Technique For SLAP Repair in 2016

Eric J. Strauss MD
Division of Sports Medicine
NYU Hospital for Joint Diseases

Disclosures

• Joint Restoration Foundation – Consultant/Research Support
• Vericel – Consultant
• Arthrex – Consultant
• Mitek – Consultant
• Jaypee Publishing

Additional Disclosure

• I have been doing more and more biceps tenodesis to manage symptomatic SLAP lesions
SLAP Lesions in 2016

- Optimal management remains controversial
- Treatment recommendations based on
  - Age
  - Activity level
- Current data variable with respect to clinical outcomes and return to athletic activity

SLAP Lesions in 2016

- Pendulum Swing

  - 4975 cases of SLAP repairs collected from ABOS candidates
  - Repairs performed at rate 3 x higher than expected
  - Average age 37 yrs
- 105% increase between 2004-2009
- Annual incidence 17/10,000 to 28/10,000 – highest in 20-29, 40-49 yr old groups

Pendulum Swing

- Assessment of ABOS Part II database 2002-2011
- 8963 isolated SLAP lesions treated

SLAP Repair: 69.3% → 44.8%
Biceps Tenodesis: 1.9% → 18.8%
Who Gets a SLAP Repair in My Practice?

- Young patient (< 35 years)
- Persistent posterosuperior shoulder pain/mechanical symptoms with overhead activity despite trial of nonoperative tx
- Corresponding physical exam findings
- MRI proven SLAP tear
- Careful discussion with overhead athlete/thrower

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Surgical Positioning

- **Lateral Decubitus**
  - Ability to exert traction to visualize the entire glenoid – labral interface
  - Utilized when dealing with extension of the labral tear (Type 5 SLAP)

- **Beach Chair**
  - Ease of anatomic orientation
  - Facilitates dynamic arthroscopic assessment of intra-articular structures
  - “Peel-back” of labrum at 90° ER/abduction
  - Convenient access for conversion to open procedures
  - Open biceps tenodesis

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**Portals**

A. Standard posterior portal
B. Anterior Midglenoid portal
C. Anterosuperolateral (ASL) portal
  - 1cm lateral to anterolateral acromion
  - In RI above the LHBT away from leading edge of SS tendon
  - Viewing posterior extension of tear & drilling/anchor insertion
D. Modified Neviaser portal
  - 1cm medial to acromion, posterior to clavicle – percutaneous needle for suture passage
  - Safe – Mean 2.4cm from SS nerve
E. Portal of Wilmington
  - ~1cm lateral and anterior to posterolateral acromion
  - Useful for tears with significant posterior extension
  - Percutaneous trans RC technique – drilling/anchor placement and suture passage
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Trans RTC Portals

- Concern in overhead athletes – modify portal use?
- Provides ideal angle for glenoid drilling/anchor insertion
- Important to identify RC cable and stay medial within the MT junction
  - Oh et al (AJSM, 2009) – 2 articular sided RC tears, 3 pts w/persistent defects at site of cannula
  - Cohen et al (Arthroscopy, 2006) – Trans RC portals demonstrated lower ASES scores, increased pain
- Stephenson et al (JSES, 2012) – 6 patients with FT tears following prior SLAP repair using TC portals
- Reduced concern with newer percutaneous techniques, attention to arthroscopic anatomy

Glenoid Drilling/Anchor Insertion

Anterosuperior portal drilling
  - Mean drill depth 14.2mm (3x14mm BioSutureTak)
  - All 12 anchors (100%) perforated the medial glenoid wall
  - Mean distance from SS nerve to anchor was 3.1mm
  - 4 cases (33%) the tip was visibly next to the nerve

Mean Coronal Angle Drilling – 12.3°
Mean Axial Angle Drilling – 19.1°

Glenoid Drilling/Anchor Insertion – ASL Portal Drilling

Safer?

- Anterosuperior vs ASL portal drilling
  - 3 anchors placed at 1/11/10 o’clock (R) and 11/1/2 o’clock (L)
  - BioSutureTak anchor 3x14mm with 21mm drill stop
  - All far posterior suture anchors perforated the glenoid rim using both anterosuperior and ASL drilling
- Distance to nerve from far posterior anchor
  - Anterosuperior portal – 8.02mm
  - ASL portal – 2.1mm
- Risk of injury increased with ASL portal placed high within the RI

Injury to the Suprascapular Nerve During SLAP repair: A Relative Interval Portal Is Not Safer Than an Anterosuperior Portal

Pine-Wagar, MD, Ralph Frick, Marx, MD, James C. Bryan, MD
University of Pittsburgh School of Medicine, Pittsburgh, PA, USA.
Suture Configuration – Labral Fixation

3 Repair Constructs
1. Single simple suture anterior to biceps (one anchor)
2. Two simple sutures (anterior/posterior) using two anchors
3. Horizontal mattress stitch (one anchor)
   • With cyclic traction the load to failure was stronger for mattress/single anchor construct
   • More biomechanically favorable construct?

Mattress vs. Simple Suture Configuration
• Evaluated variation in anatomic restoration and biomechanical strength through physiologic loading through the biceps
• Mattress suture effectively increases labral height at anchor sites
  • May confer greater translational stability
• Simple suture had higher load to failure
  • Effect of two suture holes = more stress risers leading to weakened construct

Is there a clinical difference?
• Prospective evaluation of Type 2 SLAP repairs w/ mean f/u of 37 months
  • No difference in outcome scores
  • No difference in postop ROM
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Suture Configuration – Labral Fixation

Should We Be Tying Knots?
- Advantage of knotless anchor is that it obviates potential abrasion of adjacent intra-articular structures
  - Particular concern in overhead athletes (Internal Impingement)
- Compared knotless (3.5 pushlocks) vs. simple suture repair (3.0 BioSuture Taks)
- Glenohumeral rotation restored to normal in both groups – no overconstraint
- No significant difference between stiffness, yield load, ultimate load to failure
  - Mode of failure
    - Knotless – suture slippage
    - Knot – knot breaking

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Suture Configuration – Labral Fixation

Should We Be Tying Knots?
- Mitek Lupine vs. Bioknotless suture anchor
  - Load to 2mm gapping was lower for knotless anchors (70N) compared to tying (104N)
  - Similar differences for cyclic loading to failure and ultimate load to failure
  - Majority of specimens (80%) failed at the suture-soft tissue interface regardless of implant

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Anchor Placement

Where Should We Be Putting The Anchors?
- 3 anchor repair (1 anterior, 2 posterior)
  - Placement of an anterior anchor had the greatest effect on ER
  - Presence of 1 or 2 anchors posteriorly did not have effect on glenohumeral rotation
  - Important finding given concerns of overconstraint, particularly in overhead athletes
Putting It Together – My Preferred Approach

- Beach Chair Position
- Most times
- Lateral Decubitus
- If performing anterior/posterior labral repair
- Portals – Always use Posterior, Anterior mid-glenoid
  - Neviaser portal – percutaneous placement of spinal needle/micro suture lasso for suture passage
  - ASL portal for preparation and 1st anchor
  - Modified Wilmington portal to aid in proper drill angle posteriorly
- Tap drill guide with mallet to avoid skiving
- Percutaneous kit for Trans RC portals – 4.5 mm cannula
- Wider tape/looped suture with a knotless anchor construct
  - 2.9x12.5mm PEEK anchor

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Summary

- Trend moving towards less repair and more tenodesis
- Indications and in-office discussion are the keys
- Become facile with different portals for anchor placement, suture passage and fixation
- Portal of Wilmington very useful for managing posterior aspect of lesion
- Find what works best in your hands and make it reproducible

Thank You