Rehabilitation of Labral Lesions- Intermediate Phase

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Thank You to OOC

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Welcome to Orlando

Disclosures/Conflicts of Interest

- None

Anatomy[1]

- Fibrous structure strongly attached around edge of glenoid
  - Increases contact surface area
- Superior labrum loose and mobile
  - Meniscal-like
- Inferior labrum more rounded and tightly attached
- Attached to the superior biceps anchor

Functions to Enhance Stability[1]

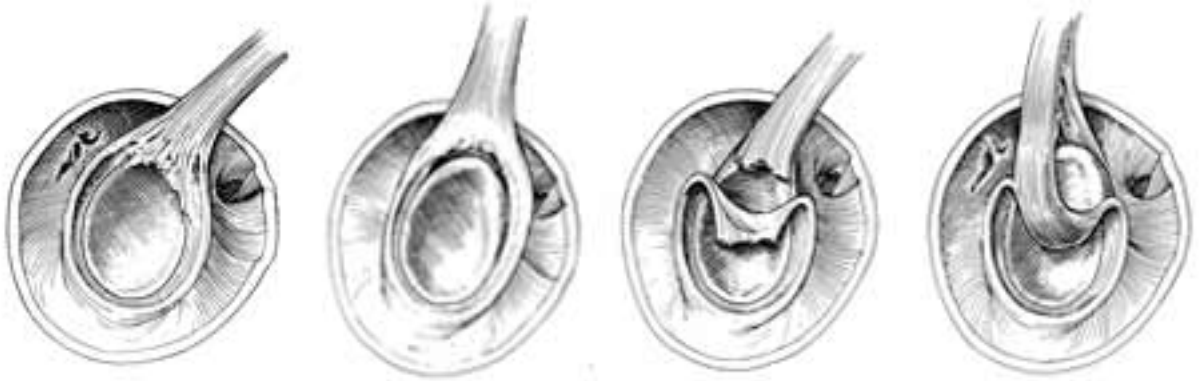
- "Chock-block" effect between glenoid and humeral head
  - Limits humeral head translation
- Increases concavity-compression
- Stabilizing effect of the long head of biceps
- Increases overall depth of glenoid fossa

Labral Abnormalities in Throwers

- Andrews JR, et al: *Arthroscopy*. 1985.
  - 83% of 73 throwers exhibited labral lesions under arthroscopy
- Miniaci A, et al: *Am J Sports Med.* 2002.
  - 14 asymptomatic pro baseball pitchers
  - MRI & clinical exam
  - 79% exhibited abnormal glenoid labrum
- Reinold MM, et al: *J Orthop Phys Ther.* 2003.
  - 91% of throwers undergoing TACS for GH instability had superior labral pathology

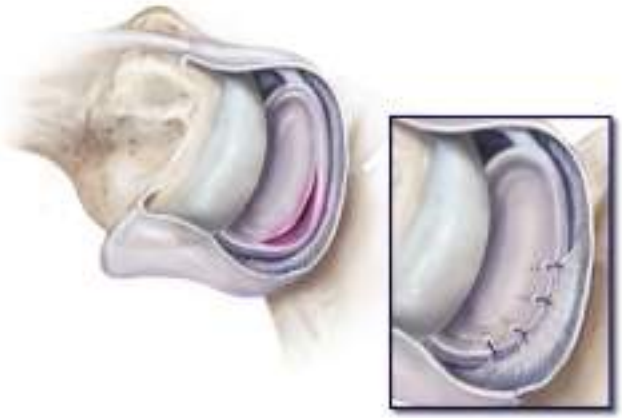
Surgical Treatment

- SLAP[1]
  - Type I- debridement back to a stable labral rim
  - ***Type II***- superior labrum reattached to the glenoid and the biceps anchor is stabilized
  - Type III- resect torn fragment
  - Type IV- based on extent of biceps anchor tear
    - <30%: torn tissue resected, superior labrum reattached
    - >30%: biceps repair, superior labrum reattached



Surgical Treatment

- Bankart- capsule repair and reattachment to glenoid
  - Traumatic dislocation
- Posterior labrum- debridement/reattachment
  - "Batter's Shoulder"- lead shoulder in swinging



Rehab Considerations with Concomitant Lesions

- SLAP repair with stabilization surgery
  - Bankart
  - Capsular shift
  - Presence of Hill-Sachs, bone bruise?
- SLAP repair with rotator cuff repair
  - Arthroscopic, mini-open, or open
  - Full thickness- small, medium, large
  - Repair method- single-row, double-row, suture bridge
- SLAP repair with SAD
- SLAP repair with debridement
- Labral repair with tenodesis

Rehab Guidelines

- Rehab must be specific to the surgery and the athlete
  - Team communication
  - Position player vs. pitcher
  - Dominant vs. non-dominant shoulder
- Do not overstress healing tissue
  - Caution with compressive and shear forces
- Emphasis on dynamic stabilization & neuromuscular control
- Attention to biceps activity
  - Type II and IV lesions
- Postural and core stability

Rehab Principles[3]

- Shoulder Mobility
- Scapular Posture & Stability
- Neuromuscular Control & Dynamic Stability
- Proprioception
- Core & Lower Extremity Training

Intermediate Phase (Weeks 7-12)- Overview

- Progression and restoration of full, functional ROM
- Progress isotonic exercises emphasizing strength & endurance
  - Dynamic stability
  - Neuromuscular control/proprioception
  - Scapular stabilizers
  - Core/LE
- Initiate biceps strengthening (Weeks 6-8)
- Avoid CKC exercises until Week 8
- Initiate functional overhead exercises (Weeks 8-12)
- Initiate light 2-hand plyometrics (Weeks 10-12)

Intermediate Phase- ROM Progressions

- SLAP Repair[1]
  - Weeks 7-9
    - Flexion to 180
    - ER at 90 abduction: 90-105
    - Full IR
  - Weeks 10-12
    - ER at 90 abduction: 110-115 in throwers

Intermediate Phase- ROM Progressions

- Bankart Repair[2]
  - Weeks 7-9
    - Flexion to 160
    - ER at 90 abduction
      - 70-80 (week 7)
      - 90 (weeks 8-9)
  - Weeks 10-12
    - Progress ROM to functional demands

Intermediate Phase- ROM Progressions

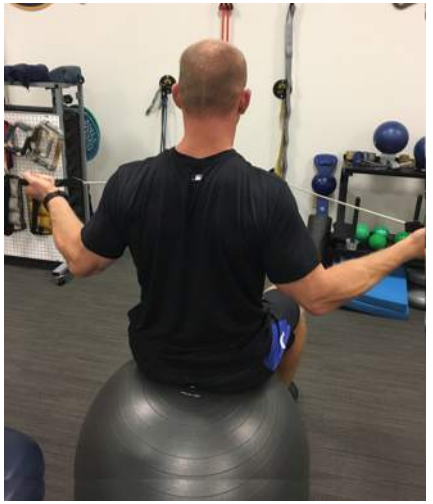
- Posterior Repair
  - Aggressively regain any loss of ROM
  - Progress ER and IR ROM and flexibility towards functional demands
  - Caution with extremes of glenohumeral IR and horz. adduction

Throwers ER Stretch

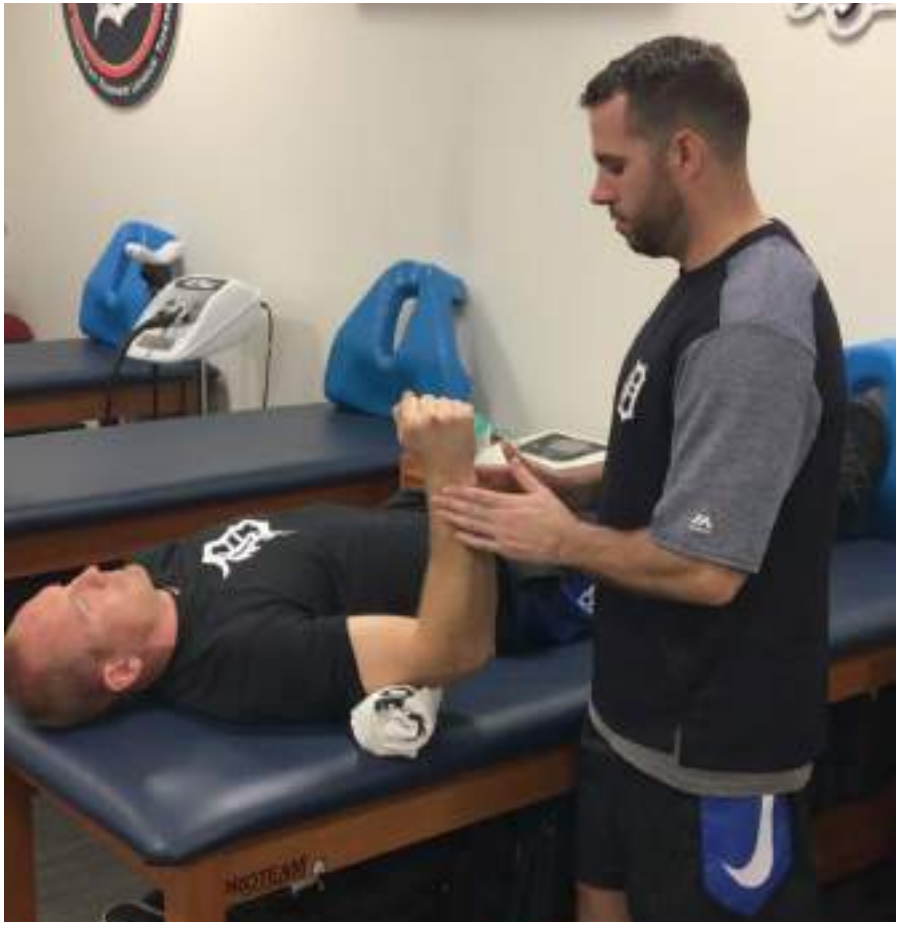
Cross-body Stretch

Strengthening[1,2]

- Weeks 7-9
  - Progress isotonic strengthening (rotator cuff and scapular stabilizers)
  - Thrower's Ten Program
  - Dynamic stability and neuromuscular control
  - Implement light biceps training
  - Implement CKC activities
  - Core/LE strengthening
- Weeks 10-12
  - Advanced Thrower's Ten
  - Functional, overhead strengthening
  - Integrate UE with core/LE
  - 2-hand plyometrics
- Reinold MM, et al: *JOSPT.* Feb 2009.



Rhythmic Stabilizations



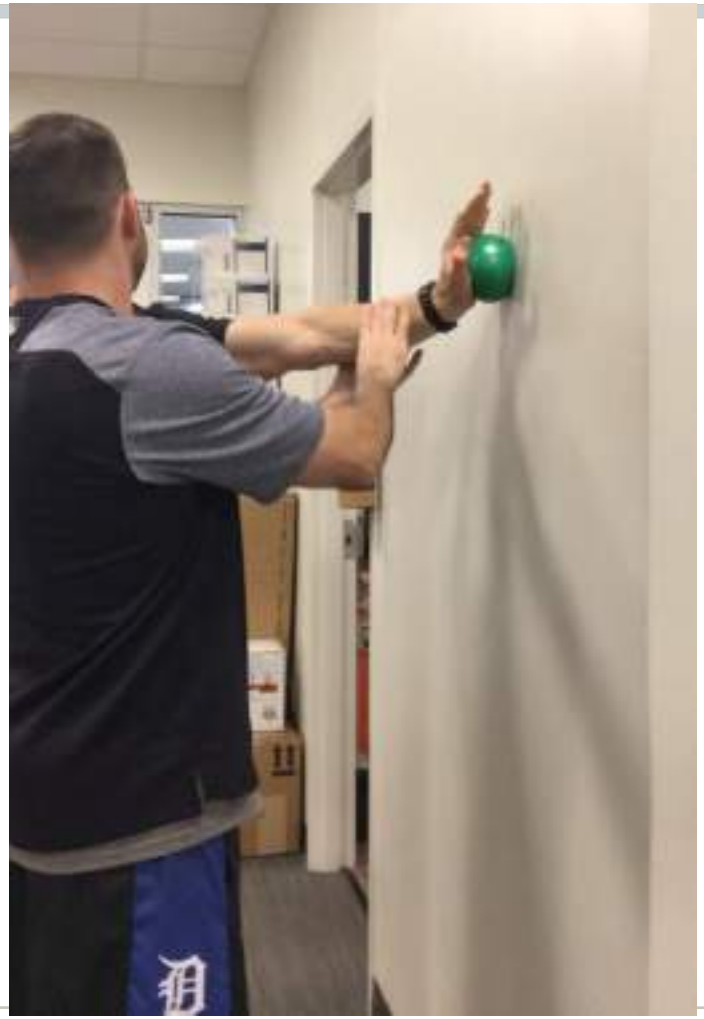
Dynamic Stabilization with Rhythmic Stabilization

Dynamic Stabilization

Dynamic Stabilization

Dynamic Stabilization

Dynamic Stabilization



Dynamic Stabilization

Dynamic Stabilization

Dynamic Stabilization

Throwers 10- Prone 90/90 ER on Stability Ball

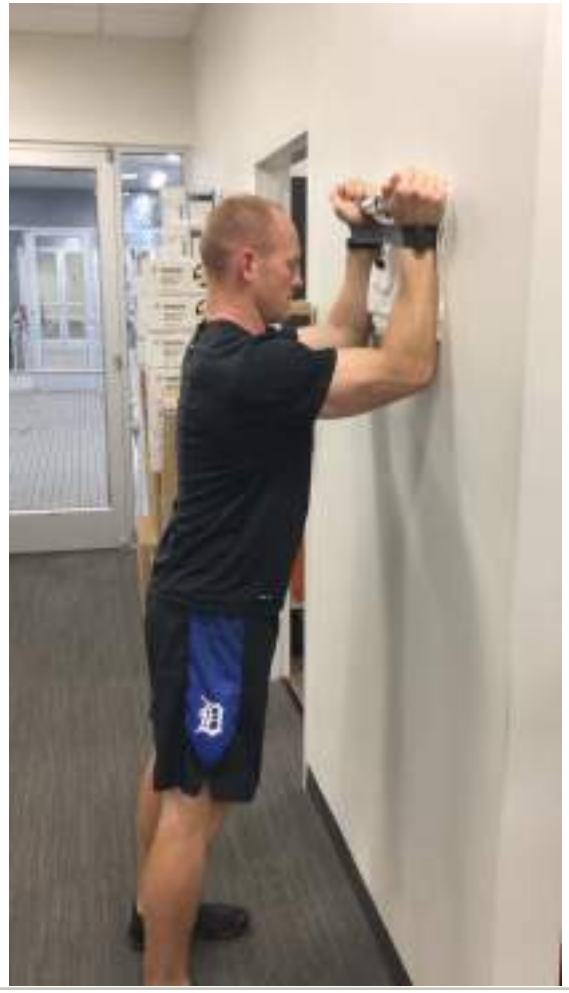
Advanced Throwers 10-Sustained Holds

90/90 ER with Rhythmic Stabilization

Scapular PNF

Scapular Stabilization

Scapular Stabilization



Scapular Stabilization

CKC Stabilization

CKC Stabilization

2-hand Plyometrics (Weeks 10-12)

- Using 6-8lbs plyoball and plyoback
  - Chest pass
  - Overhead soccer throw
  - Side-to-side chops
  - Side chops
  - Underhand toss
- Plyometric Wall Push-up with MRE

Outcomes and Return to Play

- Fedoriw WW, et al. *Am J Sports Med.* 2014
- Return to Play of Superior Labral Tears in Professional Baseball
  - 68 players (45 pitchers, 23 position)
  - Pitchers Non-operative (21)
    - 40% RTP
    - 22% RPP
  - Pitchers Operative (27)
    - 48% RTP
    - 7% RPP
  - Position Non-operative (10)
    - 39% RTP
    - 26% RPP
  - Position Operative (13)
    - 85% RTP
    - 54% RPP

Outcomes and Return to Play

- Smith R, et al: *Am J Sports Med.* 2016.
  - RTP and RTPP in MLB pitchers after SLAP repair
  - 24 MLB players
    - 62.5% (15/24) RTP at MLB level
      - 86.7% RTPP at MLB level
    - Overall RTPP below MLB level: 54.2% (13/24)
  - Significant decrease in innings pitched

Outcomes and Return to Play

- Neri BR, et al: *Am J Sports Med.* 2011
  - Effect of concomitant partial-thickness rotator cuff tear in Type II SLAP repairs in elite OH athletes
    - 23 athletes (college/pro)
    - 57% (13/23) returned to pre-injury levels of competition
      - ~9 months postoperatively
    - 26% (6/23) RTP with pain
  - 35% (8/23) identified with concomitant injury
    - 12.5% RTP
    - 80% RTP in group without concomitant injury

Outcomes and Return to Play

- Gilliam BD, et al: *Am J Sports Med.* 2017.
  - RTP and outcomes in baseball players after SLAP repairs
  - 62% (133) returned to play
    - 59% pitchers
      - 41% felt the same or better at follow-up
    - 76% non-pitchers
  - Average KJOC score: 75
  - 26% had additional surgery related to baseball before follow-up (6.5 years)

Summary

- Understand “abnormalities” are adaptations
- Trending towards conservative management
- Communication is key (team approach)
- Protect healing tissue through gradual ROM restoration and load application
- Rehab must be specific to the athlete
- Work the entire kinetic chain

Thank You!

References

- 1. Wilk KE, et al: The recognition and treatment of superior labral (SLAP) lesions in the overhead athlete. *Int J Sports Phys Ther.* 2013 Oct;8(5):579-600.
- 2. Wilk KE, Macrina LC: Nonoperative and postoperative rehabilitation for glenohumeral instability. *Clin Sports Med.* 2013 Oct;32(4):865-914.
- 3. Wilk KE, Williams RA, et al: Current Concepts in the Assessment and Rehabilitation of the Thrower's Shoulder. *Oper Tech Sports Med.* 2016 Sep;24(3):170-80.