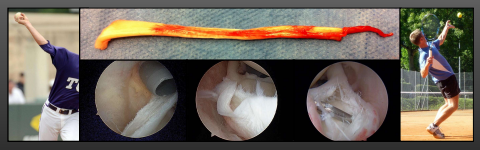
SLAP Lesions
If You Are Going To Fix It: Here's How



John Conway, MD
Texas Health Sports Medicine Fort Worth, Texas

SLAP Lesions
Who Should I Repair?

I, John Conway MD, have no relevant financial relationships to be discussed, directly or indirectly, referred to or illustrated with or without recognition within the presentation but have the following relationship:

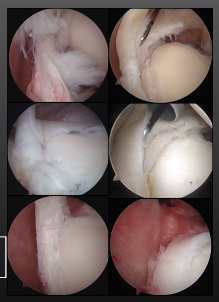
- AJSM – Editorial Board
- AOSSM – Board of Directors
- Arthrex Inc. – Royalties, Consultant

My full disclosure is in the AAOS Database

Some SLAP Lesions …

- Cause
  - Pain
  - Mechanical Catching
  - Translational and Rotational Instability
  - Shoulder Dysfunction

Some do Not



Some SLAP Lesions …

Should Not be Fixed

Can Not be fixed

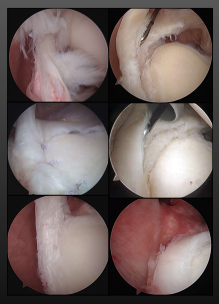
Should be Ignored

Should be Debrided

Should be Repaired

Should have a Transfer

Should have a Tenodesis



Considered in the Context of …

Mechanism of Injury

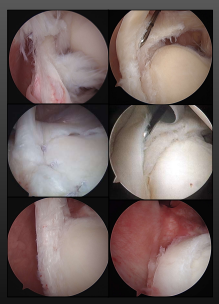
Anticipated Activities

Effect of SLAP on shoulder function and anticipated activities

Surgical Findings

Joint Stability

Age, Health … Etc.



GOOD SLAP – BAD SLAP

GOOD - Purposeful, beneficial adaptation allowing greater labral mobility, Hor AB, ABER, velocity and performance

and

BAD - Pathologic process causing translational and rotational micro-instability, pain and lost performance

Ignore or debride the Good SLAP

Fix or tenodesis the Bad SLAP

GOOD SLAP – BAD SLAP

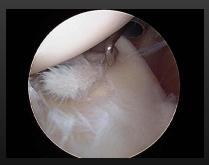
GOOD - Purposeful, beneficial adaptation allowing greater labral mobility, Hor AB, ABER, velocity and performance

and

BAD - Pathologic process causing translational and rotational micro-instability, pain and lost performance

Ignore or debride the Good SLAP

Fix or tenodesis the Bad SLAP



GOOD SLAP – BAD SLAP

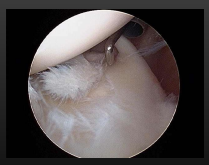
GOOD - Purposeful, beneficial adaptation allowing greater labral mobility, Hor AB, ABER, velocity and performance

and

BAD - Pathologic process causing translational and rotational micro-instability, pain and lost performance

Ignore or debride the Good SLAP

Fix or tenodesis the Bad SLAP



GOOD SLAP – BAD SLAP

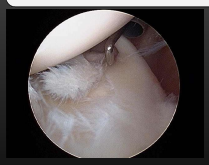
GOOD - Purposeful, beneficial adaptation allowing greater labral mobility, Hor AB, ABER, velocity and performance

and

BAD - Pathologic process causing translational and rotational micro-instability, pain and lost performance

Ignore or debride the Good SLAP

Fix or tenodesis the **Bad SLAP**



SLAP Repair in **Throwers**

Poor Outcomes – in ALL 3 Systematic Review Articles

Old Methods

Old Understanding

Gorantla Arthroscopy 2011

Cavuto et al JSSR 2012

Osti et al Musc Lig Tend J 2013

Baseball Return to Play
22-64%

Why, Was it Our Method?

Anterior anchor had greatest effect on ER

Effect of anterior SLAP anchor on ER – Cadaver throwing model McCullough et al Arthroscopy 2013

Signif change in mechanics after SLAP repair

Pitchers: SLAP repair vs no HX SLAP

(↓ Hor AB, ABER, FW Trunk Tilt)

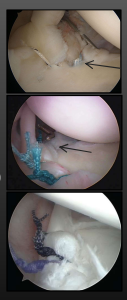
3D motion biomech analysis: SLAP group less

Laughlin et al (ASMI, Fleisig) AJSM 20

Significantly altered thoracic rotation patterns after SLAP repair

Pitchers with SLAP repair vs BT Tenodesis

Chalmers et al AJSM 2016



Why, Was it Our Method?

No increased Failure Risk - Anterior Anchor

Military population – Larger adverse outcomes

et al AAOS Poster 2018

Our old methods negatively affected Outcomes?

Signif change in mechanics after SLAP repair

Pitchers: SLAP repair vs no HX SLAP

(↓ Hor AB, ABER, FW Trunk Tilt)

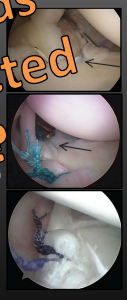
3D motion biomech analysis: SLAP group less

Laughlin et al (ASMI, Fleisig) AJSM 20

Significantly altered thoracic rotation patterns after SLAP repair

Pitchers with SLAP repair vs BT Tenodesis

Chalmers et al AJSM 2016



Are Suture Knots BAD?

Superior and posterior suture knots cause rotator cuff injury following SLAP repair
Byram et al JSES 2011

Also Cause Pain – Stable healed T2 SLAP
- Persistent **sharp pain (100%)** and [illegible]
- Glenoid side knots and **chondral damage**
- Pain improved with knot removal
Park et al SSTA 2017

Maybe Suture knots are a problem

Are Suture Knots BAD?

Yang et al, KSSTA — 2016
- 20 knotless vs 21 knotted
- Slightly better ROM
- No difference in outcomes

Bents et al, AJO — 2017
- 44 knotless vs 119 knotted
- Faster, no difference in ROM
- No difference in outcomes

Arner JW, et al AOSSM 2018
- 73% OHA, 40% Thrower, 20% BB
- 32 knotless vs 42 knotted
- Lower Revision Rate (9 vas 17%), Higher RTP, ASES & KJOC

Biomechanical Advantage?

Configuration:
- Knotted vs Knotless Vertical Mattress

Cadaveric Study
- Custom Testing System 6df / MicroScribe
- No biomechanical or translational differences between knotted and knotless SLAP repair

Uggen et al Arthroscopy 2009

Suture Configuration

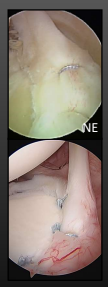
Configuration:

- Simple vs Vertical vs Horizontal Mattress

Bankart Repair (?Compare to SLAP?)

- No biomechanical difference between configurations (Simple, Hor Matt, Double Row suture or tape)
- No footprint coverage difference between Simple and Hor. Mattress suture configurations (38% vs 32%)

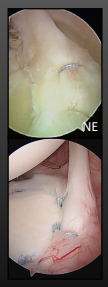
Judson AJSM 2017



Is Knotless Better?

Knotless fixation - increasingly popularity

- Faster
  - *Kocaoglu et al, KSSTA 2009*
  - *Bents et al, AJO 2017*
- Lower profile
  - *Hanypsiak et al, AJSM 2014*
- Higher pullout & pull though strength
  - *Bradley et al, 2012, 2017*
- More consistent tensioning
  - *Rhee et al, JSES 2006*
- May better restore meniscoid anatomy
  - *Dines et al, Arthroscopy 2008*



Don't Do It Like This

1. Trans-tendinous cannulas
2. Superior capsule injury
3. Anterior sutures
4. Biceps Tendon Strangulation
5. Hard prominent suture knots

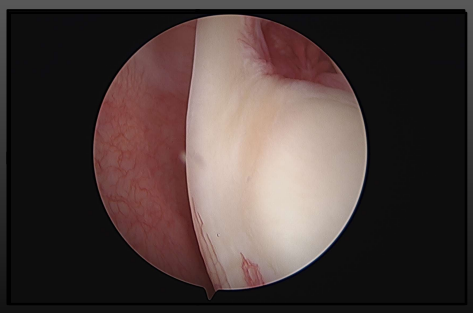
19 year old RH pitcher

Here's How To Do It

1. No superior cannulas
2. Meniscoid rim debridement
3. Glenoid prep
4. Anterior repair for instability only
5. No BT cross-over
6. Simple or vertical mattress sutures
7. No knots – cut close

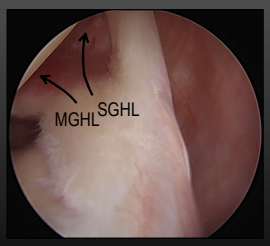
20 year old LH pitcher

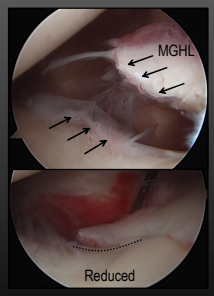
This is what we want



Type 2A SLAP is a BAD SLAP

MGHL SGHL Avulsion





Subacromial Space

Neri et al AJSM 2011

84% vs 12% Returned

(if RCTs are excluded – probably due to subacromial space disease:

No SA Bursoscopy)

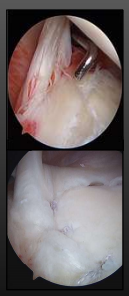
Galono et al Orthop 2010

90% Returned

(regardless of RCTs)

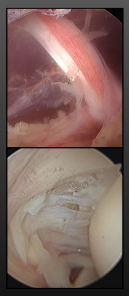
Here's How

- Do as little as possible
- Correct all the correctable kinetic chain problems first ("Real Problems")
- Throwers – better too loose, than too tight
- Some SLAP Lesions should not be fixed
- SLAP debridement is always better than a bad SLAP repair
- NO knots



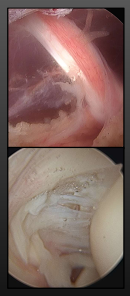
Here's How

- A good LHBT tenodesis is also better than a bad SLAP repair
- You can't fix biceps tunnel disease with superior labrum surgery
- Over 35-40 or with RC repair: debride or tenodesis based on Biceps Tunnel disease
- Ignore or debride the GOOD SLAPs
- Repair or tenodesis the BAD SLAPs



Here's How

- A good LHBT tenodesis is also better than a bad SLAP repair
- You can't fix biceps tunnel disease with superior labrum surgery
- Over 35-40 or with RC repair: debride or tenodesis based on Biceps Tunnel disease
- Ignore or debride the GOOD SLAPs
- Repair or tenodesis the BAD SLAPs



Thank You