Pearls for Shoulders, Elbow, Wrist and Hand Problems

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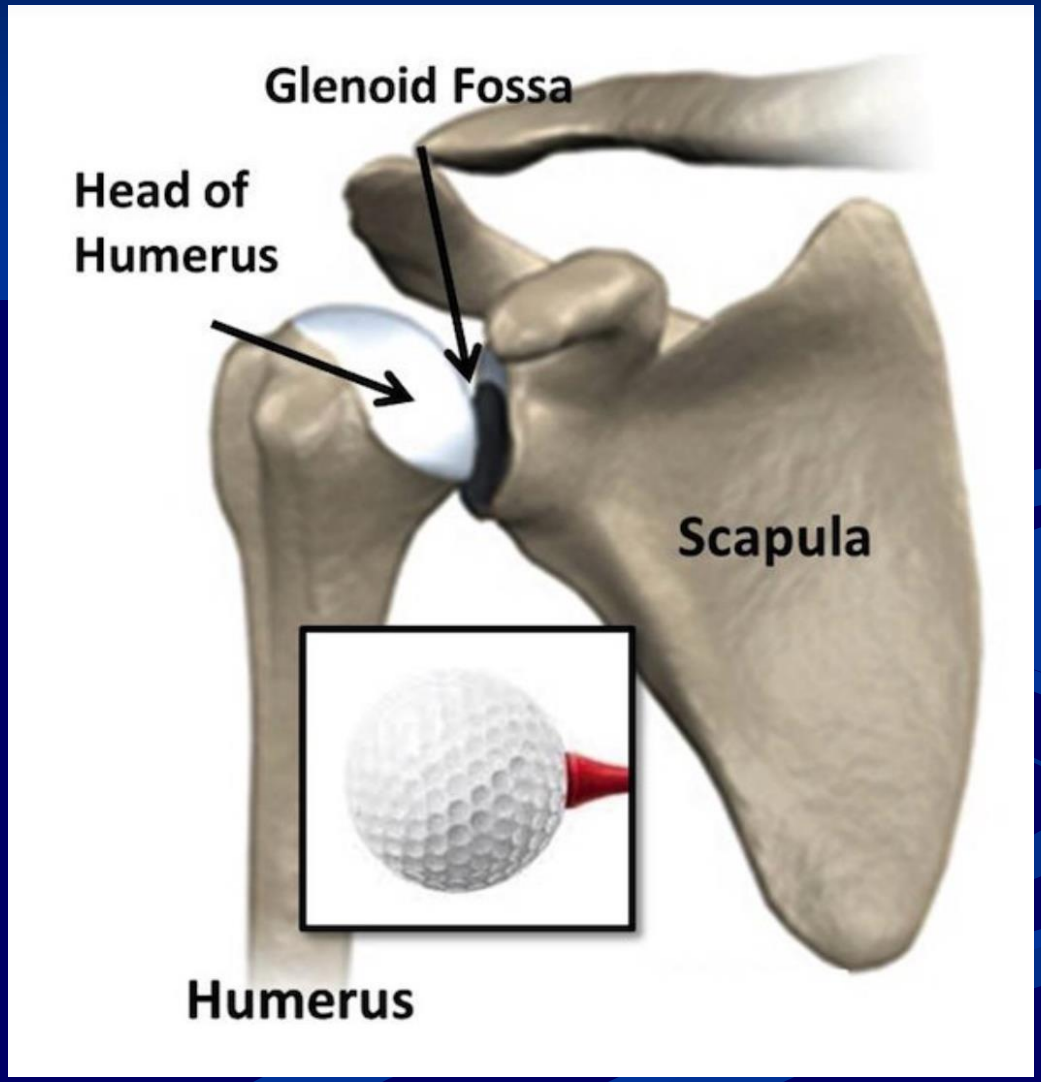
Banner Pediatric Subspecialists

- Saturday, June 29
- 7:30-9:00am; Workshop: Sports Injuries to the Knee, Hips and Ankle
- 9:30-10:15am; General Lecture: Pearls for Shoulders, Elbow, Wrist and Hand Problems
- 12:00-12:30pm; Panel Q&A
- Sunday, June 30
- 7:30-9:00am; Repeat Workshop: Sports Injuries to the Knee, Hips and Ankle
- 9:15-10:00am; General Lecture: Fractures Every

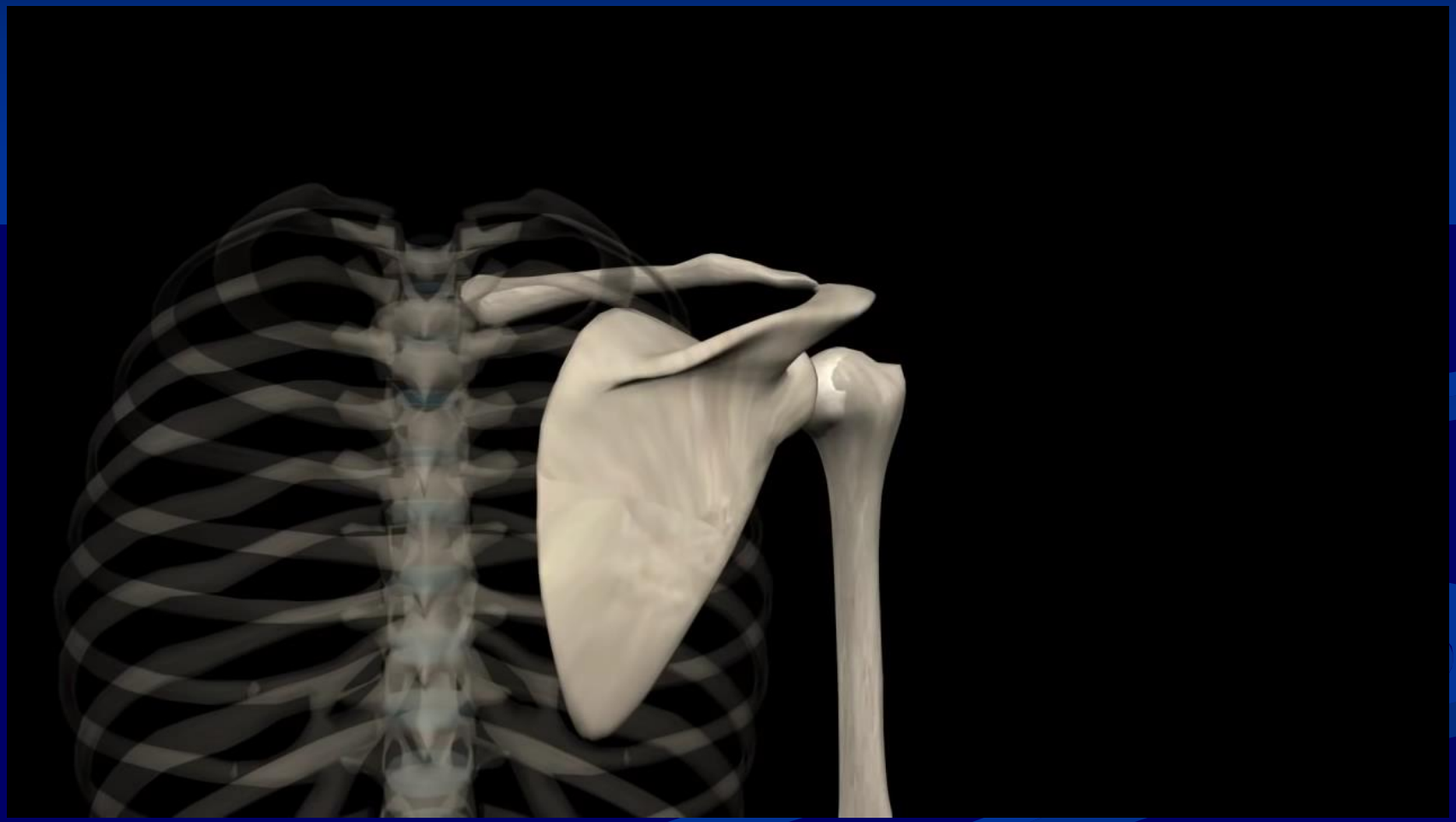
Overview

- Shoulder
- Elbow
- Wrist
- Hand

Shoulder Mechanics



Shoulder Mechanics

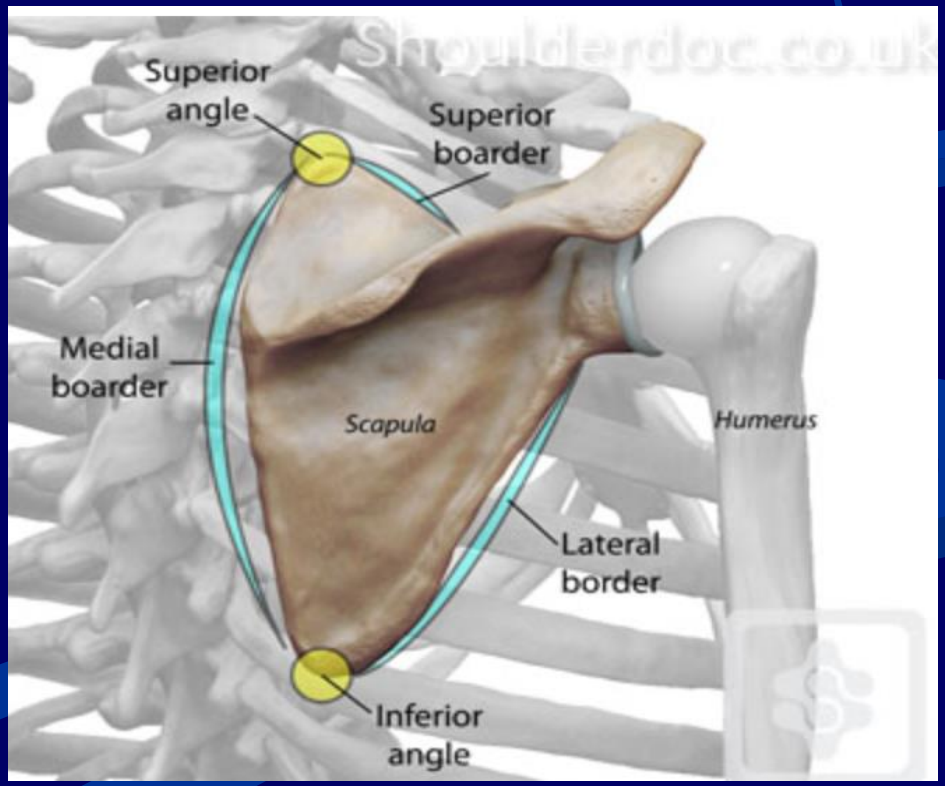


Function of the Scapula

- To stabilize and create stable platform for shoulder
- 1/3 of "shoulder motion"
  - Sternoclavicular joint 25 degrees
  - Scapulothoracic 35 degrees
- verses 2/3 at glenohumeral joint

The "SICK" Scapula
Scapula dyskinesis

- Unhealthy movement of the scapula with resultant periscapular pain



The "SICK" Scapula Signs and symptoms

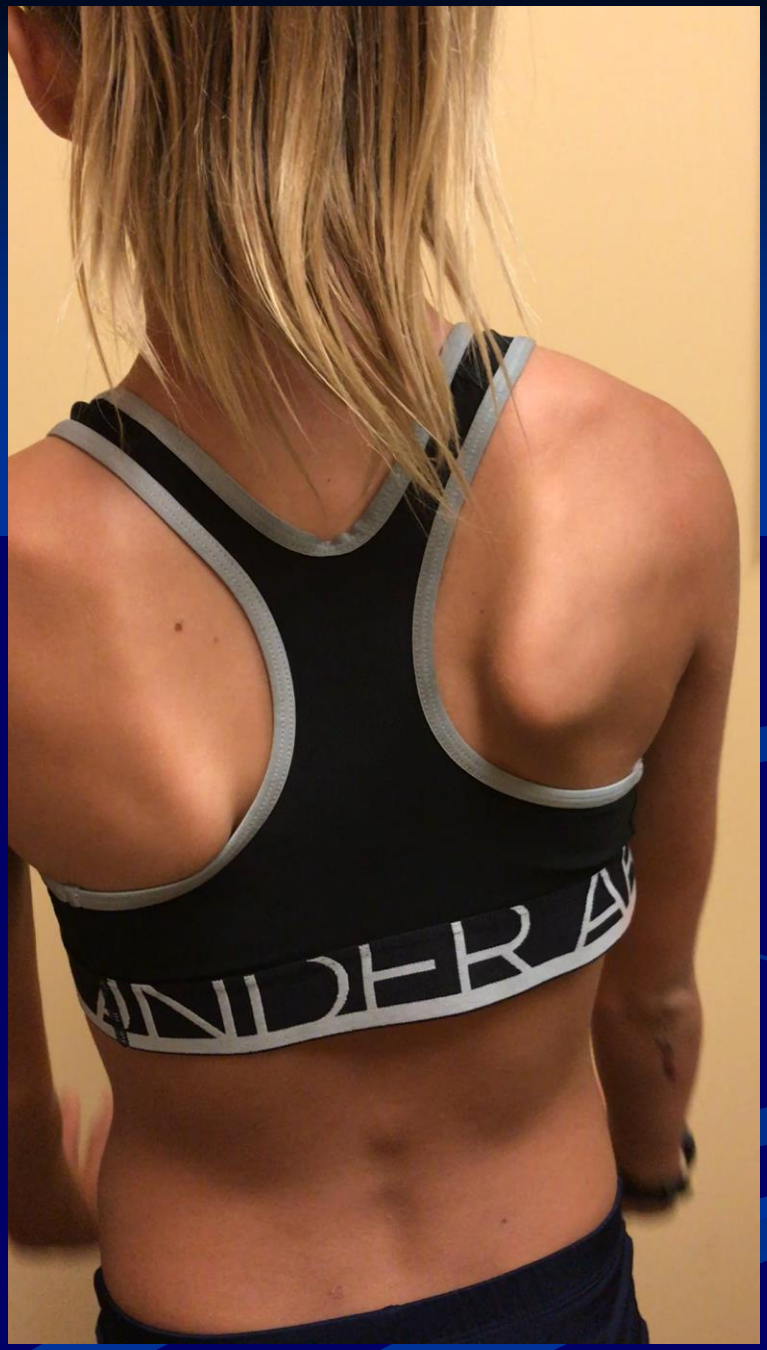
- Dropped shoulder appearance
- Periscapular pain and tenderness
- Snapping or popping with scapular motion
- Loss of strength with shoulder and arm use.
- Winging of the scapula

The "SICK" Scapula Causes

- Muscle weakness or imbalance
- Poor timing of muscular contraction
- Poor overhead mechanics
- Overuse or repetitive motions such as throwing or serving.
- Neurological issues
  - long thoracic **nerve**, spinal accessory **nerve**

“Drop shoulder”

The winged scapula



They are not all this obvious

- You can have symptoms with very few obvious signs of winging
- Most common sign is periscapular pain

Signs and symptoms

- Posterior pain (My back/neck/shoulder hurts)
- Medial (middle) scapular protrusion
- Noticeable hitches and jumps in scapular motion during arm movements
- Scapular pain

Treatment

Treatment

- Physical Therapy
- Usually resolves within 2 months

Rotator Cuff Tears

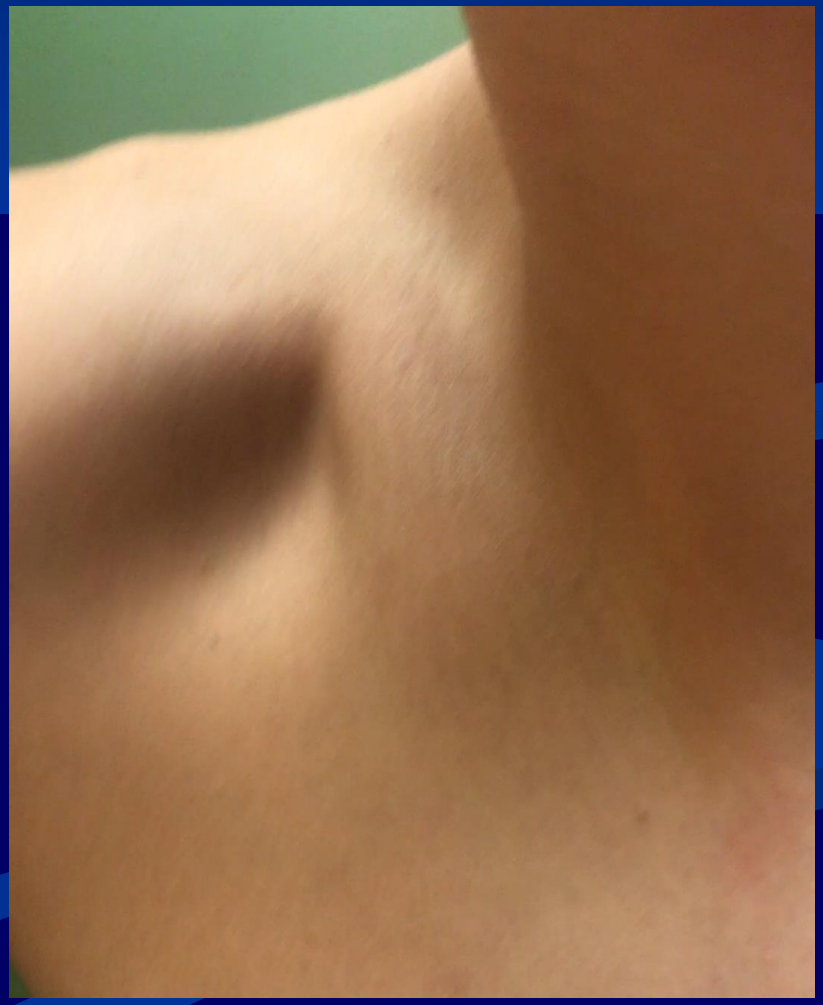
Rare in children

Sternoclavicular dislocations

- Most common is anterior dislocation
- More common in loose jointed individuals

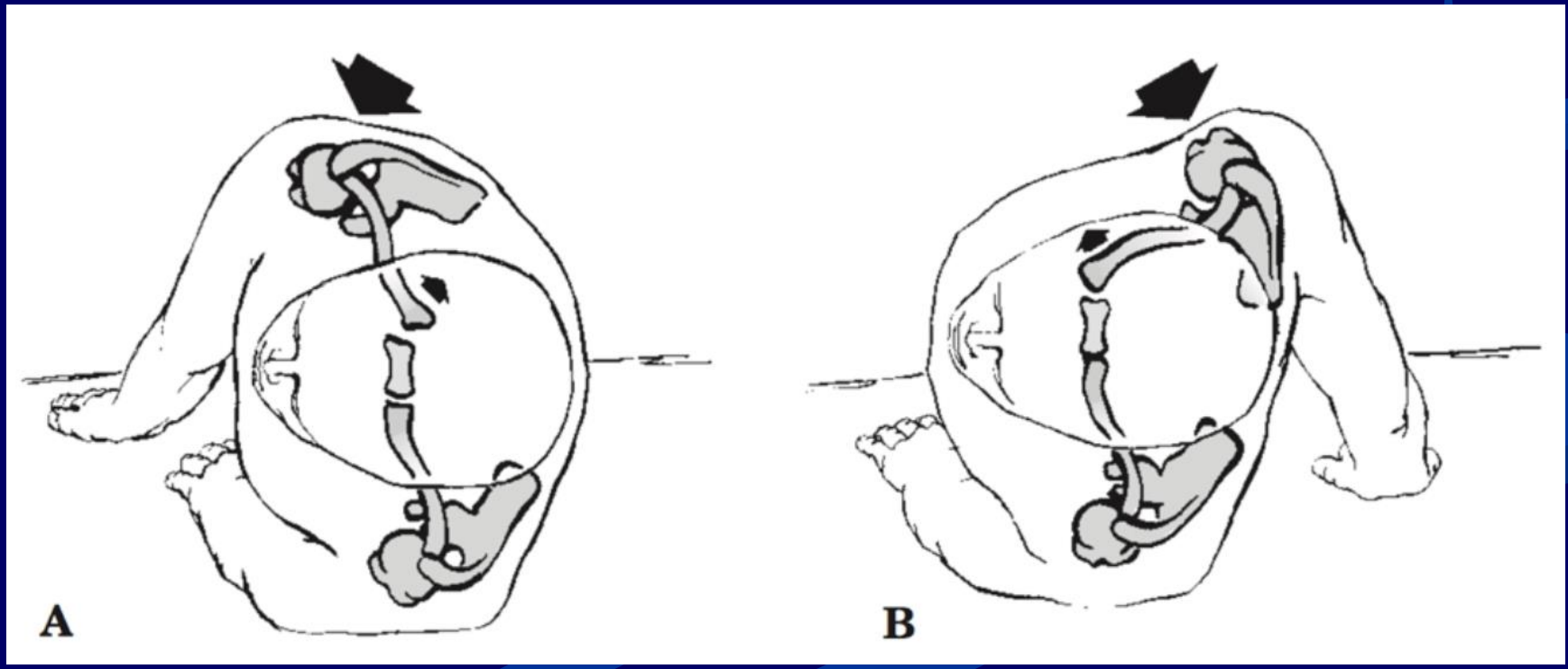
Sternoclavicular dislocations

- Anterior dislocation



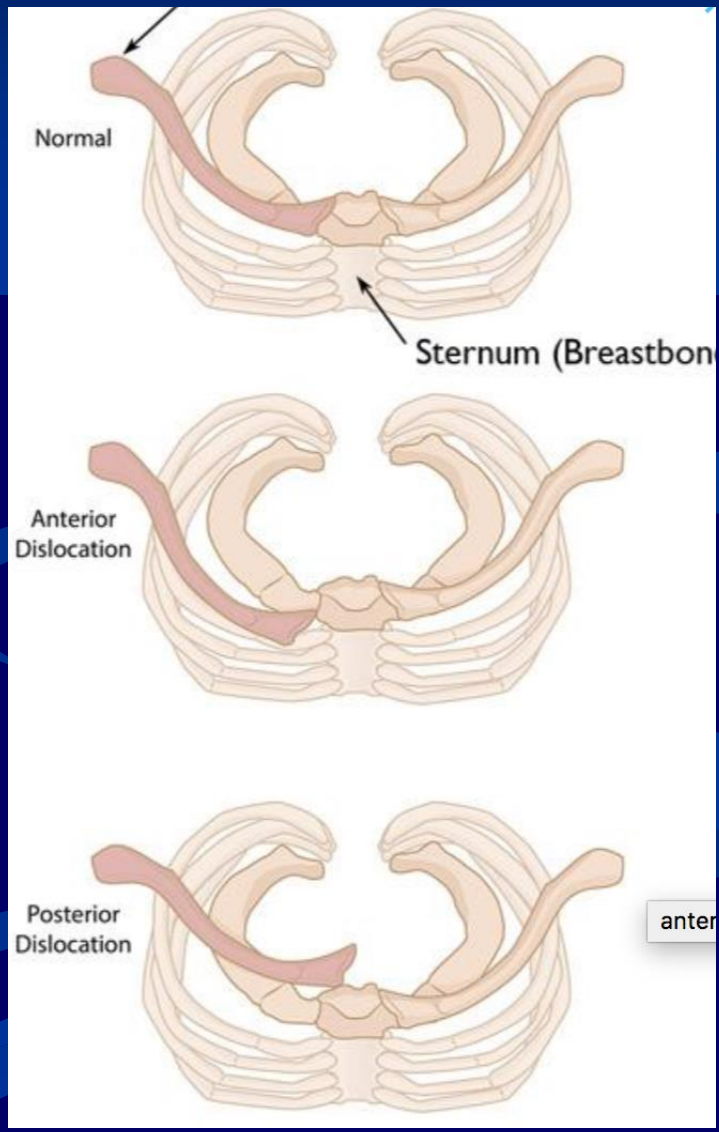
Sternoclavicular dislocations

Direct Blow
Indirect injury (below)



Anterior Sternoclavicular dislocations

- Dx- CT, XR
- Treatment
  - PT as needed
  - Non-operative

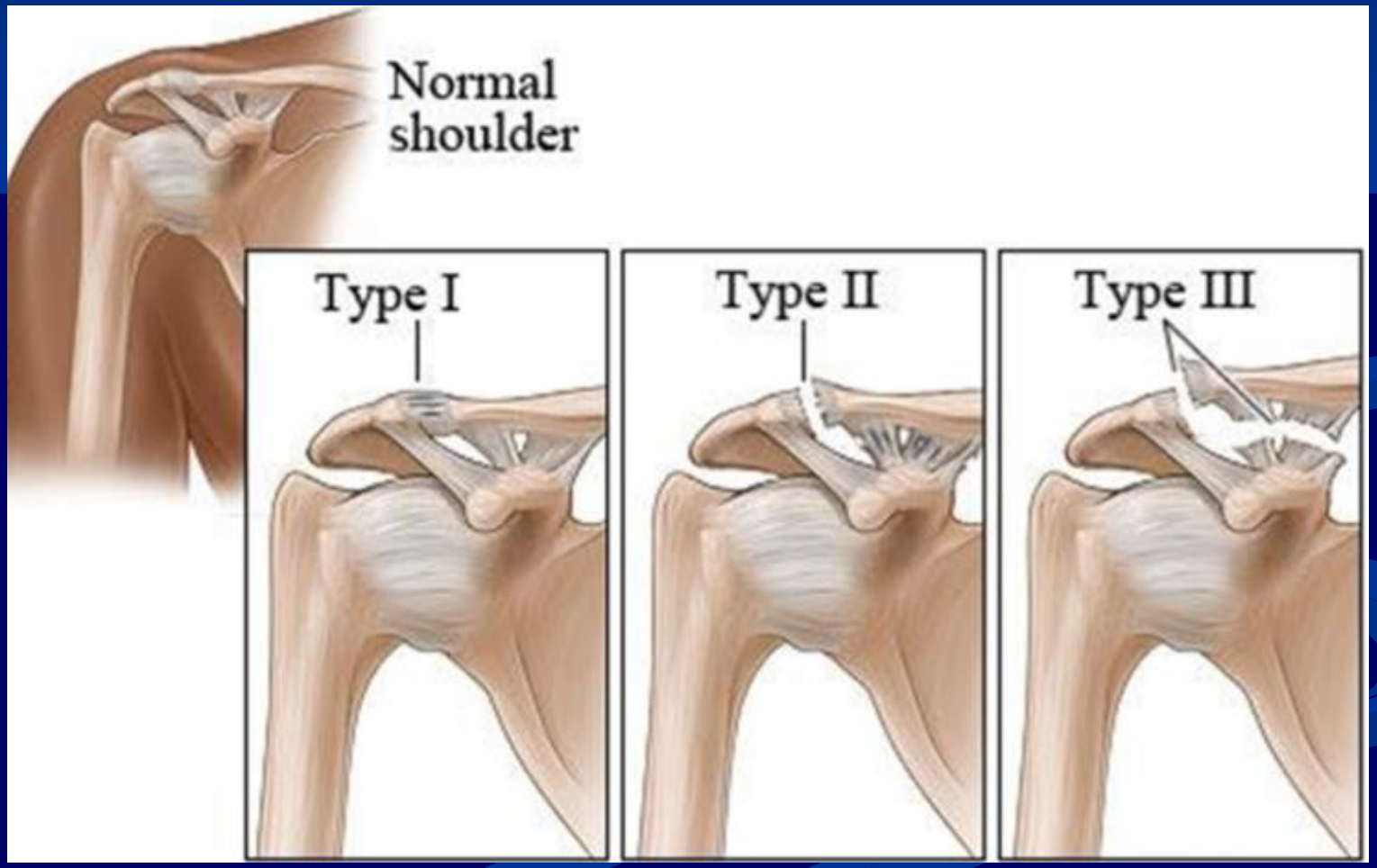


Posterior Sternoclavicular dislocations

- Treatment- surgery
- Have CT surgeon in room

Acromioclavicular dislocations

AKA shoulder separation

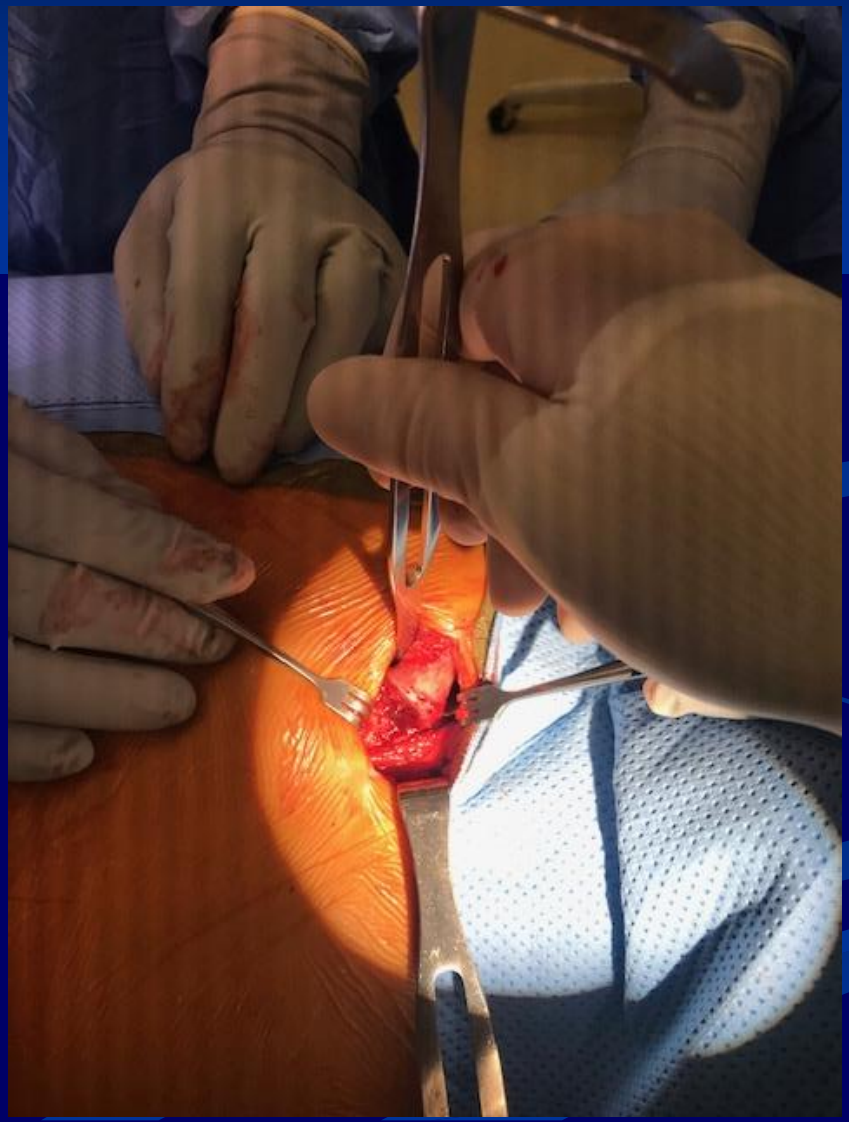


Acromioclavicular dislocations

AKA shoulder separation

- Mechanism
  - Fall or blow to shoulder with arm at side (adducted)

Posterior Sternoclavicular dislocations



Pain secondary to joint laxity

Beighton Score

Beighton Hypermobility Score

The Beighton score is a simple system to quantify joint laxity and hypermobility.

It uses a simple 9 point system, where the higher the score the higher the laxity.

The threshold for joint laxity in a young adult is ranges from 4-6. Thus a score above 6 indicates hypermobility, but not necessarily true BHJS (see below)

Joint	Finding	Points
left little (fifth) finger	passive dorsiflexion beyond 90°	1
	passive dorsiflexion <= 90°	0
right little (fifth) finger	passive dorsiflexion beyond 90°	1
	passive dorsiflexion <= 90°	0
left thumb	passive dorsiflexion to the flexor aspect of the forearm	1
	cannot passively dorsiflex thumb to flexor aspect of the forearm	0
right thumb	passive dorsiflexion to the flexor aspect of the forearm	1
	cannot passively dorsiflex thumb to flexor aspect of the forearm	0
left elbow	hyperextends beyonds 10°	1
	extends <= 10	0
right elbow	hyperextends beyonds 10°	1
	extends <= 10	0
left knee	hyperextends beyonds 10°	1
	extends <= 10	0
right knee	hyperextends beyonds 10°	1
	extends <= 10	0
forward flexion of trunk with knees full extended	palms and hands can rest flat on the floor	1
	palms and hands cannot rest flat on the floor	0

Shoulder Instability

- Multidirectional Instability
  - A – Atraumatic
  - M – Multidirectional
  - B – Bilateral
  - R – Rehab
  - I – Imbrication
- Unidirectional Instability
  - T – Traumatic
  - U –Unidirectional
  - B – Bankart Lesion
  - S - Surgery

Shoulder Multidirectional Instability (often bilateral)

Shoulder Multidirectional Instability

- Causes
  - Generalized capsular and ligament laxity
  - Insufficiency of the static ligament constraints of the glenohumeral joint

Any patients with a atraumatic history….

- Check joint laxity

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Beighton Testing

- >10 degrees hyperextension at elbow

Mother's elbow

Beighton Testing

- 90 or > at Metacarp-phal joint

Beighton Testing

- Thumb to forearm

Beighton Testing

- 10 deg or more knee hyperextension at knee

Beighton Testing

- Palms to ground

Beighton Testing

- Score of 4-6 is threshold for laxity
- Greater then 6 = hypermobility
- Even if score normal, still possible to have loose shoulders

Shoulder Multidirectional Instability

- Exam
  - Generalized ligament laxity exam (Beighton score)

Will it ever get better?

- Symptoms may improve
- Will always be lax
- Nonsurgical treatment in a mean follow-up of 8 years showed one in three of the patients had required surgical treatment, one in three had persistent instability or pain and only half rated their shoulder function as better or much better after conservative treatment.

Multidirectional Instability Treatment

Therapy

Surgery – only if persistent failure

Multidirectional Instability

- Xray and MRI findings?
  - Usually normal

Traumatic Instability

- TUBS
- Traumatic
- Unidirectional – 95% anterior
- Bankart Lesion
- Surgery

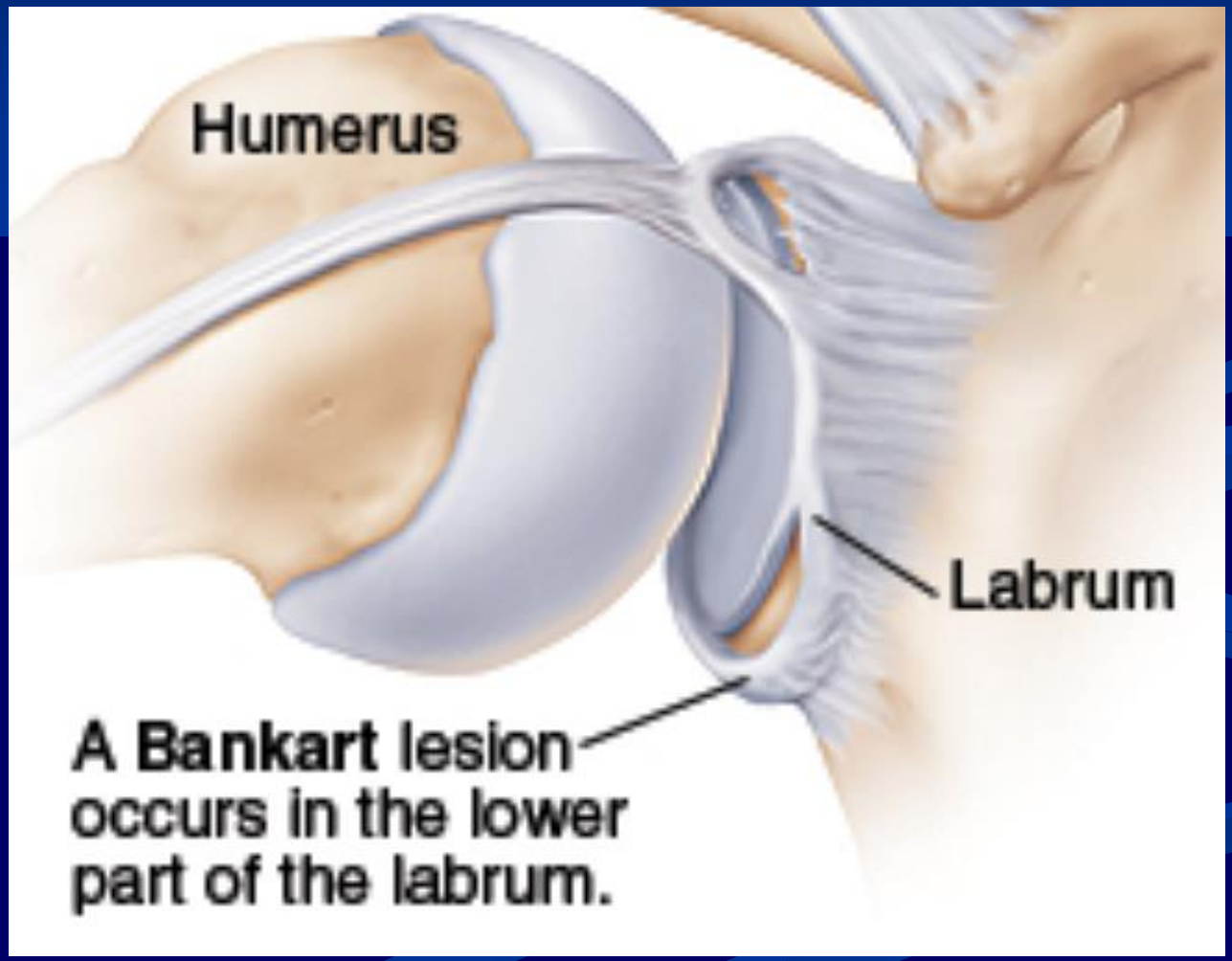
Unidirectional Dislocation

- Abduction – External position
- Shoulder pops out anterior- inferior
- Dislocation = Pops out and stays out unitl maneuver to relocate
- Subluxation = Pops our and goes back in quickly

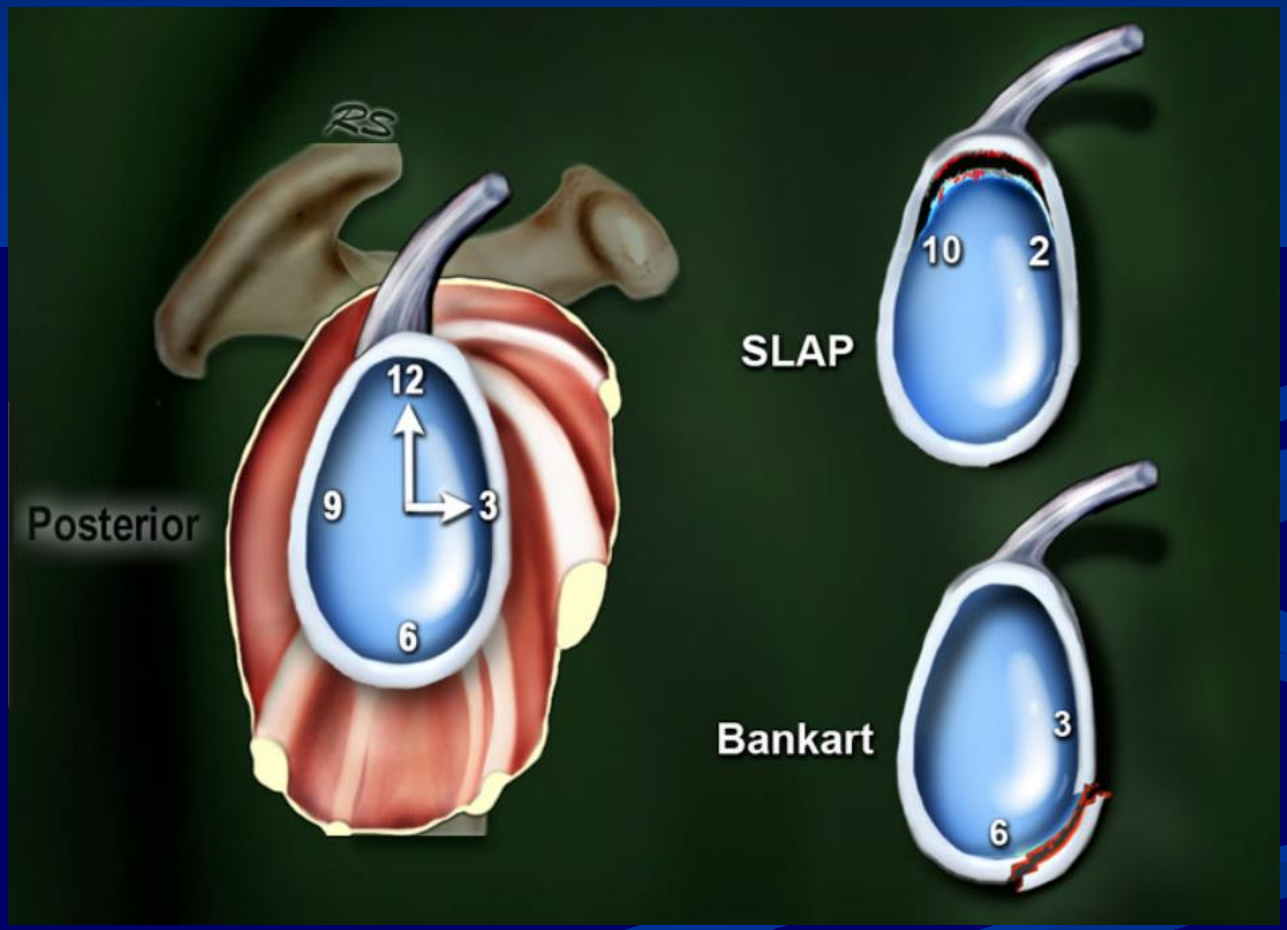
Traumatic Instability

Anterior dislocation with labral tear

Bankart Lesion



Bankart Lesion



Traumatic Instability

- Long term???
- 25 year post dislocation
  - Shoulders were normal in 44%. Arthropathy was mild in 29%, moderate in 9%, and severe in 17%.

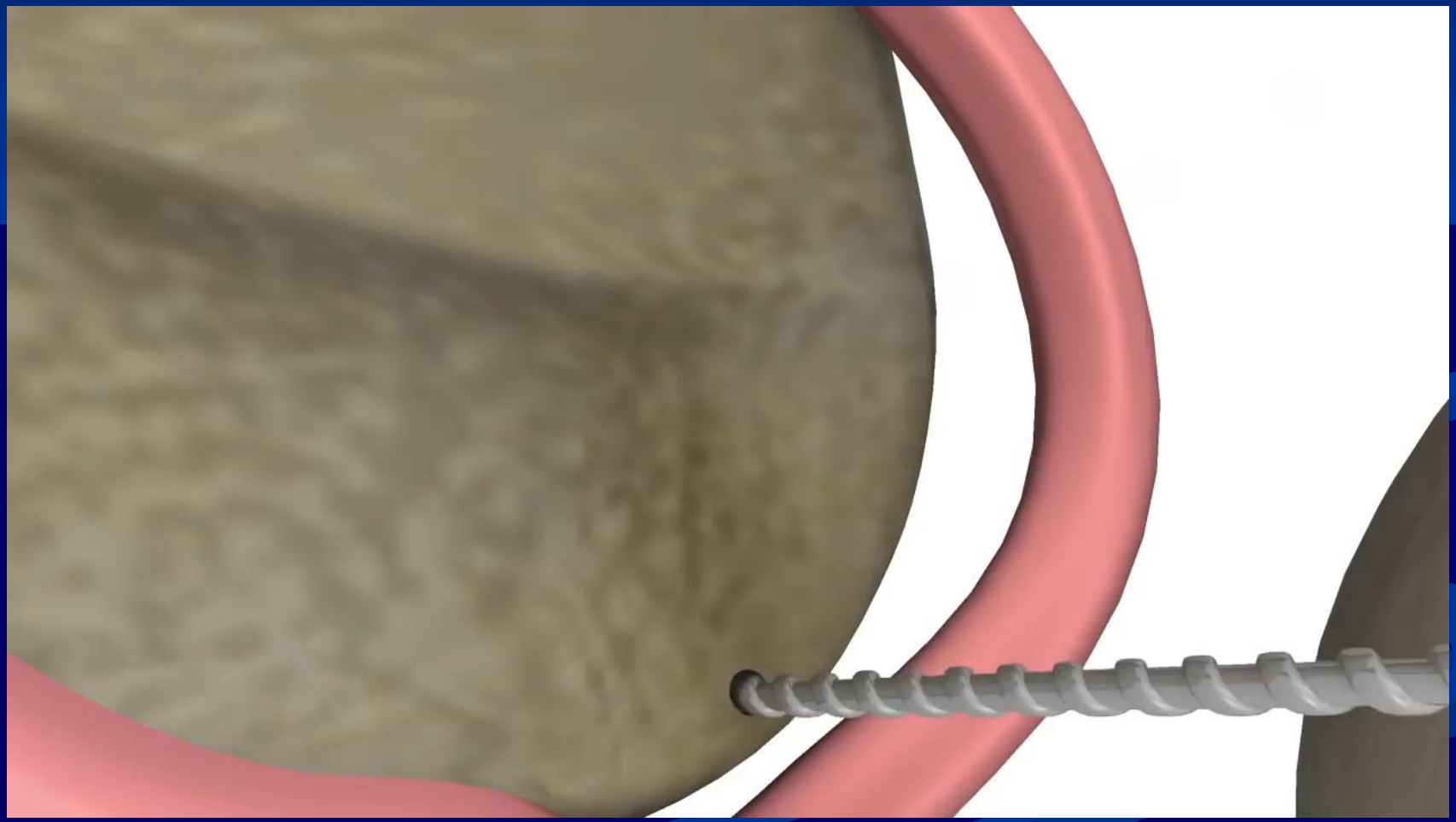
Recurrence Rate in Adolescents

After first dislocation, there is a 60-90% chance of repeat dislocation

Surgery

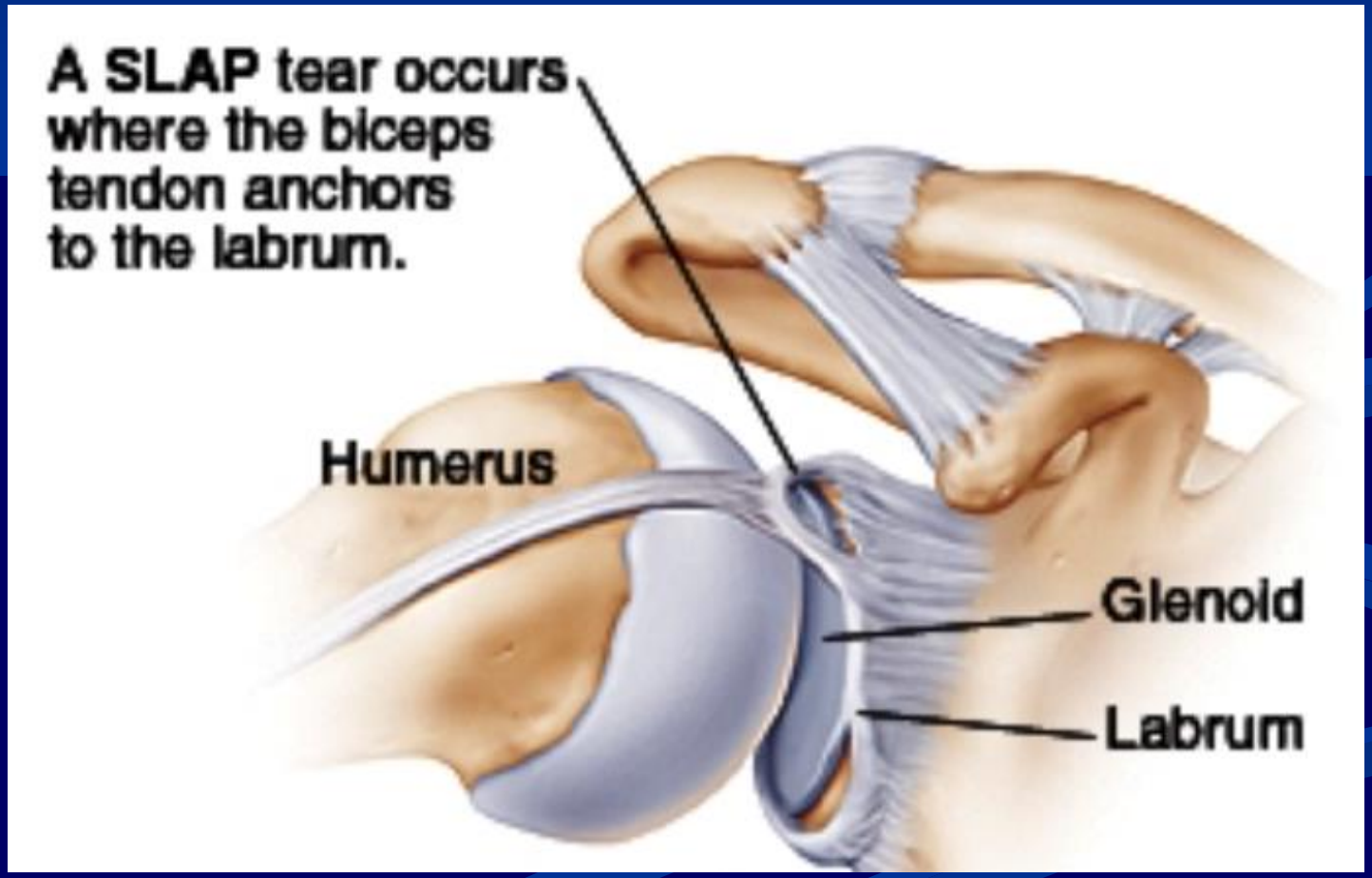
- First time dislocation - +/- surgery
- Two dislocations
  - Surgery – Bankart repair and capsulorrhaphy
    - The nip and tuck of the shoulder
    - Repairs torn labrum
    - Tightens Capsule
    - Success rate 85%

Labral Repair



SLAP TEARS

(Superior Labrum Anterior Posterior)



SLAP TEARS

- Mechanism – Good history important
  - eccentric contraction on biceps
    - Fall on outstretched arm
    - Traction injury – arm tugged on, catch oneself on monkey bar

SLAP TEARS

- Mechanism -
  - Throwing injury
    - Externally rotated arm in abducted position

SLAP TEARS

- Diagnosis –
  - Exam – Notoriously poor sensitivity and specificity
  - MRI – with intra-articular contrast more sensitive

SLAP TEARS

- Diagnosis –
  - Exam – Notoriously poor sensitivity and specificity
  - O'Brien's Compression Test
    - Arms forward flexed to 90 degrees with 10 degrees of adduction. Examiner pushes down, and patient pushes up
    - First -thumbs down
    - Second - palms up

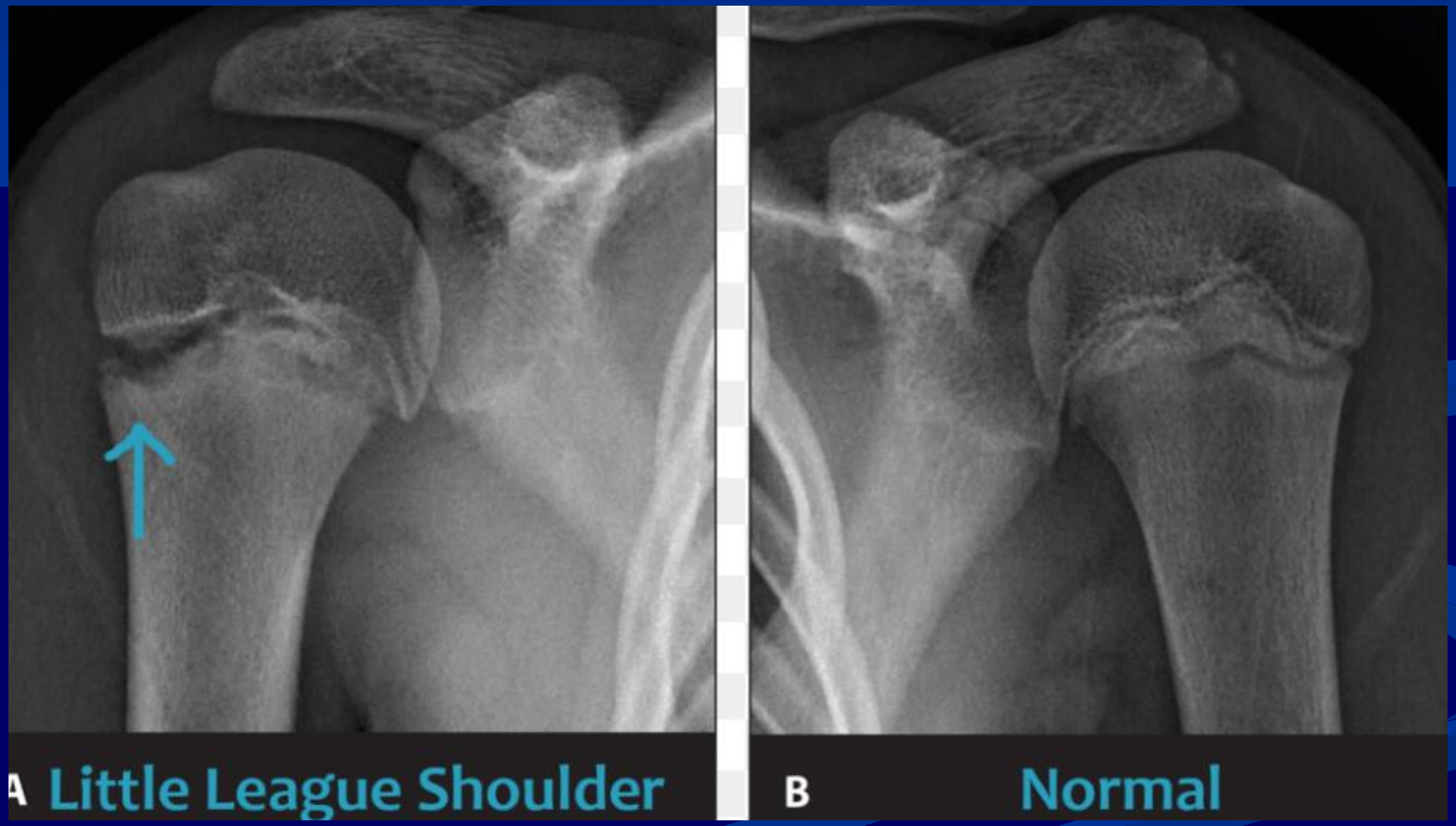
SLAP TEARS

O'Brien's Compression Test

SLAP TEARS

- Treatment – Conservative preferable
  - Professional Pitchers
    - 45 Nonsurgerical
      - 87% RTP (return to play)
      - 65% at same level or higher
    - 26 surgical patients
      - 46% Return to play
      - 12% RTP same level or higher

Little League Shoulder



Little League Shoulder

- overuse injury caused by stress to proximal humerus
- Widening of the growth plate, resulting in swelling and pain
- Usually between ages 11 and 16.

Little League Shoulder

- History
  - How much are you playing?
  - How much are you throwing?

Little League Shoulder - Factors

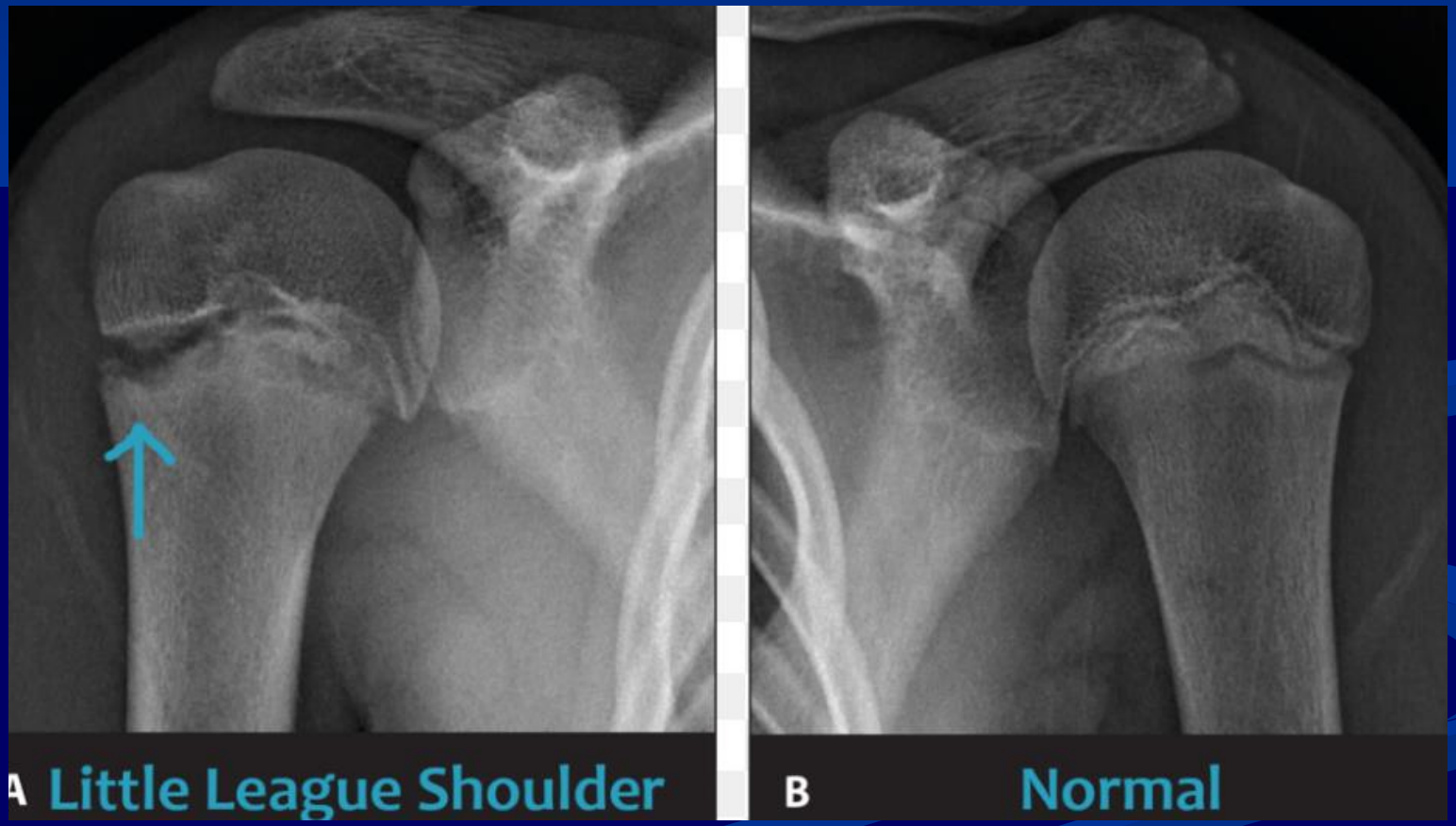
- Cause - Overuse

AGE	DAILY MAX (PITCHES)	REQUIRED REST (PITCHES)				
		0 Days	1 Days	2 Days	3 Days	4 Days
7-8	50	1-20	21-35	36-50	N/A	N/A
9-10	75	1-20	21-35	36-50	51-65	66+
11-12	85	1-20	21-35	36-50	51-65	66+
13-14	95	1-20	21-35	36-50	51-65	66+
15-16	95	1-30	31-45	46-60	61-75	76+
17-18	105	1-30	31-45	46-60	61-75	76+

Little League Shoulder

- Imaging
- Xrays – Need comparison view of contralateral shoulder

Little League Shoulder



Little League Shoulder

Poor Mechanics

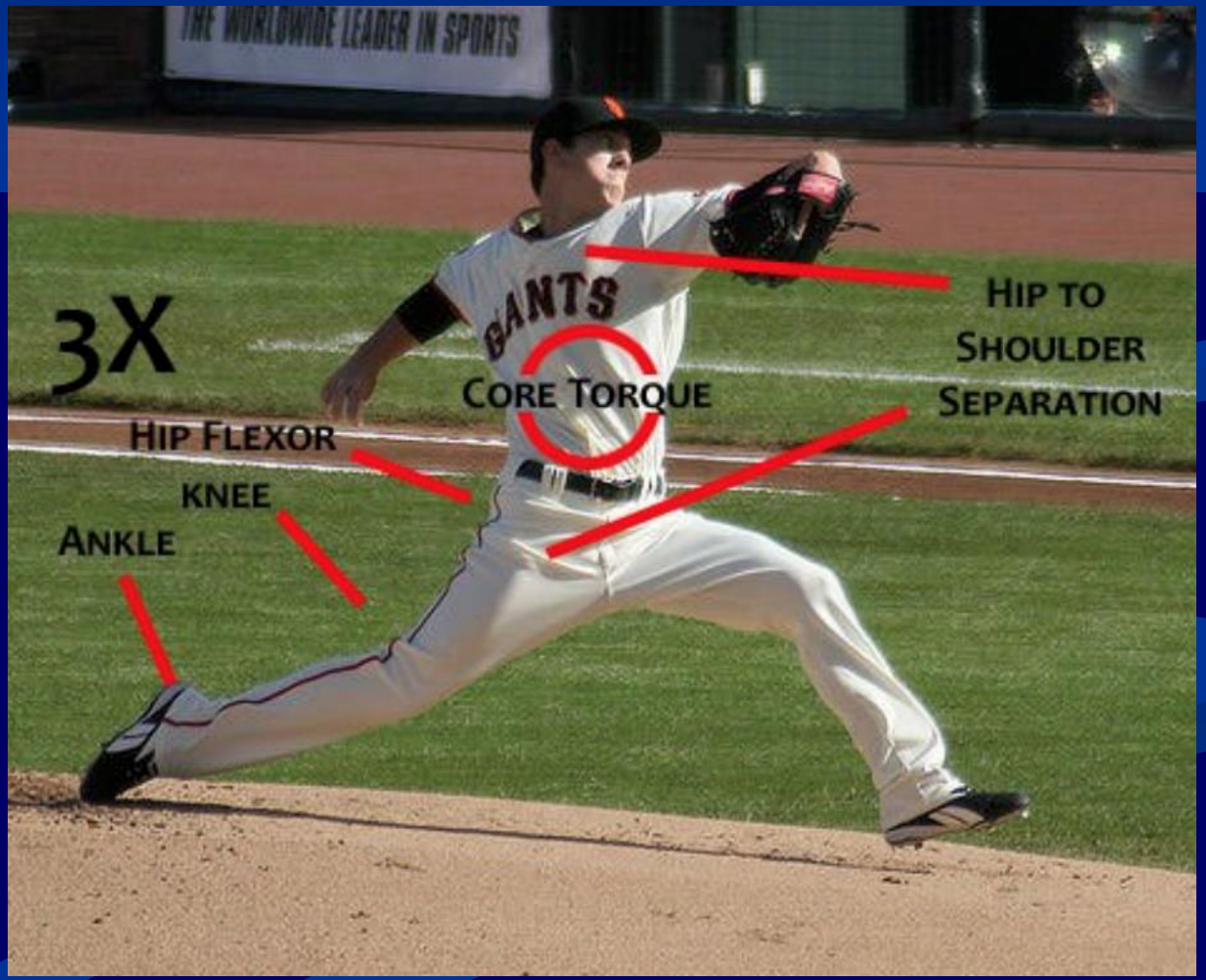
Little League Shoulder

Where is speed generated?

- Youth vs Pros
- Speed from torso down

Little League Shoulder

Where is speed generated?



Little League Shoulder

Youth tend to throw more with their arms and less with their legs

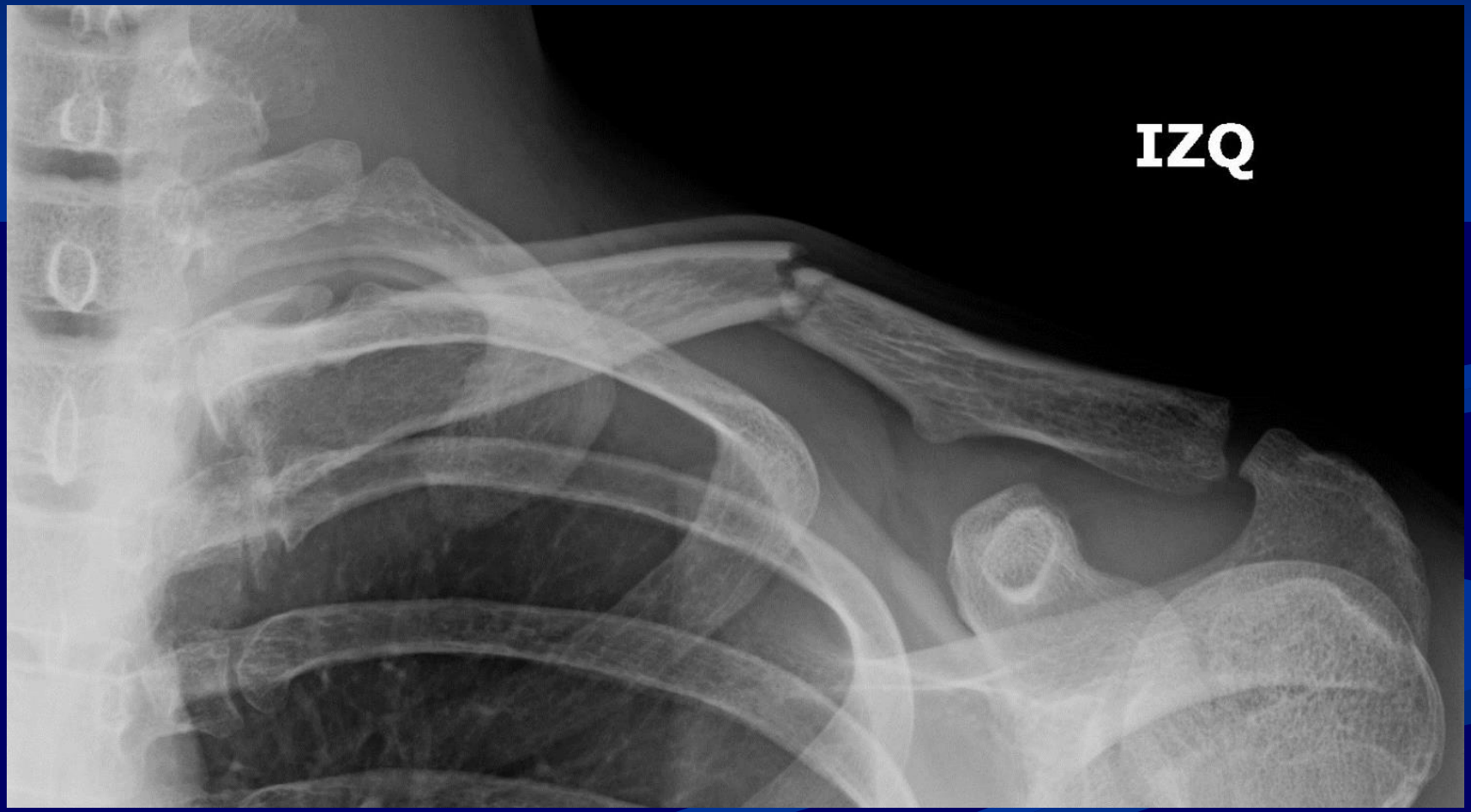
Little League Shoulder

Treatment?

REST, STRETCHING, MECHANICS

Acromioclavicular Dislocation (Shoulder Separation)

Clavicle Fractures



Elbow Injuries Seen in the Young Athlete

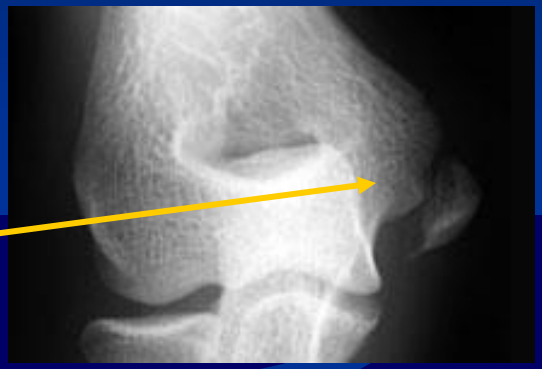
- Medial Epicondyle Avulsion Fractures
- Medial Ulnar Colateral Ligament Injury
- Medial Epicondyle Apophysitis
- Olecrenon Apophyseal Injury
- Panner's Disease
- Osteochondritis Dessicans

Medial epicondyle apophysitis

- Pediatric version of golfer elbow
- Rest, rest, rest

Medial Epicondyle Avulsion Fractures

- Mechanism: Single large force leading to tensile forces medially and muscle contraction
- Ligament injury???
- Elbow Dislocations common
- Common in baseball players and gymnasts/cheerleaders



13 gymnast after doing back hand stand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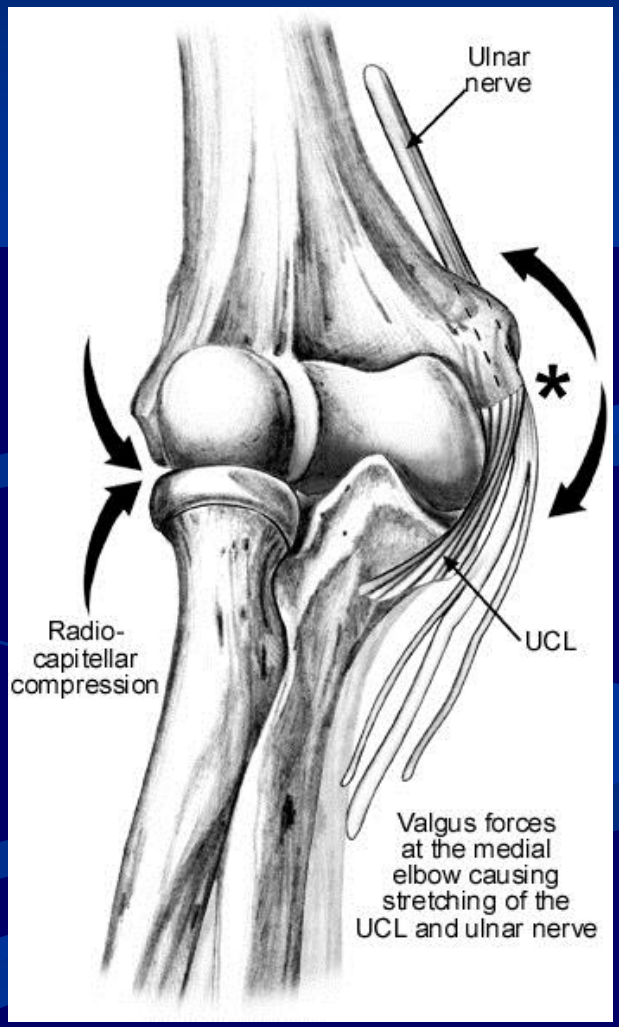
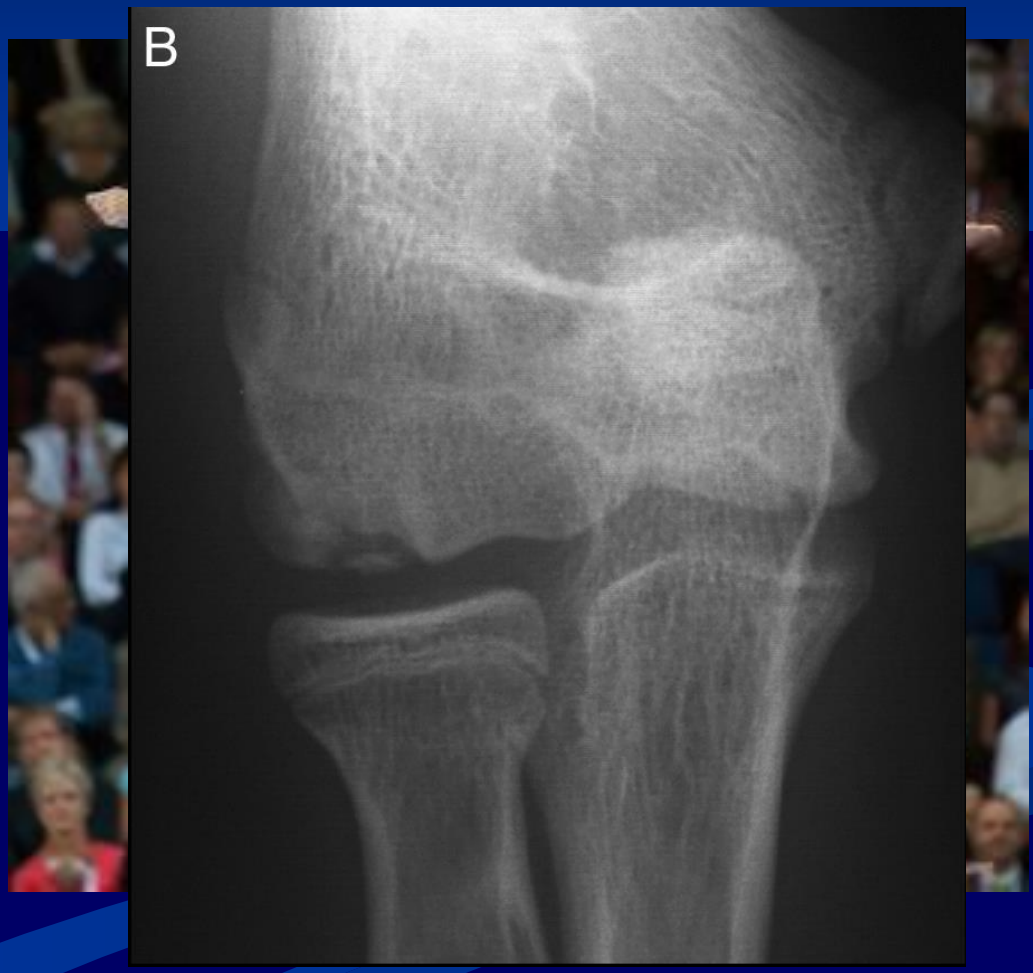
Kinematics

- Tension on medial elbow
- Compression of RC joint (lateral)
- Bony impingement of posteromedial olecrenon
- Stretch of ulnar nerve
- Stress on the flexor-pronator muscles



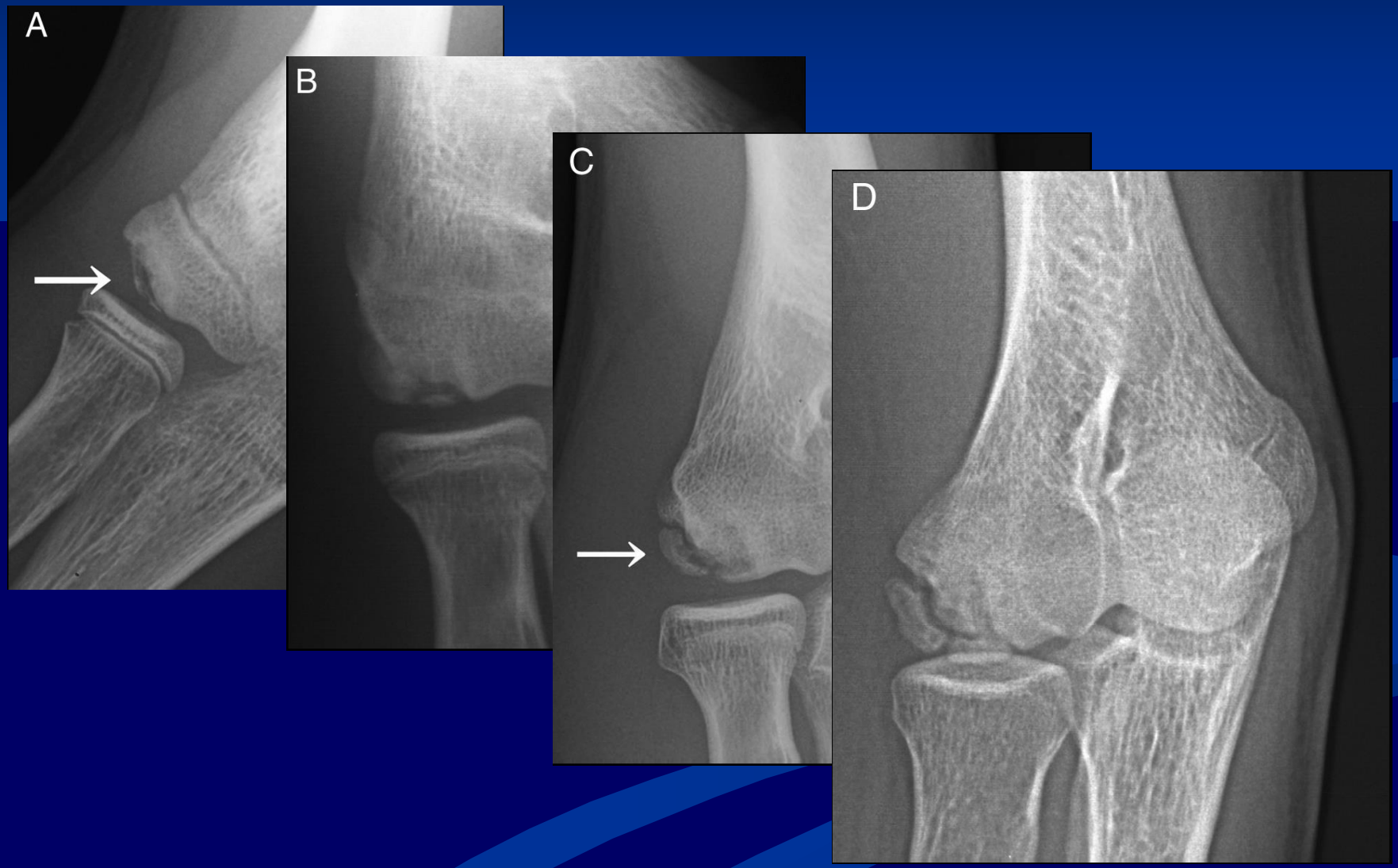
Osteochondritis Dissecans



Osteochondritis Dissecans

- Etiology? Microtrauma in setting of tenous blood supply
- OVERUSE INJURY
  - Weakening of vulnerable subchondral bone with repetetive loads
  - Gymnasts and Baseball players predominantly
  - Vague pain and decreased range of motion
  - Knee and Elbow most commonly affected

Staging (45 deg AP)

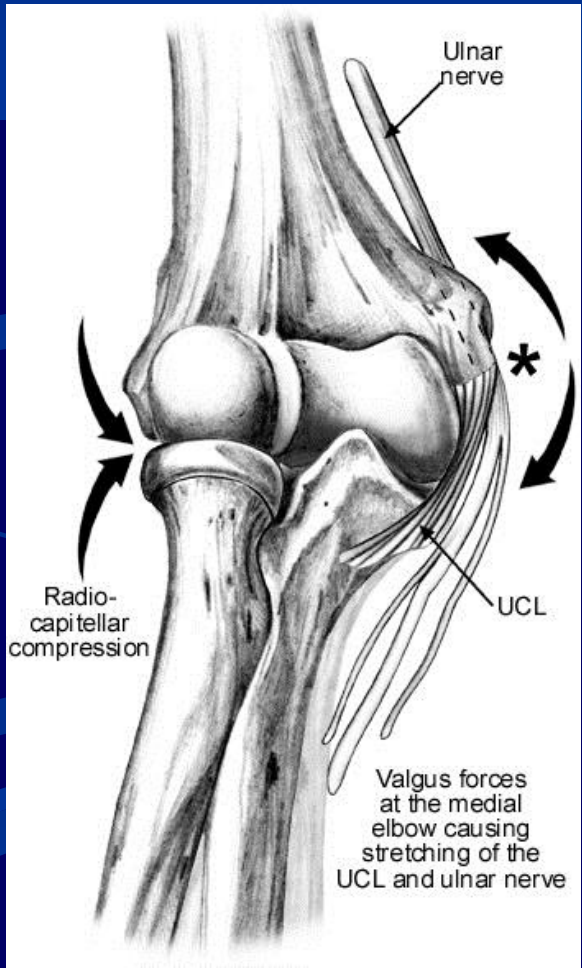


OCD Treatment

- Observation
- Drilling
- Drilling with fixation
- Excision, chondroplasty
- OATS

Tommy John Ligament

- Medial sided pain in baseball pitchers
- Non-op unless high caliber
- Mainly needed in throwing



Wrist Problems

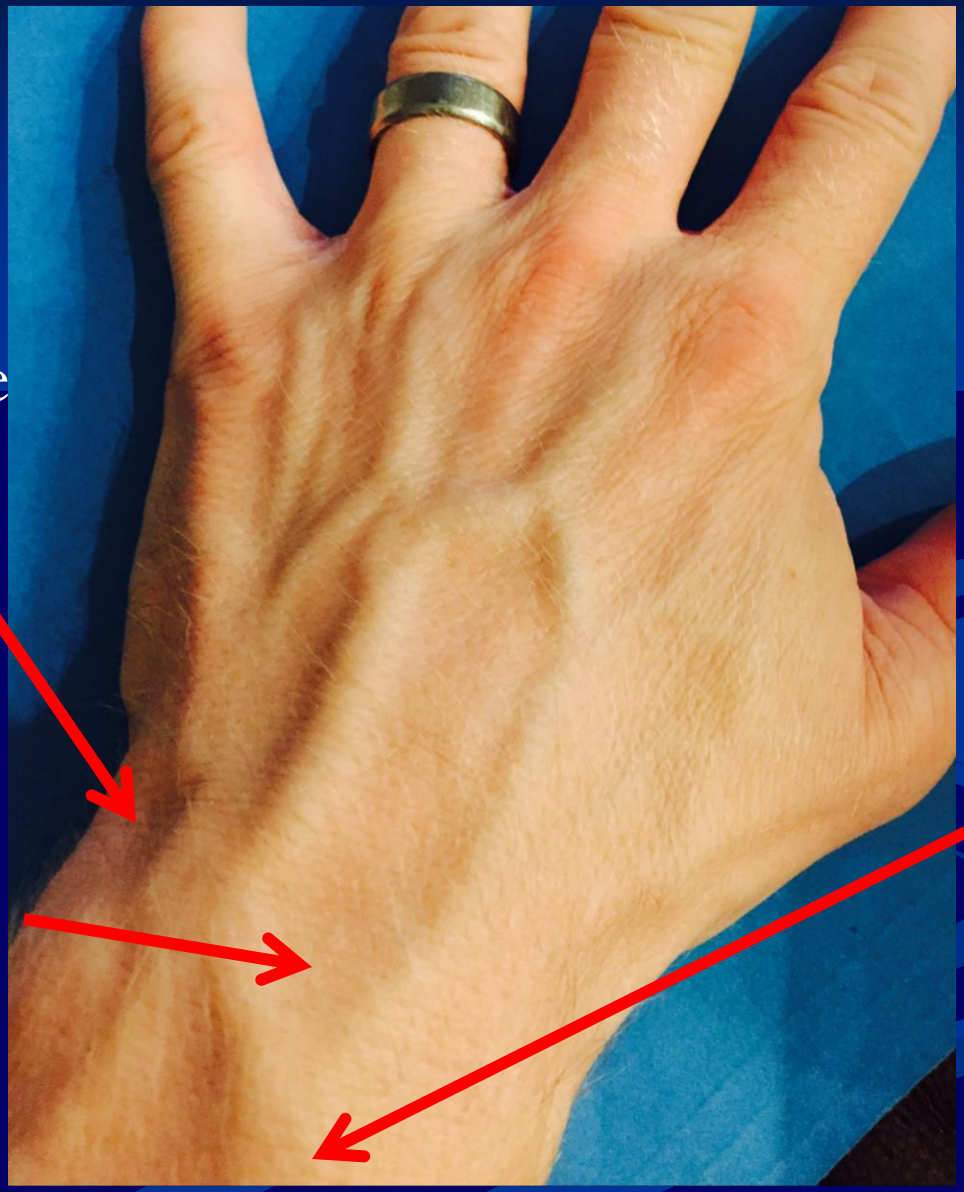
Wrist Fractures

- Distal Radius Fractures (Colles)
- Any angulation or displacement refer out
- Buckle Fractures
  - We always love to see, but…..You can treat if desired
  - Brace an option, some parents insist on cast

Wrist Pain

- Do not ignore radial sided wrist pain!
- Especially radial sided in snuff box

Ulnar and Dorsal Wrist pain



Triangular Fibrocartilage Complex (TFCC)

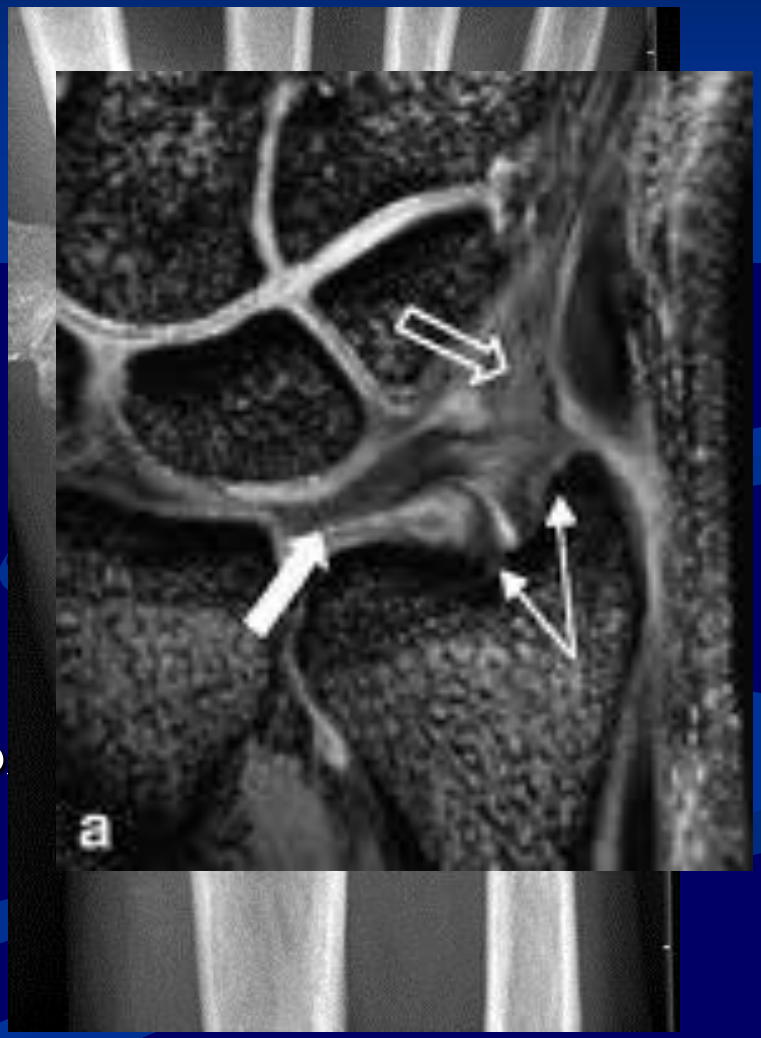
Ganglion Cyst

Growth Plate Injury

Triangular fibrocartilage complex

- Role
  - load transmission
  - Stabilizes distal RU joint
- History – ulnar wrist pain
- Testing
  - Rotation against stress
  - Getting out of seated positio

    with legs off ground

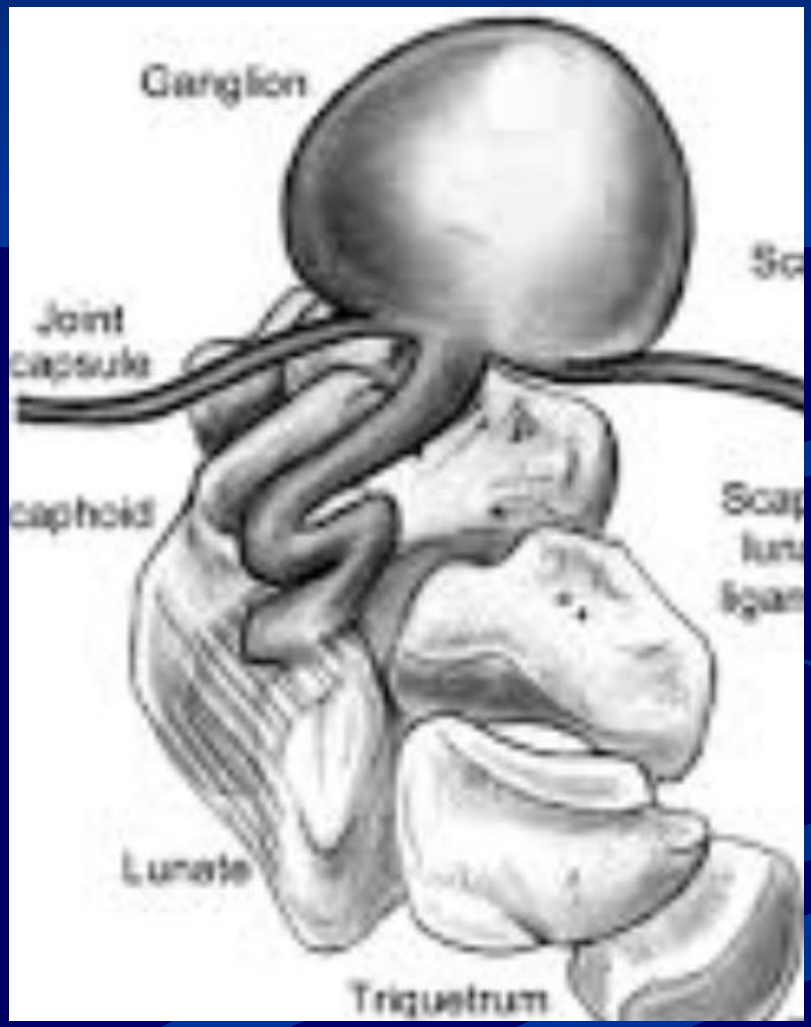


Triangular Fibrocartilage Complex (TFCC) Injuries

- Ulnar sided pain just distal to ulna
- Injury usually form fall
- Pain with twisting motion
- Diagnosis- MRI
- Healing a Long process
- Tx: Casting, splinting, injections, occionally surgery

Dorsal Ganglion Cyst

Dorsal Ganglion Cyst



Dorsal Ganglion Cyst

- Over 50% of cysts resolve spontaneously
- 20% recurrence rate with surgery
- 50% recurrence rate with needle aspiration

Dorsal Ganglion Cyst Treatment

- Education
- Try to talk them out of surgery unless very symptomatic

Growth Plate Fracture

- Pain 2cm proximal to wrist joint
- Diagnosis – Xrays
- Salter Harris 1 fractures not visible
- Treatment- Brace verses cast

Radial Sided Pain

- Snuffbox pain (Scaphoid injury)

Flexor (DeQuervan's) Tenosynovitis

17 year old s/p motocross crash

Scaphoid fracture

Wrist fracture


ajv
LEGAL
I'm Jason
I'D LIKE TO BE YOUR LAWYER.
I'm not exactly *new* to southern Utah, but this website is.
In 2006 my wife and I followed our dreams of living in "Dixie"
and moved our little family to St. George. We have been warmly
welcomed from day one, and we love living and working among
great people like you.
GIVE ME A CALL...
I would love the chance to speak with you
about helping with your legal needs.
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Personal Injury
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Criminal Defense
WEBSITE COMING SOON...
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Scaphoid Fractures

- Do not treat with standard cast

Scaphoid Fractures

- Thumb spica cast needed
- Any snuffbox pain =

Spica cast regardless of xrays

Radial Sided Pain

Flexor (DeQuervan's) Tenosynovitis

Extensor pollicis brevis

Abductor pollicis longus

Flexor (DeQuervan's) Tenosynovitis Causes

- Not entirely clear
- Occupational/repetetive motion?

DeQuervan's Tenosynovitis

- Extensor pollicis brevis
- Abductor pollicis longus
- Finklesteins Test

Flexor (DeQuervan's) Tenosynovitis Treatment

- Immoblization
- PT
- Injection
- Occasionally surgery

Mallet Finger

- Extensor digitorum longus tear
- Don't ignore
- Very easy to treat
- Test active extension
- Treat with stack splin

  12 weeks

Carpal Tunnel in Children

- Rare

ThumbUlnar collateral ligament Injury

- "Gamekeeper Thumb" "Skier Thumb"
- Abduction load to thumb
- Cast
- Occasional surgery
- Recovery prolonged