SLAP Tears

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Orthopedic Update

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Disclosures

- NONE

SLAP lesion

- Initially described by Andres in 1985, but named by Snyder in 1990
- Superior labrum anterior to posterior lesion

Labrum

- Fibrocartilage tissue which deepens joint surface and provides translation stability
  - Enhances concentric concavity
- Poor blood supply-anterosuperior labrum
- Superior labrum had different morphologies
- Serves as origin of biceps along with supraglenoid tubercle
  - 50/50 shared origin

  -most origins are posterior to 12 o'clock position
- Variants: sublabral foramen, discoid, buford complex


MGHL

Biceps

- Exact role is unknown
- Poor intraarticular blood supply
- Theories:
  - Humeral head depressor
  - Increases torsional rigidity with arm in abduction & external rotation
  - Provides some anterior translational stability of joint
- Pulls directly on that superior labrum!

Lesions

- Most commonly occur in overhead throwing athletes
- Overuse injuries
- Traumatic
- Degenerative

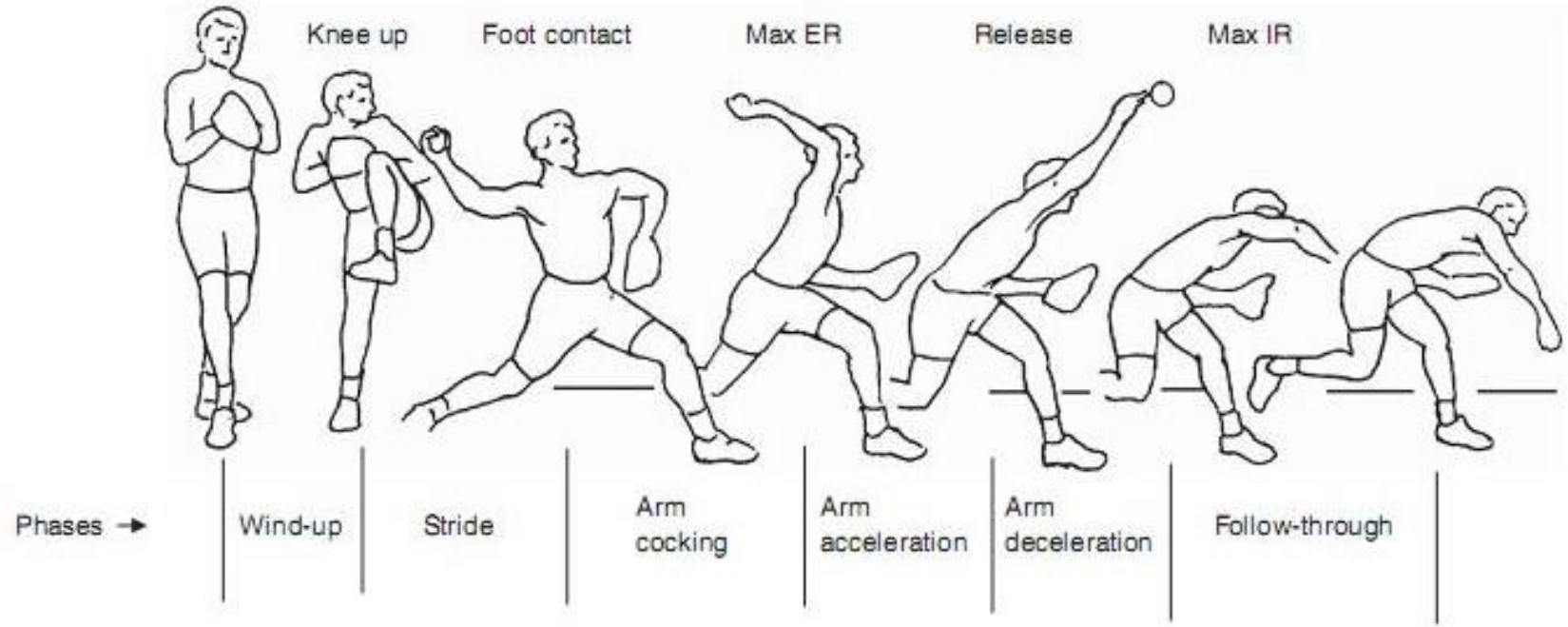


Fig. 1. Pitching phases and key events (adapted from Fleisig et al.,[12] with permission). **ER** = external rotation; **IR** = internal rotation; **max** = maximum.

Etiologies

- Mechanism of injury:
  - Traction
  - Repetitive overhead activities/throwers
    - Internal impingement- RC onto superior labral complex
    - GIRD
    - Dynamic peel back
  - Compression
    - Weight lifters

Pathophysiology

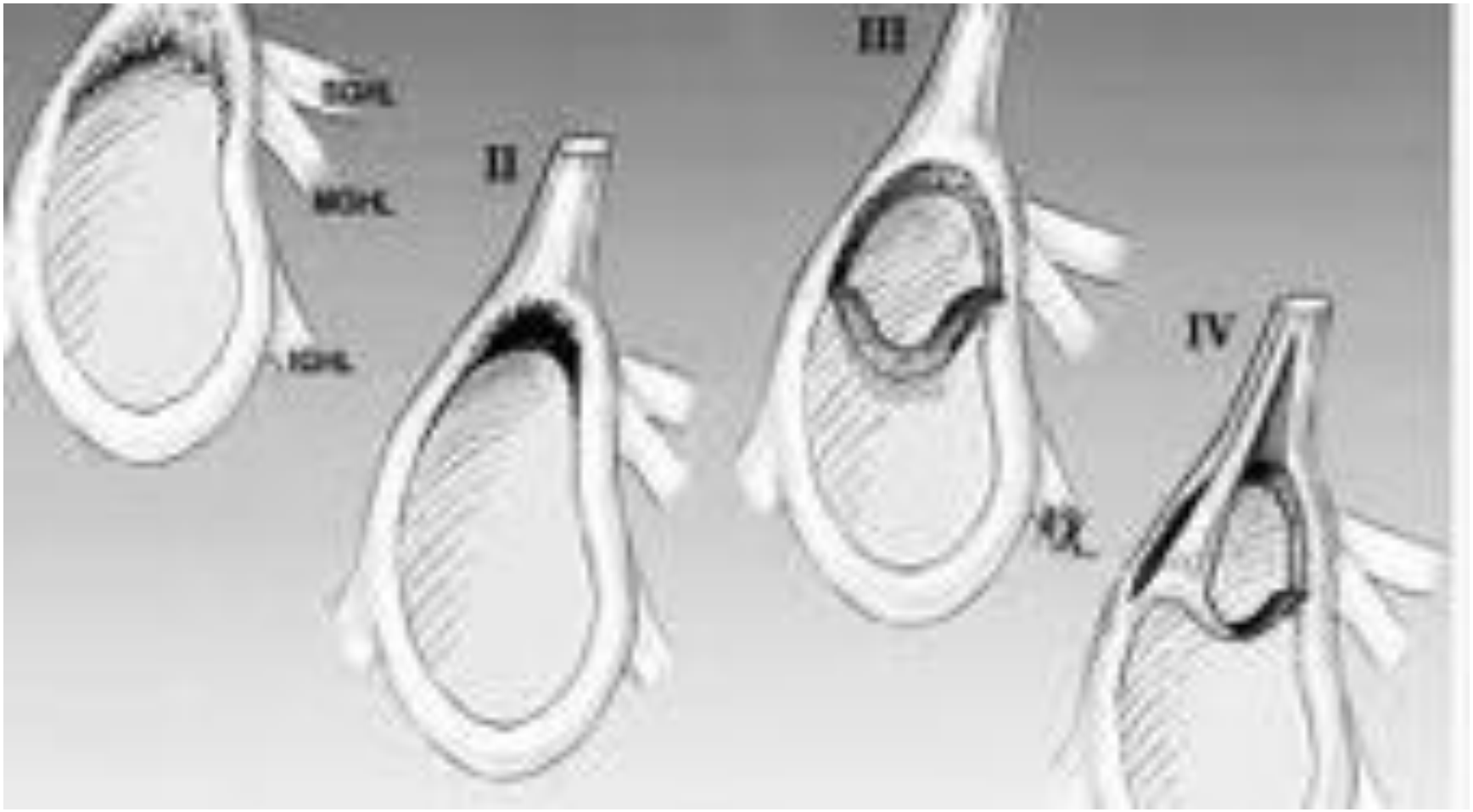
- Throwers: tightness to posterior capsule (GIRD), leads to altered joint contact forces and direction which stresses the superior labrum
  - The biceps fires during throwing motion→ peels off origin, especially during late cocking phase

Association:

- Rotator cuff pathology
- Suprascapular neuropathy/ Spinoglenoid notch cysts
- Instability
- Scapular dyskinesia
- Other labral tears
- Glenohumeral internal rotational deficit
  - 25% risk of SLAP lesion in throwers with GIRD
- age

Synder classification

- Types I-IV:
- I: fraying of biceps and labrum
- II: fraying and detachment of biceps anchor
- III: bucket handle tear + intact anchor
- IV: bucket handle tear + detachment of anchor
- Group I and III: biceps anchor is ok (stable)


II
III
IV

Symptoms:

- Mechanical: popping, clicking, locking
- Instability:
- Performance decreased: fatigue, weakness
- Pain: vague pain, deep
- Activity pain
- Dead arm syndrome
- Insidious or acute onset

Exam

- Decreased IR-GIRD
- Crepitus thru motion
- Biceps tenderness
- Apprehension with extreme abd, ER
- Sulcus sign

- Provocative
  - O'Brien
  - Crank
  - Dynamic labral shear
  - Anterior slide
  - Jobe
  - Speeds
  - Yergason

NO SINGLE EXAM TEST IS ABSOLUTE FOR DIAGNOSIS

Imaging

- XR- normal
- MRI- signal intensity of T2
  - May see cysts
  - MR arthrogram: best at identifying tear
  - Caution-high false positive rate
- Arthroscopy: peel back test
  - Gold standard for dx

Nonoperative tx

- Physical therapy
  - Goals: symmetric ROM, RC and periscapular strengthening
- NSAIDs
- Activity modification- sports break
- Injections

- Don’t wait on neuropathy

Operative tx

- 2 structure to address: Labrum & Biceps
- Arthroscopic debridement
  - Stabilization of labrum and biceps
- Debridement: type I, III
- Repair labrum: type **II in overhead athlete**
- Type IV (debride or repair labrum): biceps?
    - If > 50% tendon involved→ tenodesis/tenotomy
    - If < 30% involved→ debride with handle tear
- Cyst-decompression
- Consider biceps tenodesis/tenotomy

Complications

- Stiffness-most common
- Failed repair
- Re-tear
- Infection
- Persistent pain-other pathology (biceps groove?)
- Nerve injury

Outcomes

- Cordasco et al, 1993 (debridement) 90% good at 1 year, 66% excellent at 2y, only 44% RTP
- Field & Savoie, 1993 (repair) 100% good /excellent results
- Morgan et al, 1998 (repair) 71% good results
- Burkart & Morgan (anchor repair), 97% good/excellent results at 1y f/u
- Full return to sports (return to previous level/intensity of play) less predictable
  - **especially elite throwing athletes?

My practice:

- Mild SLAP fraying→ debridement
- Bankart + SLAP (young overhead athlete)→ fix both
- Patient >40 with any biceps fraying or groove synovitis→ biceps tenotomy /tenodesis

Take home messages:

- Labral variants-don't fix them
- Patients > 40; don't fix degenerative/asymptomatic tears
  - Have high suspicion for other associated injuries/pathology!!
- Biceps tenotomy in older low demand patients
- Biceps tenodesis in active patients
  - If tendon in good condition (manual labors, work comp)

Take home points:

- **S**LAP
- Think about:
  - in**S**tability
  - **S**ports
  - **S**capula
- Therapize/fix:
  - Stability: cuff or periscapular program
  - Sports kinetics
  - Strength

References:

- 1. Mileski, Robert and Synder, Stephen; Superior Labral Lesions in the Shoulder; Pathoanatomy and Surgical mangement JAAOS 1998;6:121-131
- 2. Keener, Jay and Brophy, Robert; Superior Labral Tears of the Shoulder: Pathogenesis, Evaluation, and Treatment; JAAOS 2009;17:627-637
- 3. Matsen and Lippit; The shoulder, Chapter 20 pages 1020-1028 2nd ed.
- 4. Wiesel, Sam: Operative Techniques in Orthopaedic surgery; Chapter 5 Arthroscopic treatment of superior labral (SLAP) tears 2011
- 5. Millers Review of Orthopaedics 6th ed 2012, Chapter 4, section 4 Shoulder pg 329-220
- 6. Lieberman, Jay; AAOS Comprehensive Orthopaedic Review 2009; Chapter 77 Shoulder conditions in the athlete pg 837-42
- 7. Altcheck, David and Dines, David; Shoulder Injuries in the Throwing Athlete; JAAOS 1995;3:159-165
- 8. Shoulder Injuries in the Throwing Athlete - OrthoInfo – AAOS (picture)