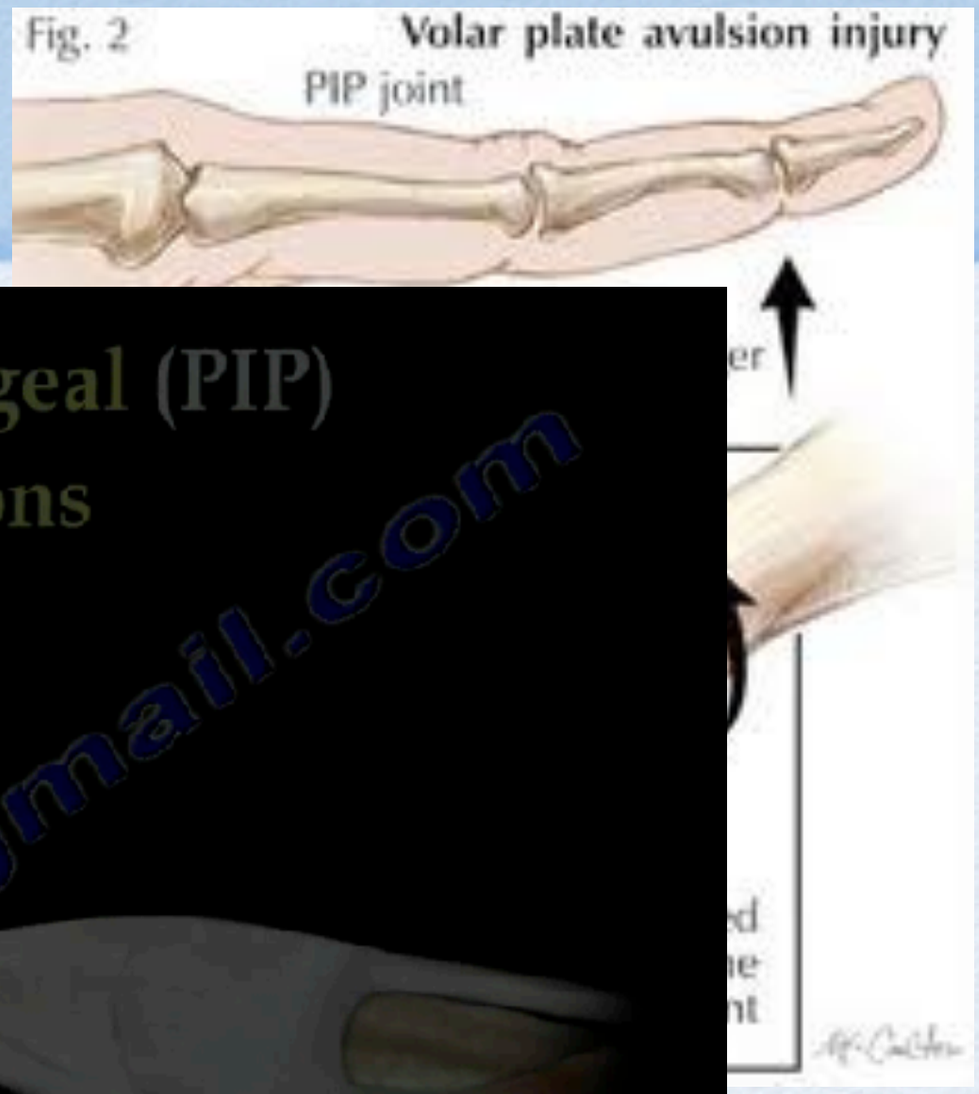
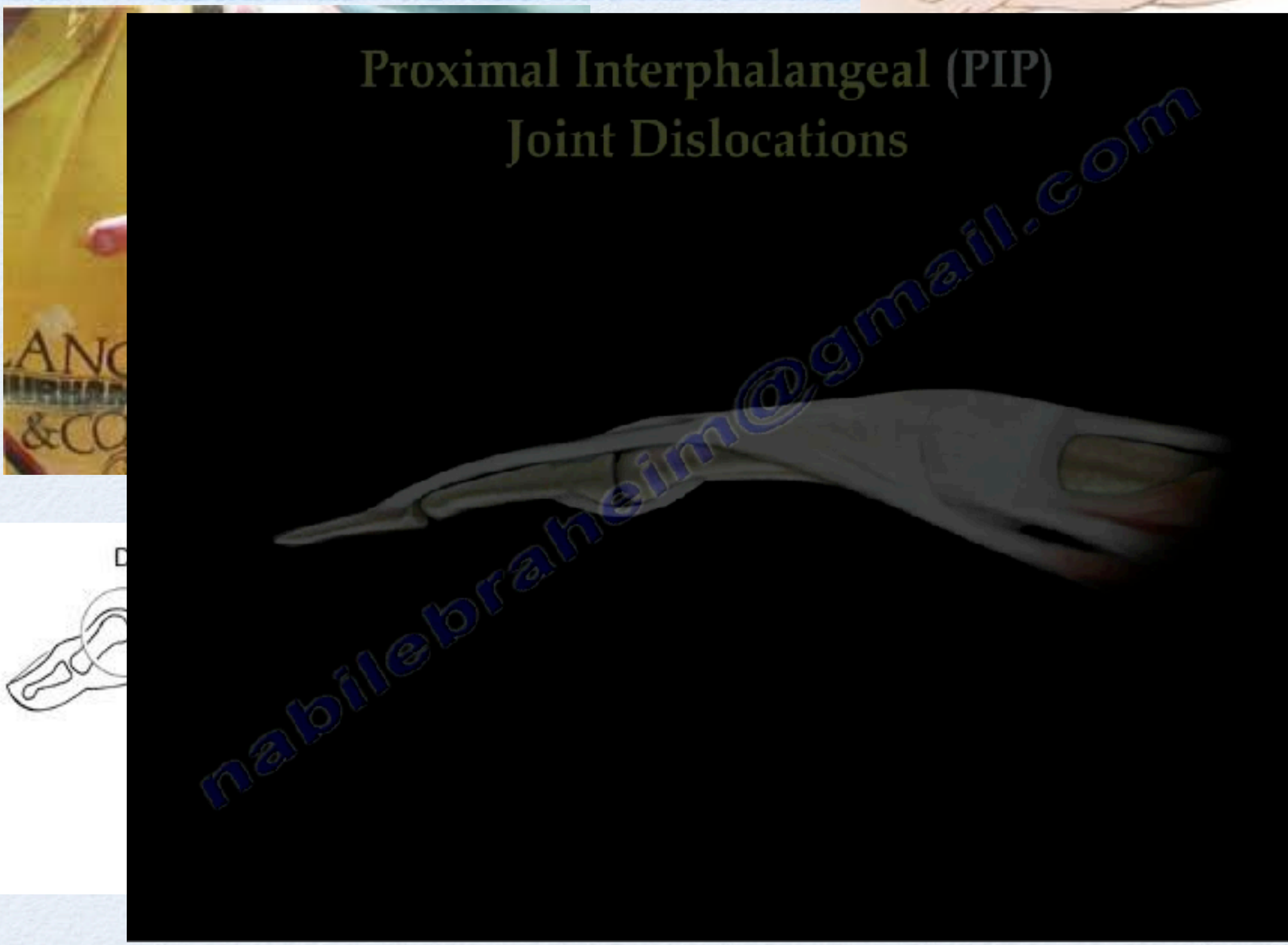
DIP

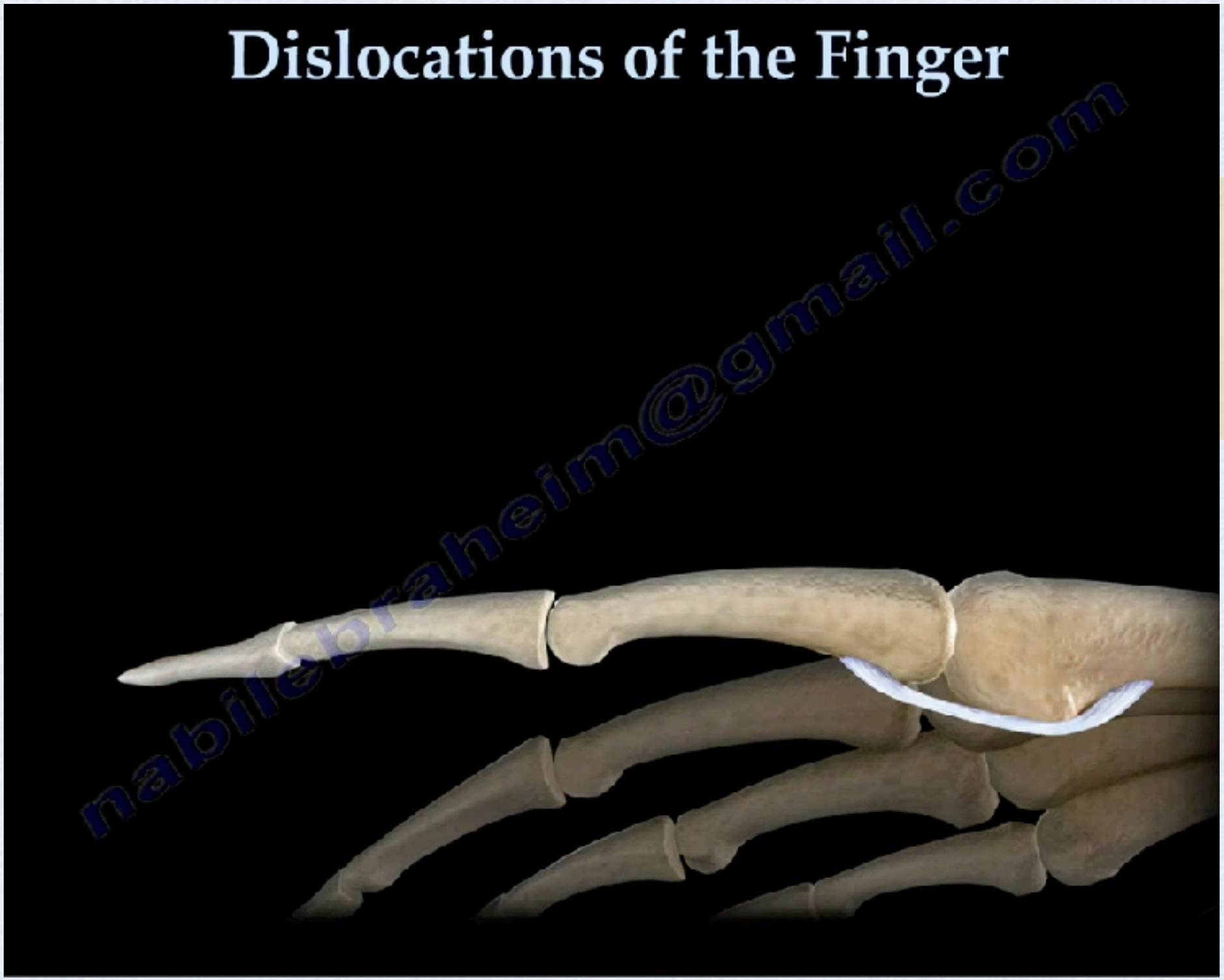


PIP

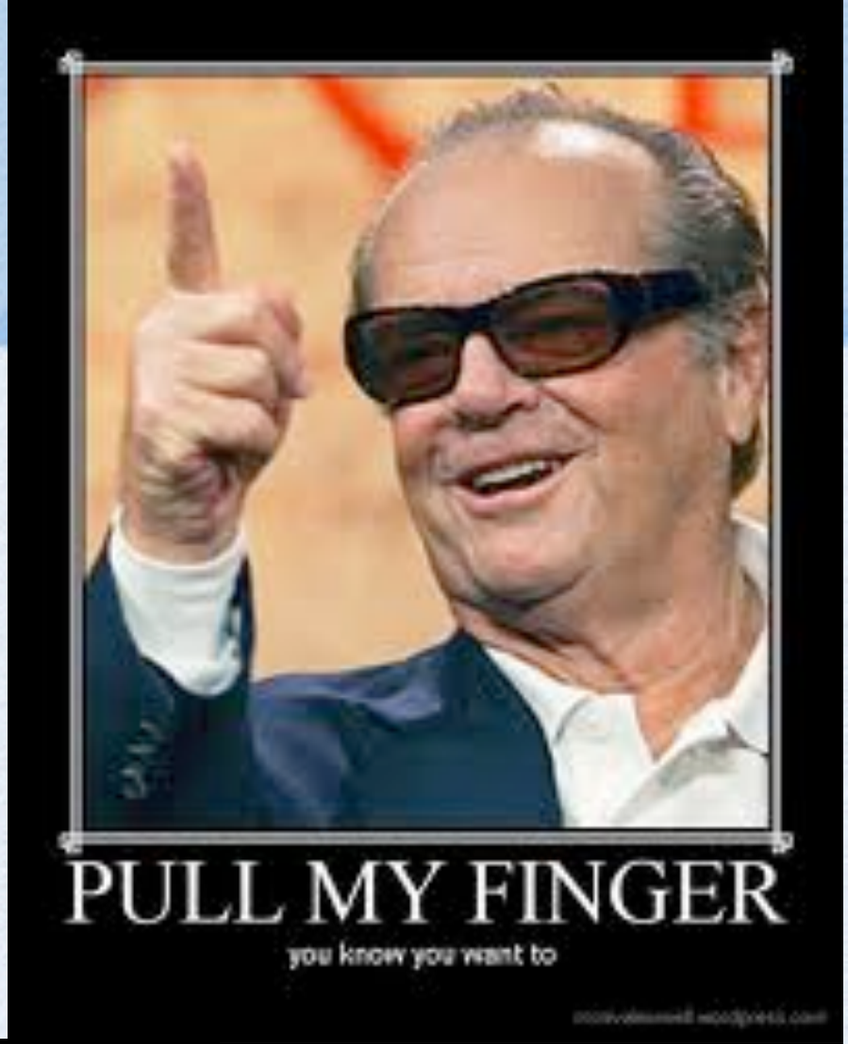




MCP



Clinical Practice



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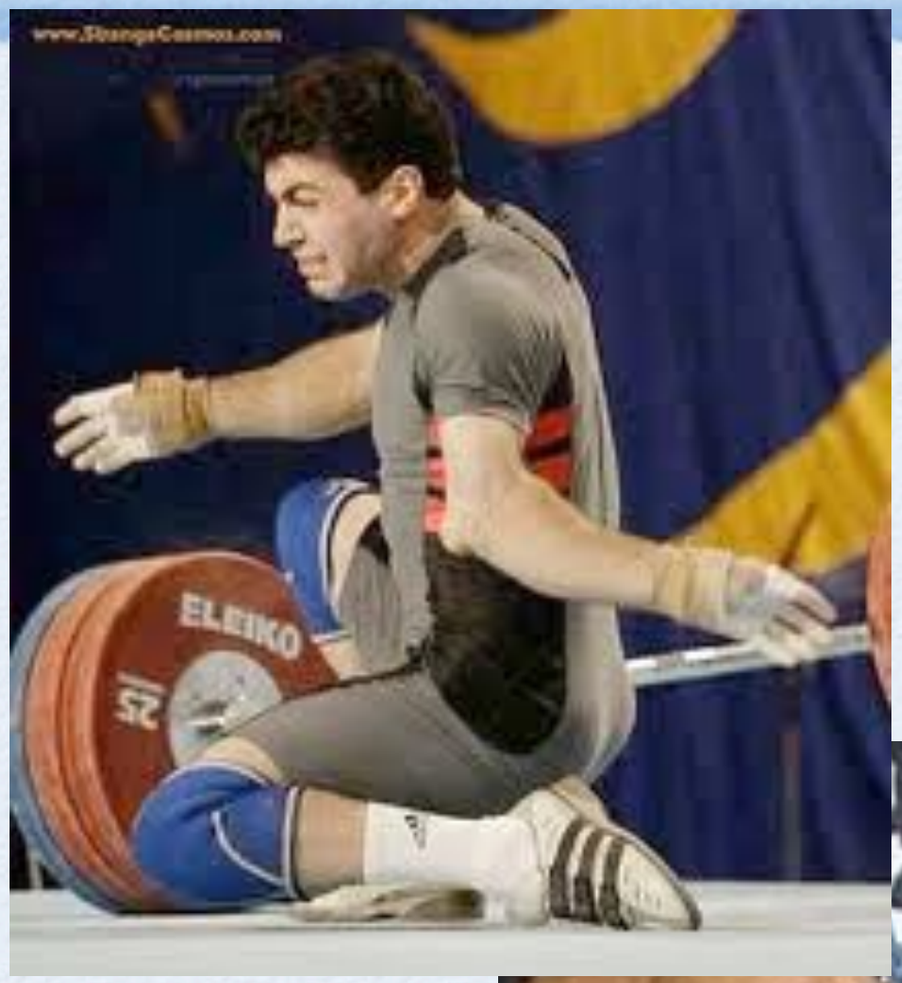
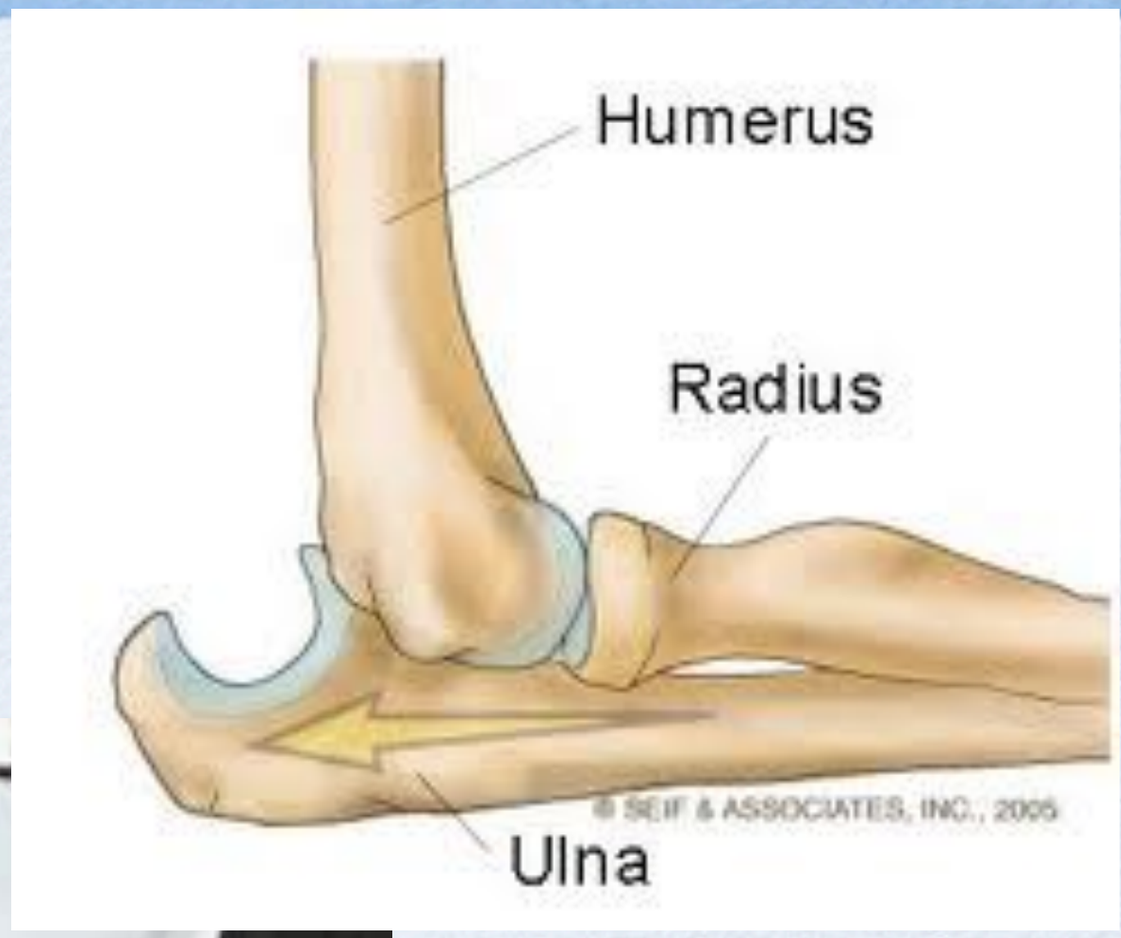
Elbow Dislocations





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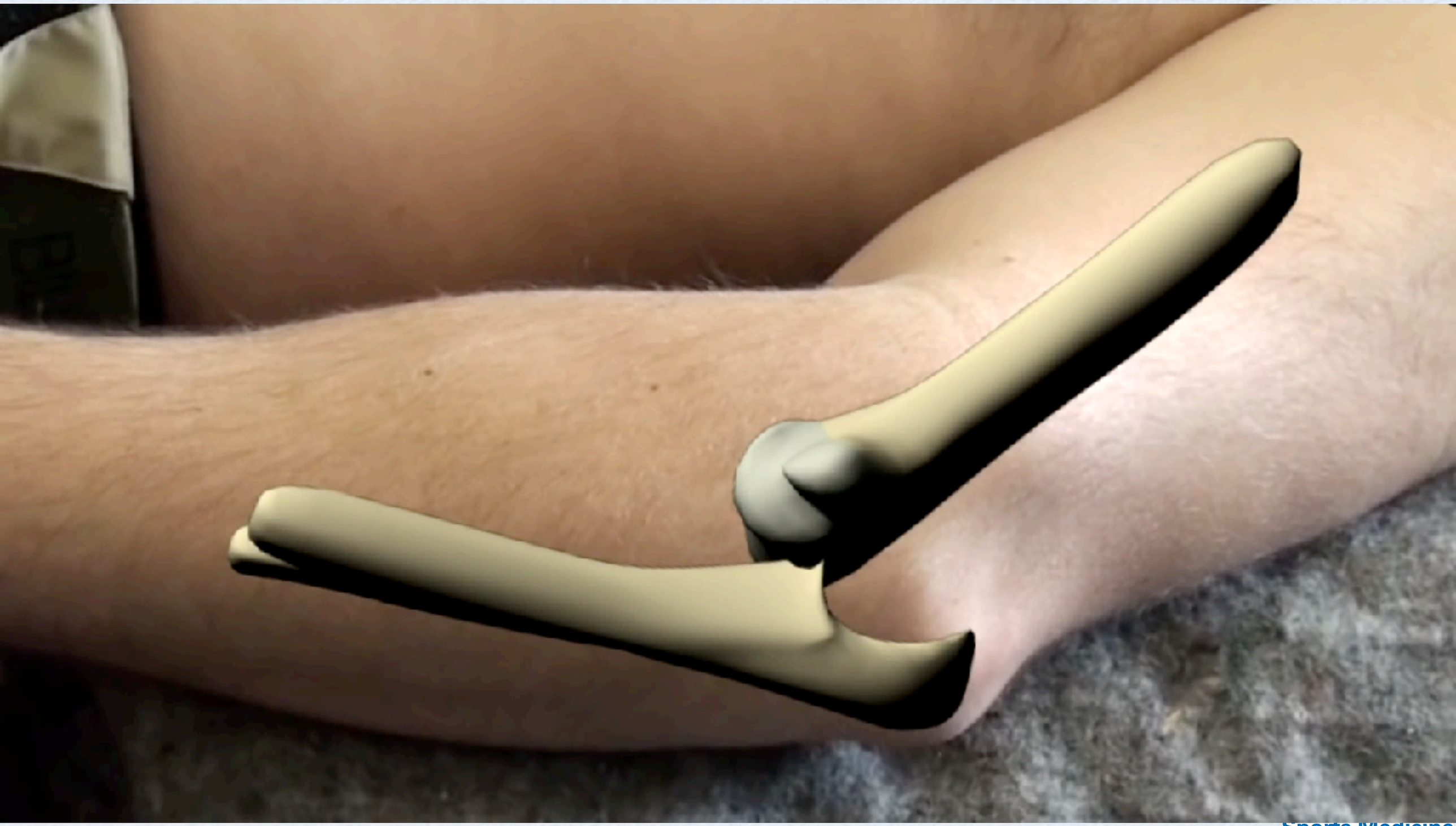
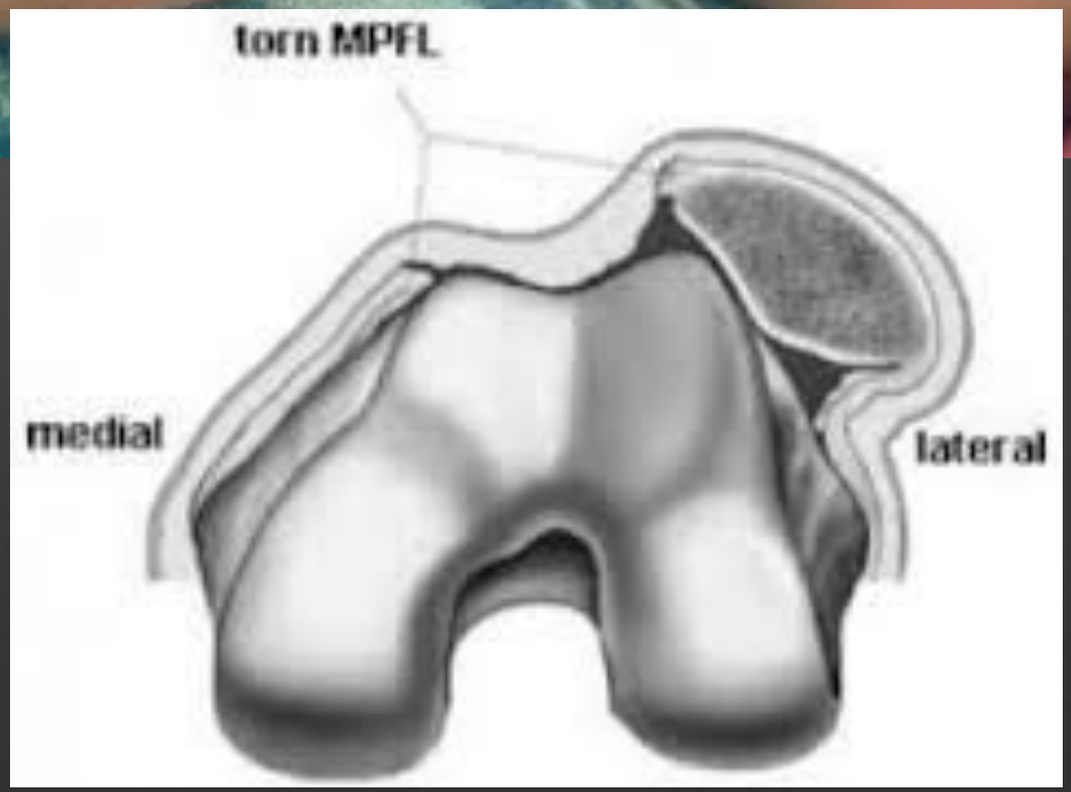
Elbow



Knee Trauma Instability
Patella Dislocation



Patella,
The Knee Dislocation you can reduce

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Shoulder Anatomy

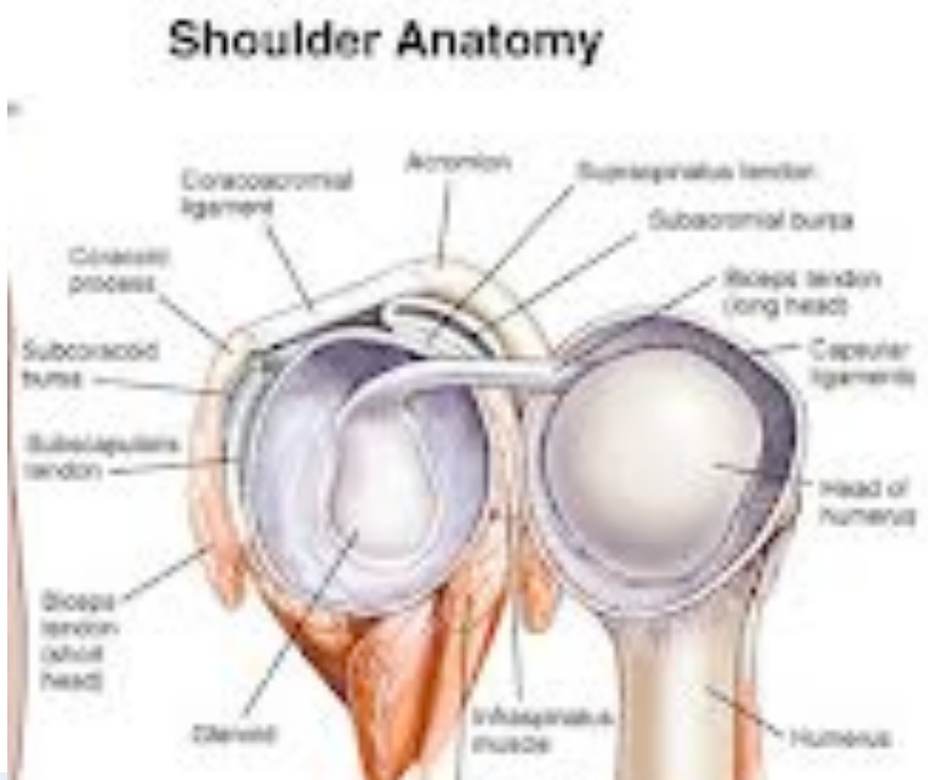
Anatomy

- Static restraint
  - **Bony Glenoid**
  - Humeral head
  - Labral depth
  - Capsuloligamentous
    - SGHL
    - MGHL
    - IGHL
    - Axillary pouch
    - CHL

Shoulder Anatomy

Anatomy

- Static restraint
  - Bony Glenoid
  - **Humeral head**
    - ~1/3 of the humeral surface is in contact with the glenoid at any time
  - Labral depth
  - Capsuloligamentous
    - SGHL
    - MGHL
    - IGHL
    - Axillary pouch
    - CHL



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Shoulder Anatomy

Capsulo-Ligamentous Structures: Labrum

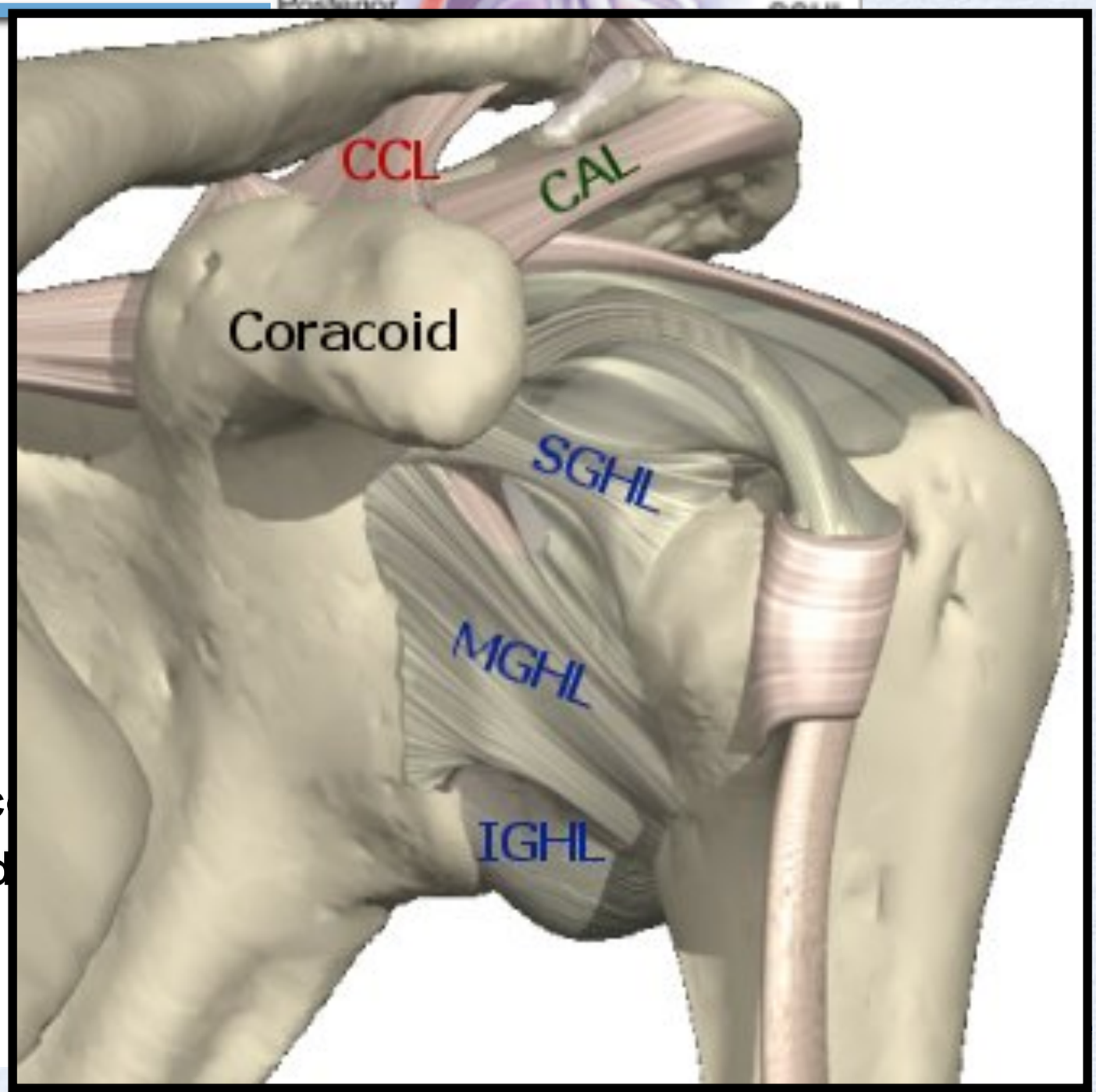
- Fibrocartilaginous thickening
- Increases Glenoid depth by 50%
- “Chock block” preventing abnormal translation
- Stability increased by 20%
- Increases shoulder’s ability to withstand excessive external rotation forces by 32%

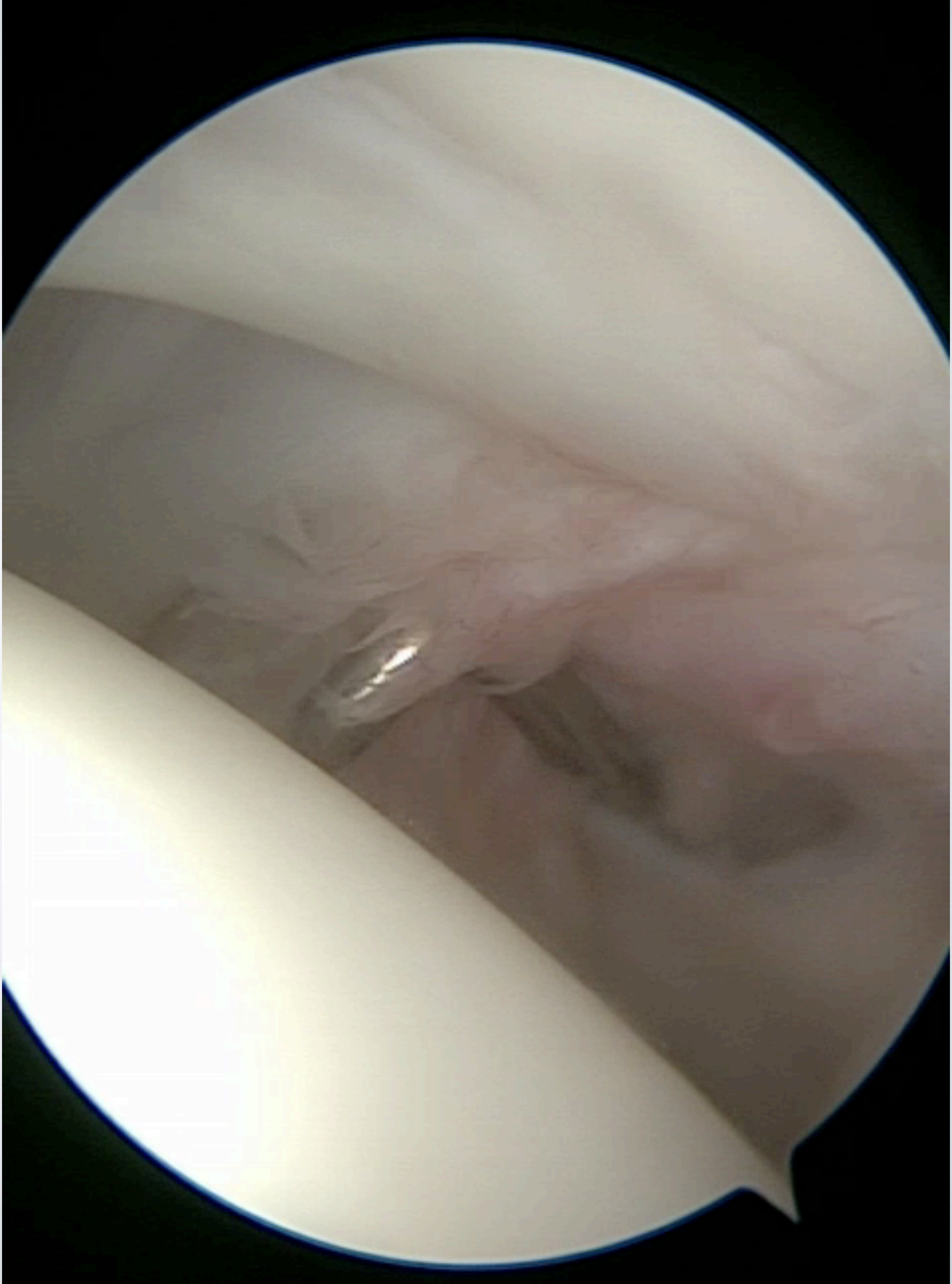
Interactive Shoulder v1.0 © 2000 Primal

Shoulder Anatomy

Anatomy

- Static restraint
  - Bony Glenoid
  - Humeral head
  - Labral depth
  - **Capsuloligamentous**
    - **SGHL**
    - **MGHL**
    - **IGHL**
      - **Anterior band is main c**
        ant. translation in abd
    - **Axillary pouch**
    - **CHL**





Shoulder Anatomy

Anatomy

- Dynamic Restraint
  - Rotator cuff musculature
    - Subscap – passive restraint to anterior translation
    - Concavity-compression
  - LHB tendon
    - Rodosky, Harner, Fu AJSM 1994
      - LHB contributes to anterior stability by resisting torsional forces
    - Kumar et al JBJS 1990 & CORR 1989
      - Depresses & prevents proximal migration of the humeral head

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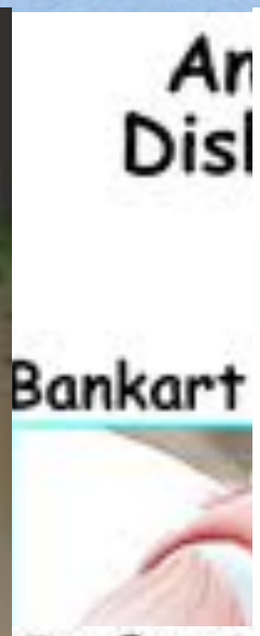
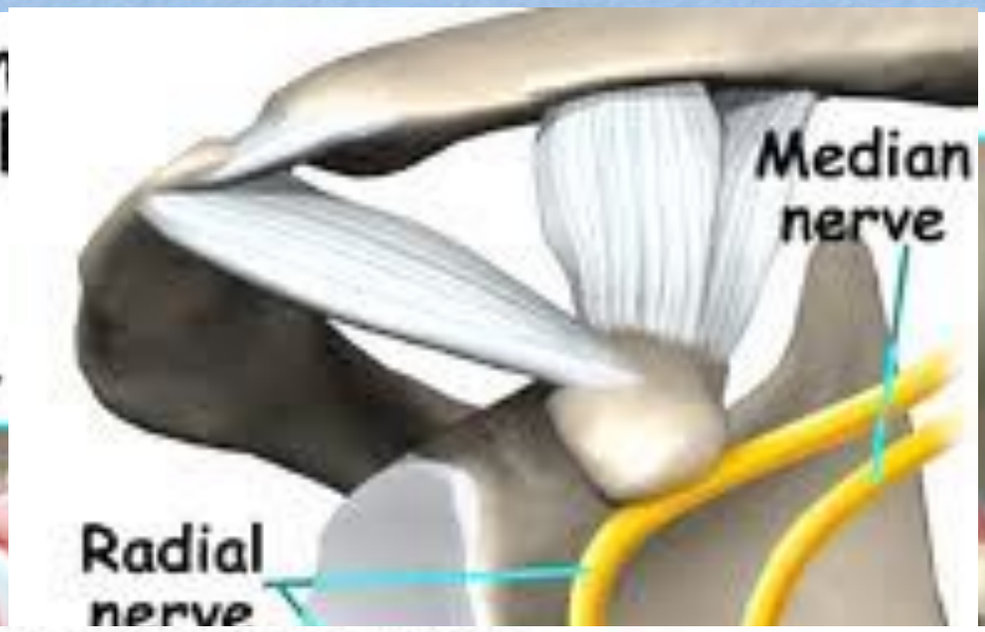
Shoulder Dislocations

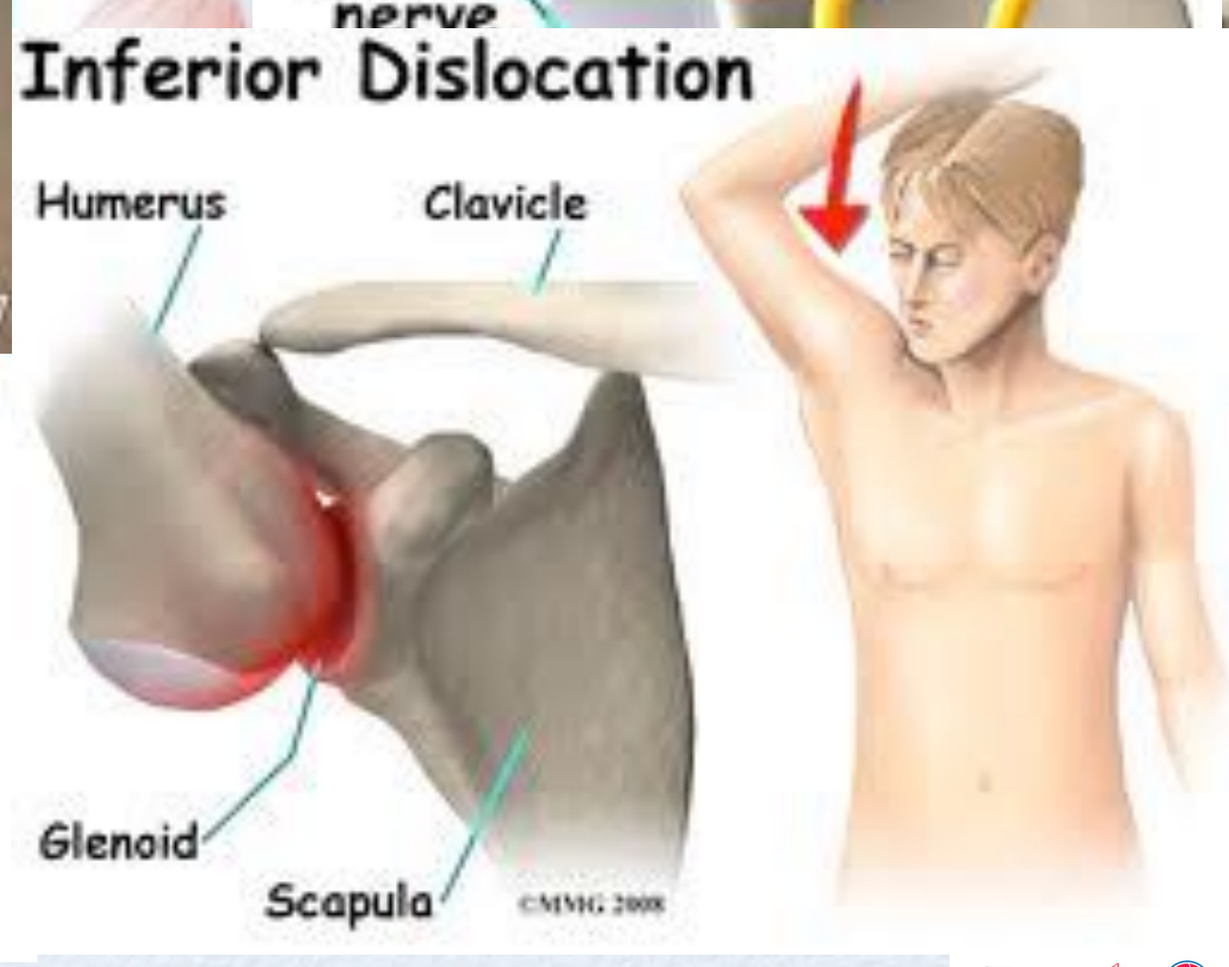
- Glenohumeral joint is the most commonly dislocated major joint
  - ~ ½ of anterior dislocations occur in ages 15-19
  - ~3:1 male : female ratio

- TUBS
  - Anterior
    - Forced abduction / ER
- AMBRI
- Voluntary

Shoulder Dislocations







HILL SACHS LESION

Reduction Techniques

- Broad Strokes
- Muscular issues
- Scapular issues

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Kocher

Traction-Countertraction

Fares

Spaso

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Stimson

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CLARIFICATIONS

- 4 TRUTHS

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#1. If your athlete dislocates their shoulder, they are going to do it again

- Risk factors for recurrent instability
  - Young age
  - Athletic activity
  - Male sex
  - Bony Bankart

Treatment	Rate	No. of patients
Nonoperative	92%	35 of 38
Arthroscopic	22%	2 of 9

Arthroscopic Bankart Repair Versus Nonoperative Treatment for Acute, Initial Anterior Shoulder Dislocations*

Robert A. Arciero,† LTC, MC, USA, James H. Wheeler, MD, John B. Ryan, COL, MC, USA, and John T. McBride, MAJ, MC, USA

From the Orthopaedic Service, United States Military Academy, West Point, New York

In young athletes with an acute shoulder dislocation, immobilization alone is not sufficient to allow adequate healing of the detached labrum or glenohumeral ligaments. However, arthroscopic surgery followed by immobilization can insure a healing response that will significantly decrease recurrence of the instability.

The prognosis after an anterior shoulder dislocation in a young patient, particularly a young athlete, is poor, with recurrence rates >80%.

Rowe reported a recurrence rate of

94% in 53 patients aged ~20 years,

79% in 64 patients aged 21-30 years,

50% in 16 patients aged 30-40 years,

14% in 188 patients aged >40 years.

McLaughlin and MacLellan reported a recurrence rate of

95% in 181 patients aged approx 20 years

Recurrent dislocation:

96% first Dislocation before age 30 years

Nonrecurrent dislocation:

90% of which occurred after age 30 years.

Henry and Genung showed a recurrent dislocation rate of

88% in 121 athletes aged ~32 years.

Simonet and Coifed reported a recurrence rate of

82% in athletes aged 30 years

30% nonathletes aged 30 years.

#2. We may be too cavalier about finishing the season

Return to Play and Recurrent Instability After In-Season Anterior Shoulder Instability

A Prospective Multicenter Study

MAJ Jonathan F. Dickens,*†‡ MD, LTC Brett D. Owens,†‡ MD,
Kenneth L. Cameron,‡ PhD, MPH, ATC, MAJ Kelly Kilcoyne,†§ MD,
LTC C. Dain Allred,‖ MD, COL Steven J. Svoboda,†‡ MD, LTC Robert Sullivan,‖ MD,
Col (Ret) John M. Tokish,†¶ MD, Karen Y. Peck,‡ MEd, ATC, and CDR John-Paul Rue,# MD
Investigation performed at the United States Naval Academy, Annapolis, Maryland, USA;
the United States Military Academy, West Point, New York, USA;
and the United States Air Force Academy, Colorado Springs, Colorado, USA

73% Return the same season

27% complete the season without subsequent instability events.

No difference in the recurrence rate whether a subluxation or dislocation.

The **long-term outcomes and consequences** associated with recurrent instability events in these patients who return to play remain unclear.

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#3. Reliable outcomes when surgically repaired after first dislocation

(97%) (Perthes-Bankart lesion)

1

1

ir

57

la

6

0 rotator cuff tears.

53 nonoperatively treated patients, 48 (90%) have developed recurrent instability.

Pathologic Changes Associated with Shoulder Dislocations

Arthroscopic and Physical Examination Findings in First-Time, Traumatic Anterior Dislocations*

Dean C. Taylor,† MAJ, MC, USA, and Robert A. Arciero, LTC, MC, USA

From the Orthopaedic Surgery Service, Keller Army Community Hospital, West Point, New York, and The Uniformed Services University of the Health Sciences, Bethesda, Maryland

THE AMERICAN JOURNAL OF SPORTS MEDICINE, Vol. 22, No. 5

Arthroscopic Bankart Repair Versus Nonoperative Treatment for Acute, Initial Anterior Shoulder Dislocations*

Robert A. Arciero,† LTC, MC, USA, Ja[illegible]

From the Orthopaedic Service, U[illegible]

TABLE 1. *Treatment of acute shou[illegible] West Point cadet[illegible]*

Nonoperative treatment
Immobilization (3 wk)
Physical therapy
No contact or overhead sports for 3
Arthroscopic treatment
Abrasion anterior glenoid
Debride detached labrum
+/− Staple repair labrum
Postoperative treatment same as no[illegible]

TABLE 2
Summary of results

	Grade I (Nonoperative) (N = 15)	Grade II (Arthroscopic) (N = 21)
Age (years)	19.5	20.5
Followup (median)	19 months	32 months
"Bony" Bankart lesion present (West Point view)	4	5
Sport of injury		
Collision	11	9
Limited contact	2	10[a]
Noncontact	2	2
Skill level		
Varsity	10	8
Intramural	2	6
Military training	3	7
Recurrent instability	12	3[a]
Subsequent open Bankart repair	7	1[b]
Recurrence in varsity athletes	8 of 10	1 of 8[c]

Surgical Trends in Bankart Repair

An Analysis of Data From the American Board of Orthopaedic Surgery Certification Examination

Brett D. Owens,*† MD, John J. Harrast,‡ PhD, Shepard R. Hurwitz,§ MD, Terry L. Thompson,‖ MD, and Jennifer Moriatis Wolf,¶ MD
Investigation performed at Keller Army Hospital, West Point, New York

We are doing Bankart repairs more arthroscopically than open
There are less complications with arthroscopic surgery

Conclusion: Review of the ABOS data shows a trend toward arthroscopic shoulder stabilization over time, with the use of open repair declining. Reported complications were lower overall in the arthroscopic stabilization group when compared with open surgeries.

#4. When they dislocate again the damage is more severe and the treatment more complicated

Capsular Elongation in Shoulders with Recurrent Anterior Dislocation

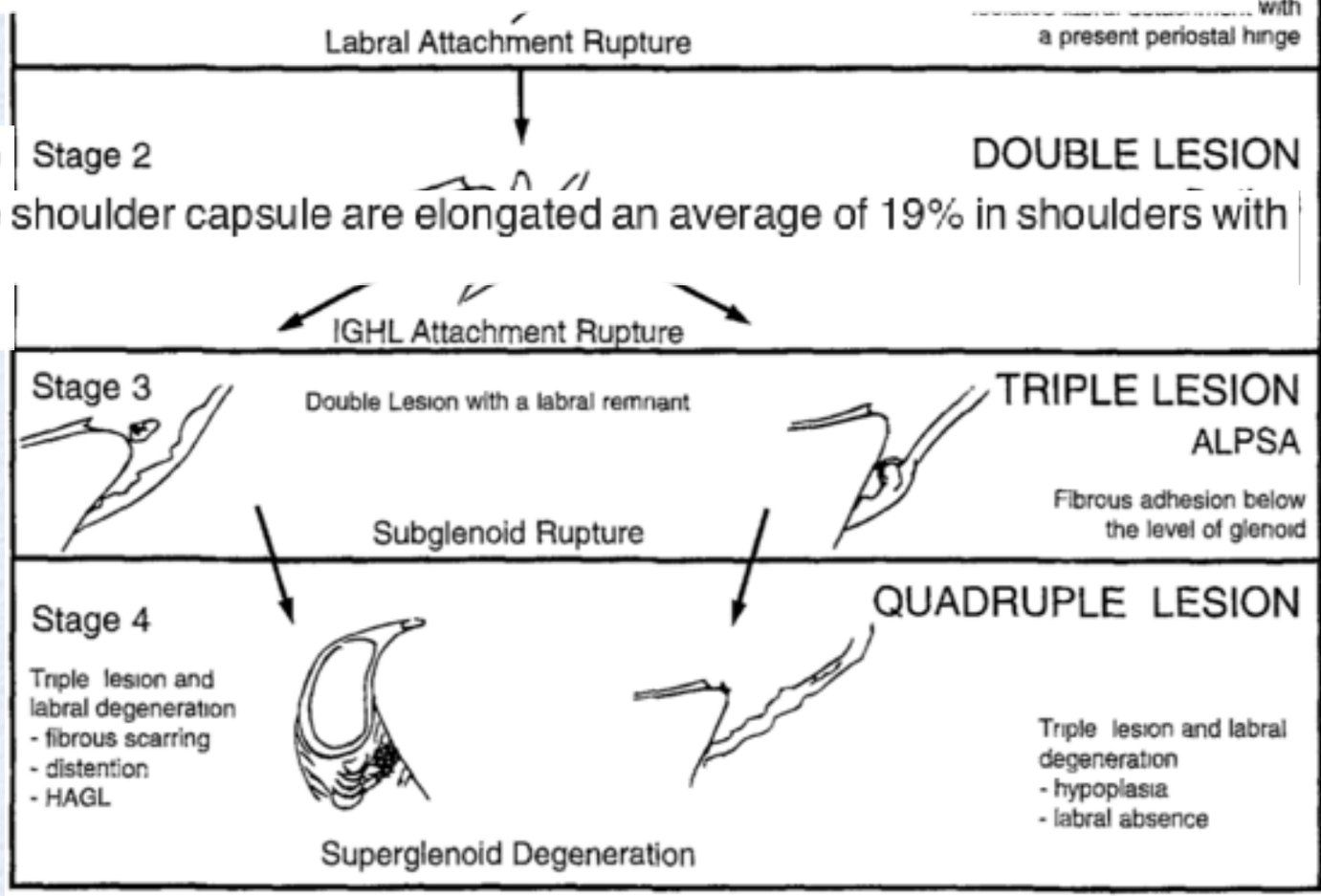
Quantitative Assessment with Magnetic Resonance Arthrography

Masakazu Urayama, MD, Eiji Itoi,* MD, Ryuji Sashi, MD, Hiroshi Minagawa, MD, and Kozo Sato, MD

The dynamic progression of these lesions seems to

Conclusions: The anteroinferior and inferior portions of the shoulder capsule are elongated an average of 19% in shoulders with recurrent anterior dislocation.

tion and subluxation disorders.



Intra-articular lesions and their relation to arthroscopic stabilization failure in young patients with first-time and recurrent shoulder dislocations

Sang-Jin Shin, MD*, Young Won Ko, MD, Juyeob Lee, MD

Ewha Shoulder Disease Center, Department of Orthopaedic Surgery, School of Medicine, Ewha Womans University, Seoul, Republic of Korea

Table II Comparison of associated intra-ar
between first-time and recurrent shoulder dislo

Variable	First-time dislocation (N = 33)	Recurren dislocati (N = 89)	
Bony Bankart			
Absent	27	64	
Present	6	25	
SLAP			.952
Absent	18	49	
Present	15	40	
Glenoid erosion			.043*
Absent	33	79	
Present	0	10	
ALPSA lesion			.048*
Absent	29	63	
Present	4	26	
Hill-Sachs lesion			.810
Absent	9	18	
Present	24	71	
Loose body			.488
Absent	31	80	
Present	2	9	
PTRCT			.925
Absent	32	86	
Present	1	3	

SLAP, superior labral tear from anterior to posterior; *ALPSA*, anterior labral periosteal sleeve avulsion; *PTRCT*, partial-thickness rotator cuff tear.
* Statistically significant difference.

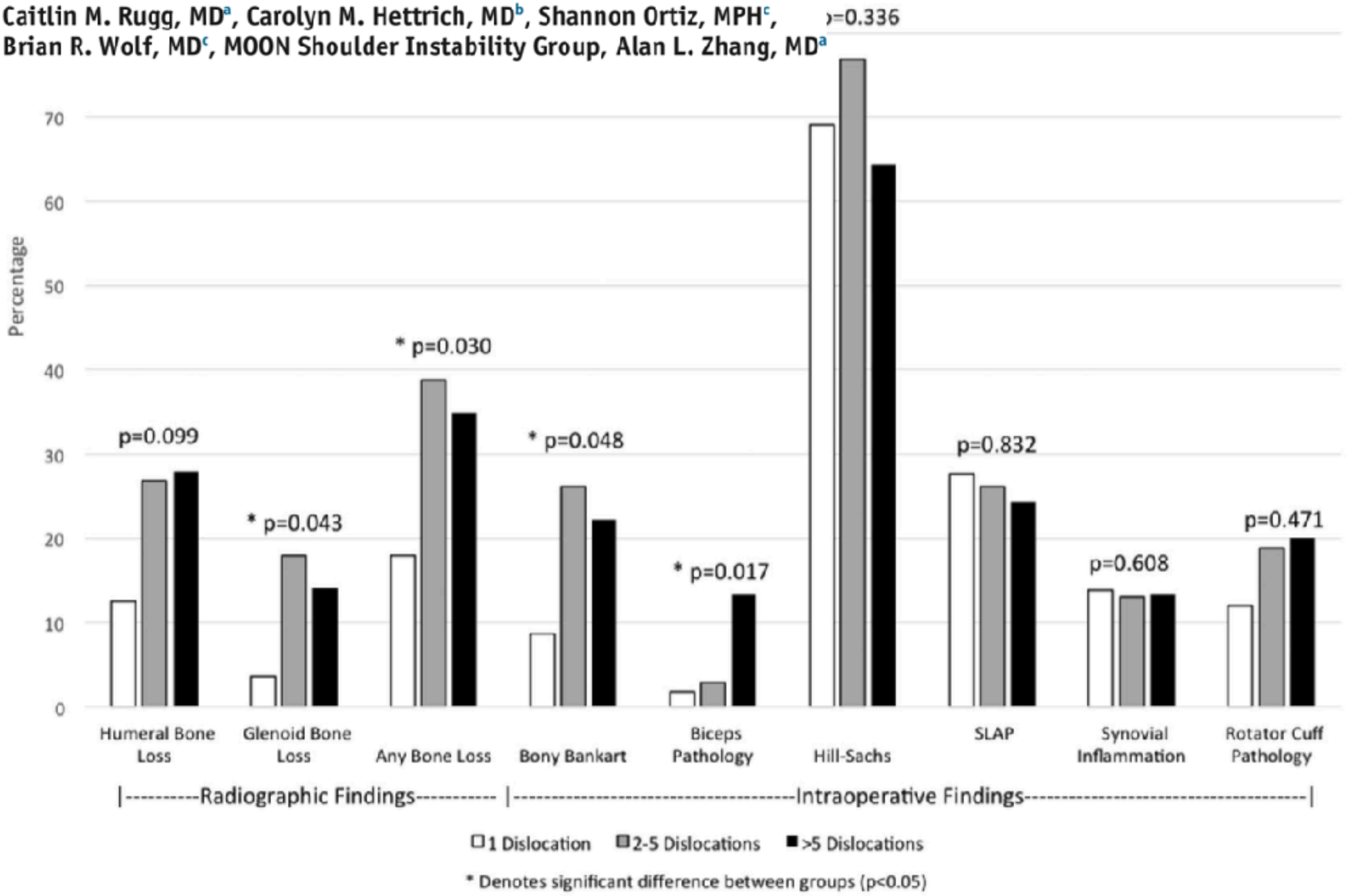
Table III Comparison of clinical outcomes and satisfaction for operation between patients with first-time dislocation and those with recurrent shoulder dislocation

Variable	First-time dislocation (N = 33)	Recurrent dislocation (N = 89)	*P* value
VAS score for pain			
Preoperative	3.9 ± 2.8	4.4 ± 2.9	.542
Last follow-up	0.5 ± 0.3	0.8 ± 0.7	.620
VAS score for satisfaction in daily activities	93.0 ± 5.2	82.7 ± 7.2	<.001*
Failure rates	1 (3%)	16 (18%)	.039*
Recurrence of dislocation	1 (3%)	6 (7%)	
Subjective instability	0	10 (11%)	

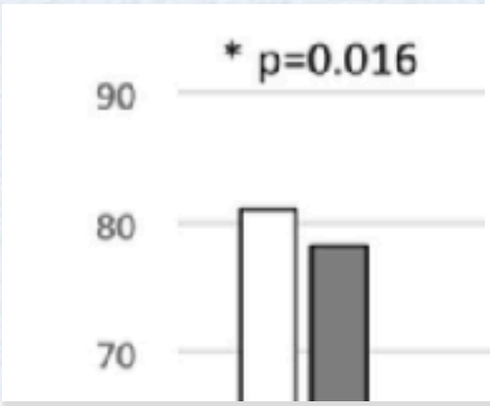
VAS, visual analog scale.
* Statistically significant difference.

Surgical stabilization for first-time shoulder dislocators: a multicenter analysis

Caitlin M. Rugg, MD[a], Carolyn M. Hettrich, MD[b], Shannon Ortiz, MPH[c], Brian R. Wolf, MD[c], MOON Shoulder Instability Group, Alan L. Zhang, MD[a]



Surgical stabilization for first-time shoulder dislocators: a multicenter analysis



Caitlin M. Rugg, MD[a], Carolyn M. Hettrich, MD[b], Shannon Ortiz, MPH[c], Brian R. Wolf, MD[c], MOON Shoulder Instability Group, Alan L. Zhang, MD[a]

Conclusion

First-time shoulder dislocators who undergo stabilization surgery are more likely to undergo an arthroscopic procedure and less likely to have bone loss or biceps pathology compared with recurrent dislocators, who are more likely to need open stabilization. Future studies are needed to ascertain long-term outcomes of surgical stabilization based on number of dislocations before surgery.

#4. When they dislocate again the damage is more severe and the treatment more complicated

Glenohumeral Arthrosis in Anterior Instability Before and After Surgical Treatment

Incidence and Contributing Factors

Florent Buscayret,* MD, Thomas Bradley Edwards,[†‡] MD, Istvan Szabo,* MD, Patrice Adeleine,* PhD, Henri Coudane,* MD, and Gilles Walch,* MD
*From the *Clinique Ste. Anne Lumiere, Lyon, France, and [‡]Fondren Orthopedic Group, Houston, Texas*

We discovered that the number of instability episodes statistically influenced the development of postoperative arthritis

This finding may argue for earlier surgery to prevent numerous instability episodes.

#4. When they dislocate again the damage is more severe and the treatment more complicated

Neer Award 2008: Arthropathy after primary anterior shoulder dislocation—223 shoulders prospectively followed up for twenty-five years

Lennart Hovelius, MD, PhD[a,b,*], Modolv Saeboe, MD[c]

Table II Arthropathy related to prognosis with respect to recurrences and performed surgery due to remaining instability

	Degree of arthropathy, No. (%)					
Degree of instability	Normal	Mild	Moderate	Severe	Total	Moderate/severe, %[a]
No recurrence	48 (51)	30 (32)	7 (7)	10 (11)[b]	95[b]	17
One recurrence or sublux	4 (24)	7 (41)	2 (12)	4 (24)	17	35

Conclusion: Age at primary dislocation, recurrence, high-energy sports, and alcohol abuse were factors associated with the development of arthropathy. Also shoulders without a recurrence were associated with arthropathy.

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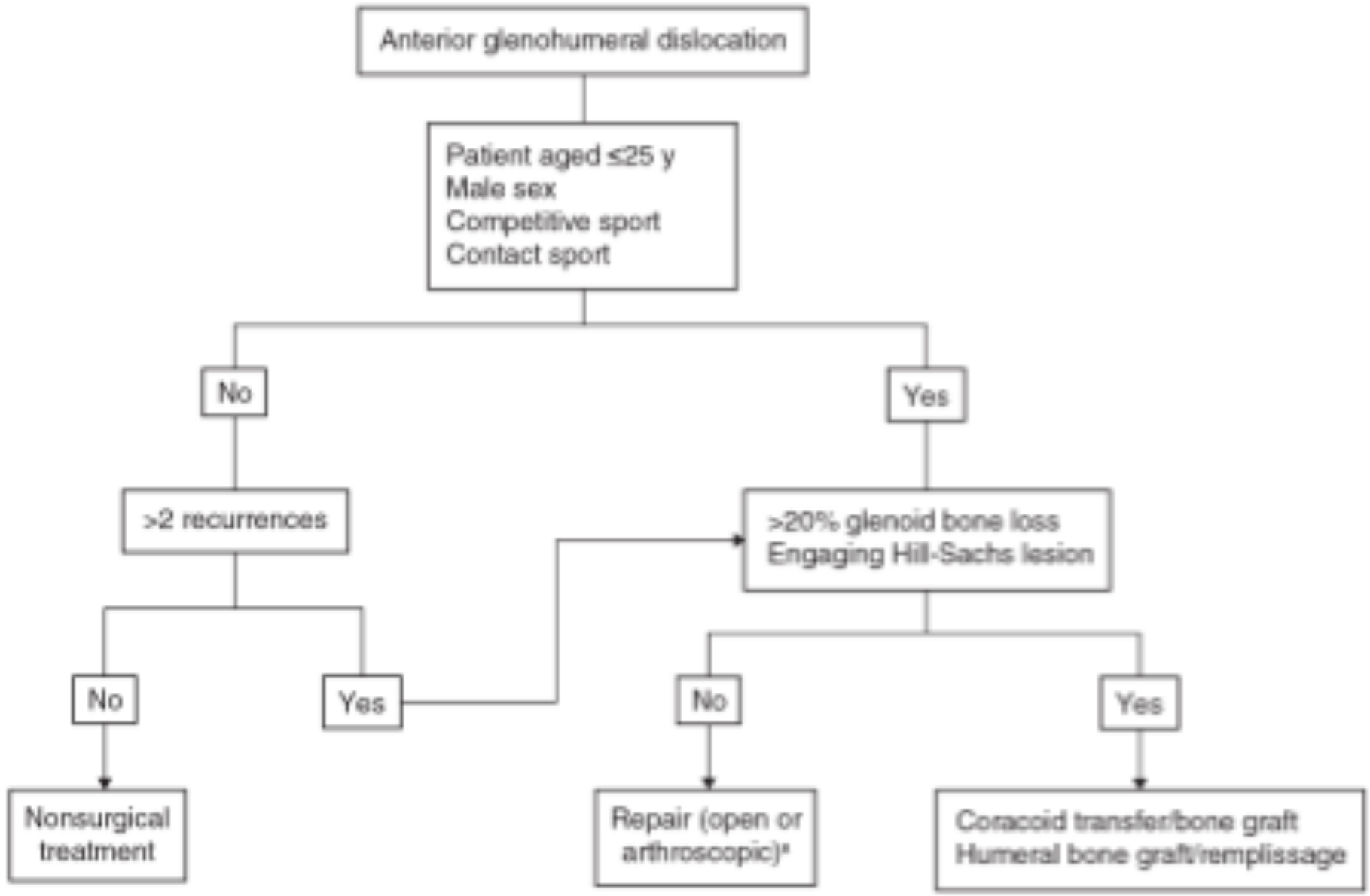
Management


Anterior glenohumeral dislocation
Patient aged ≤25 y
Male sex
Competitive sport
Contact sport
No
Yes
>2 recurrences
>20% glenoid bone loss
Engaging Hill-Sachs lesion
No
Yes
No
Yes
Nonsurgical treatment
Repair (open or arthroscopic)a
Coracoid transfer/bone graft
Humeral bone graft/remplissage

Thank You
QUESTIONS?