SLAP Tears : Can we do better?

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HOUSTON Methodist ORTHOPEDICS & SPORTS MEDICINE

Disclosures

- Consultant: Zimmer Biomet

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  - Arthrex
  - Smith and Nephew
  - Breg
  - DJO
  - AANA

Houston Methodist Hospital

Walter Tower

Outpatient Center

Research Institute

Sources

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Recent Literature: SLAP Injuries and Repairs

My Philosophy: SLAP Decision Making

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Thrower with shoulder pain and an MRI showing SLAP…

My Philosophy: SLAP Decision Making

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Thrower with shoulder pain and an MRI showing SLAP…

- Make the diagnosis… *Why does he hurt?*
  - Instability (anterior, posterior)?
  - Inflammation?
  - Entrapment (cuff/labrum fragments, Bennett's lesion, bursa)?
  - Capsule/scapula, etc?

- Treat the diagnosis…
  - Dynamic (cuff strength/timing, thoracic spine mobility)
  - Static (posture / scapula / posterior capsule)
  - Surgical (stability – capsule, labrum)

My Philosophy: SLAP Decision Making

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Thrower with a shoulder pain and an MRI showing SLAP…

- Make the diagnosis… *Why does he hurt?*
  - Instability (anterior, posterior)?
  - Inflammation?
  - Entrapment (cuff/labrum fragments, Bennett's lesion, bursa)?
  - Capsule/scapula, etc?

- Treat the diagnosis…***NOT THE MRI !!!***
  - Dynamic (cuff strength/timing, scapula, thoracic spine mobility)
  - Static (posture / glenoid spur / posterior capsule)
  - Surgical (stability – capsule, labrum)

Why me?

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- Noticed a significant failure to return to prior performance after SLAP repairs in professional pitchers (multiple surgeons).
- They felt better. But couldn’t get people out.
- Data driven
- Neuman; Cicotti, others.

Return to Play SLAP – Pro Baseball

Fedoriw, Lintner AJSM 2014

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ALL HAD ALREADY FAILED REHAB…!!

Surgery for SLAP Repair

- Professional baseball pitchers
- SLAP repair
- 48% Returned to play
- 7% Returned to prior performance

Non-op for SLAP

- Six-week PT protocol
- 40% Returned to play
- 22% Returned to prior performance

SLAP "Tears" - are they really tears?

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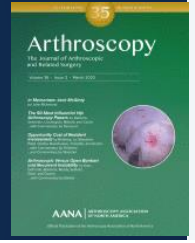
- SLAP lesions are often asymptomatic
  - 78% – 85%
- Slap lesions are associated with increased ER **and** with anterior instability
- The presence of a SLAP may be:
  - **Adaptive** - overhand thrower
  - **Neutral** - most cases
  - **Symptomatic** - contribute to instability

SLAP – Adaptive??

McCulloch et al Arthroscopy 2013



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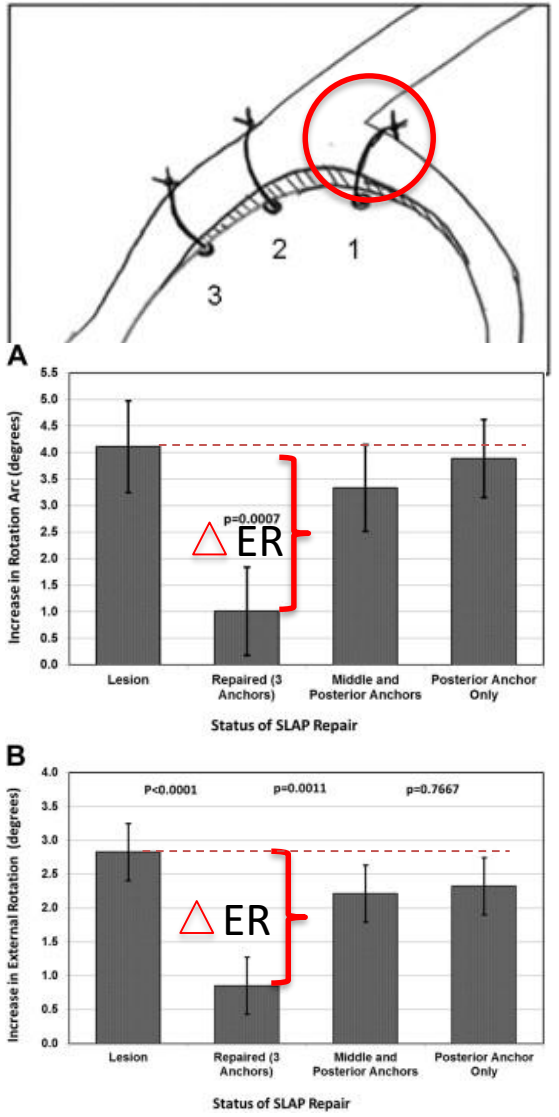
- Detachment of labrum anterior to bicep anchor increases ER (at 90^{o}).
- ER correlates with ***velocity*** AND with ***instability***
- *Repair with anterior anchor decreases ER significantly*
- *Anterior SLAP detachment is favorable for overhead athletes (and considered "normal" on MRI)*
- *Repair anterior to bicep anchor may compromise ER = velocity (baseball/handball/VB /tennis)*



SLAP “Tears” - are they really tears?

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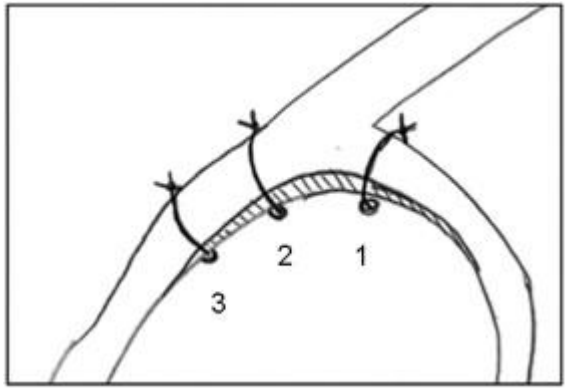
- SLAP involving the bicep anchor:
  - May be painful → bicep symptoms?
  - May be painful → instability?
  - May be adaptive → overhand athlete.



SLAP "Tears" - are they really tears?

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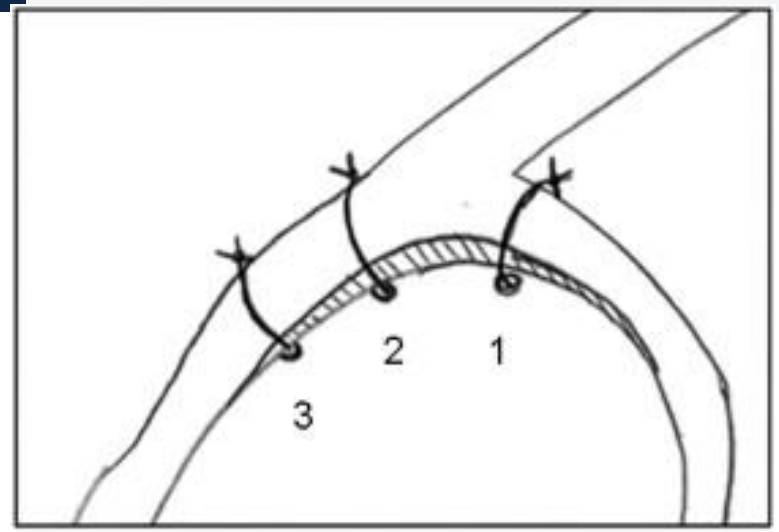
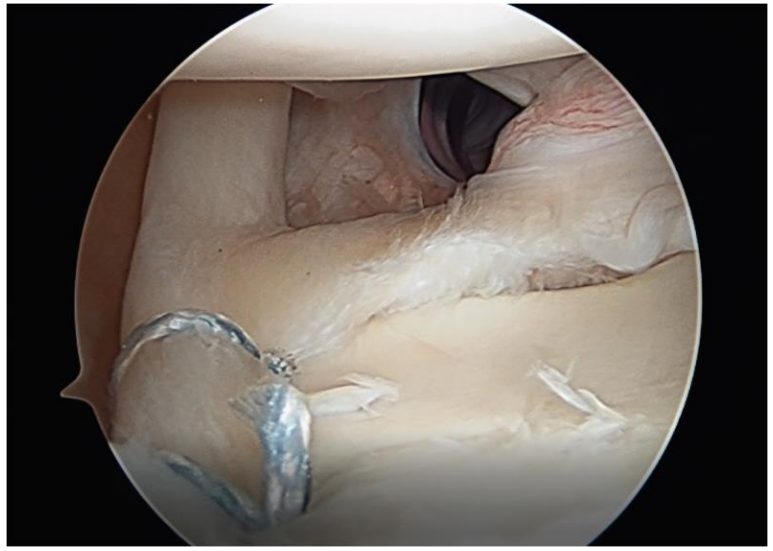
- SLAP involving the bicep anchor:
  - May be painful → bicep symptoms
  - May be painful → instability
  - May be adaptive → overhand athlete.
- *This dictates treatment!*





SLAP ⟷ Instability

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- Atraumatic SLAP / instability (in baseball and other sports)
  - Almost always treatable *WITHOUT* surgery.

- Traumatic SLAP / instability (in baseball and other sports)
  - Frequently needs surgery

Consider…

- "The endemic rate of variations of labral anatomy visible on MRI in asymptomatic overhead throwers should prompt *caution before concluding that the labrum is the source of the patient's pain*"

  C. *Mathew, D. Lintner, Open Orth J 2018*

Traumatic SLAP is an instability issue.

Attritional SLAP is probably adaptive / neutral (UNTIL PROVEN OTHERWISE)

SLAP ⟷ Instability

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- *Schwartzberg* reported MRI documented SLAP lesions can be present in up to 72% of middle-aged, asymptomatic patients *AJSM 2016*

- In 2005, an MRI analysis of professional handball players demonstrated abnormalities in 93% of shoulders with only 37% being symptomatic *Jost et al CORR 2005*

- BUT…In younger patients presenting with *shoulder instability*, the SLAP injury may be present and contributing to symptoms, especially in the setting of an acute anterior and/or posterior labral tear. *Varcallo, Tapscott Mair StatPearls 2020*

Summary

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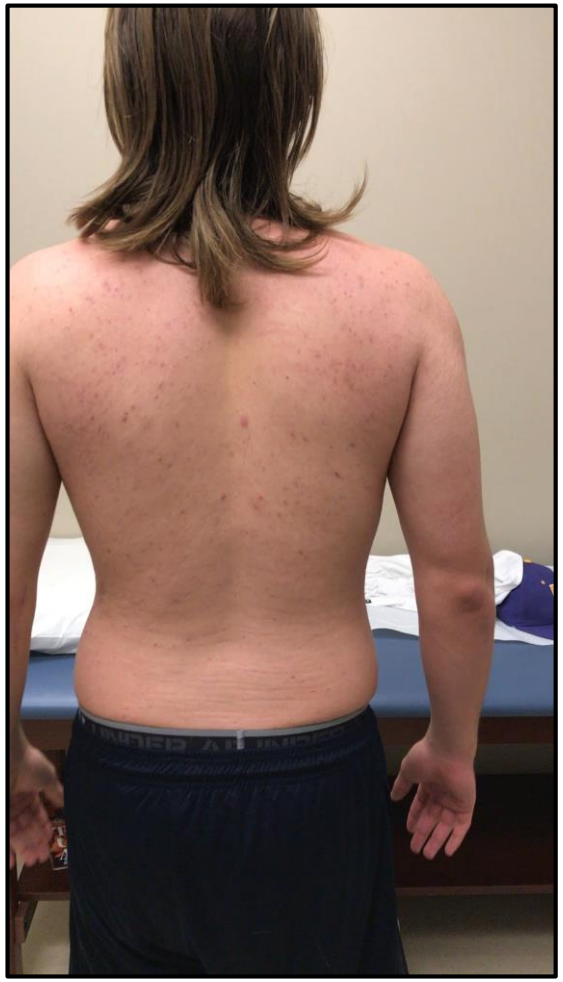
- SLAP seen on MRI often asymptomatic and can be ignored.
- Clinical presentation is key:
- Laxity leading to dynamic instability…
- Scapula control!!



Decision Making

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Choose to do Surgery?

Depends on sport/activity!

My experience 2010 - 2020

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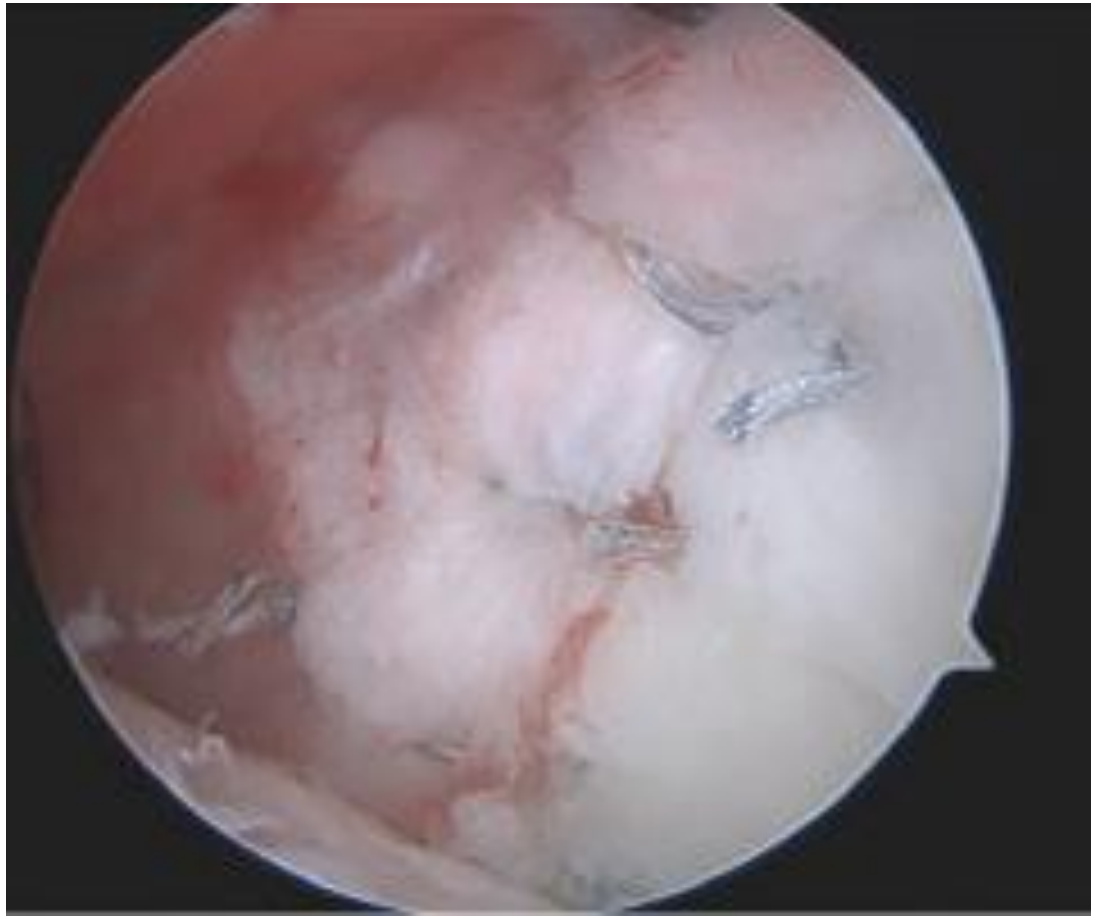
- 2010: 60 SLAP repairs / year
- 2019: 8 SLAP repairs / year
- 2019: 126 labral repairs, almost all in combination
  - Anterior + Posterior
  - Anterior + Posterior + Superior
  - Anterior + SLAP
  - Posterior + exostosis



Decision Making

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Which Surgery to do?

Depends on sport/activity!

SLAP Repair vs Tenodesis

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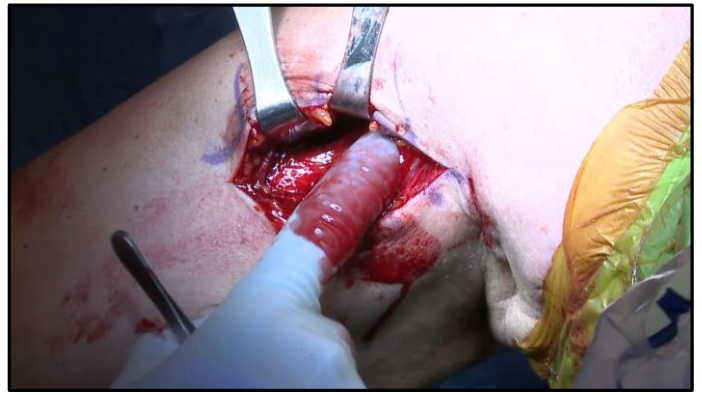
- There has been a trend toward treating SLAP lesions with Bicep tenodesis…



- Early reports were favorable.
  - Particularly in older patients
- Has not been widely reported in throwers.
  - Role of biceps
  - Fracture risk

Trends in SLAP Surgery in US

Dougherty et al J Orthop Surg 2020

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2003 – 2013 - TruvenHealth MarketScan Commercial Database

55 million US residents

- # of patients Dx'd with SLAP INCREASED 500% 2003–2013
  - 28/100k to 142/100k
- % of SLAP diagnoses who had SLAP surgery DECREASED
  - P<0.0001
- Bicep Tenodesis INCREASED as treatment for SLAP
  - Went from ~0% to 18.1% of SLAP procedures
- Debridement (alone) was still most common operation for SLAP

American Board Orth Surgery Data

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Patterson AJSM 2014

- ABOS Database
- Tx isolated SLAP lesions
- N = 8963
- Decline rate of SLAP repairs
  - 2002: 69.3%
  - 2011: 44.8%
  - P<.001
- SLAP repair pts younger than BT pts

Cvetanovich (Romeo) AJSM 2020

- ABOS Database
- Tx isolated SLAP lesions
- N=9908
- Decline rate of SLAP repairs
  - 2002: 69.3%
  - 2017: 2.1%
  - P<.001
- SLAP repair pts younger than BT pts

American Board Orth Surgery Data

HOUSTON Methodist ORTHOPEDICS & SPORTS MEDICINE

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Subsequent Shoulder Surgery

Khazai et al Arthrosc Sports Med Rehabil 2020

After SLAP Repair

- N = 25,142 patients
  - M = F
  - Ave age 38.3 +/- 14
- 11.5% additional surgery w/in 3 years
- Repeat surgery more likely in older (>35yo)

P=0.19

After Bicep Tenodesis (for SLAP)

- N = 840
  - M = F
  - Ave age 49.3 +/- 10
- 13% additional surgery w/in 3 years
- Repeat surgery more common in younger (<35yo) and in males.

Sham Surgery?

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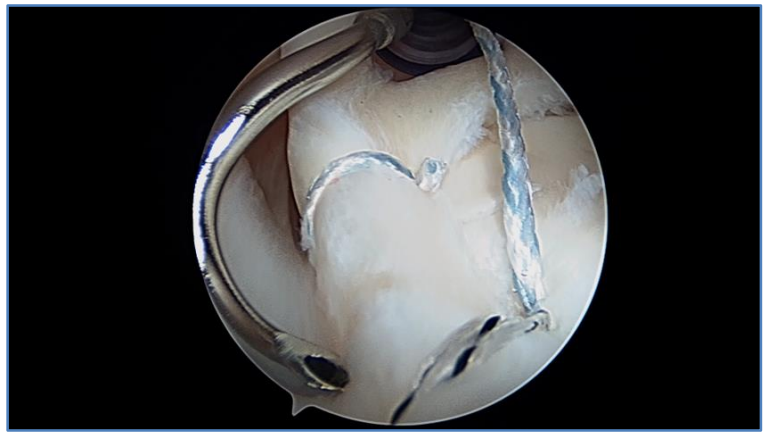
- Sham surgery vs SLAP repair vs Bicep Tenodesis
  - *Schroder et al Br J Sports Med 2016*
  - RCT, Double blinded
  - *NO DIFFERENCE!!*



Caveats:

- Ave age 40
- More crossover from sham to re-operation after six months

- *STILL…SOMETHING TO CONSIDER!!*

Type of Surgery - SLAP

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Repair SLAP

- Thrower
  - Evidence of instability
    - Uncompensated
  - Failed PT
- Young contact athlete w/ acute traumatic SLAP

Bicep Tenodesis

- Older, >35 yo
- Stiff/stable joint
- Contact or Thrower?
- Concurrent rotator cuff pathology

SLAP Thoughts…

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- We tend to look at the labrum as having independent parts
  - Anterior
  - Posterior
  - Superior

- But the circular labrum is one structure that bears load as a ring/hoop.

- ***Don't depend on the MRI!*** Depend on the clinical presentation!!
  - Symptoms
  - Demands

SLAP Thoughts…

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DECIDE WHY THEY HURT!!

SLAP Thoughts…

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DECIDE WHY THEY HURT!!

TREAT THAT!!

Throwers with SLAP

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- SLAP can contribute to laxity
- Throwers *need* laxity
- Rehab cuff / capsule / scapula to improve dynamic control of that laxity

Throwers with SLAP

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- SLAP can contribute to laxity
- Throwers need laxity
- Rehab cuff to improve dynamic control of that laxity
- Only if rehab fails AND can't throw consider surgery.

Throwers with SLAP

- SLAP can contribute to laxity
- Repair decreases laxity
- Decrease velocity!!
- End career.

Throwers with SLAP

- SLAP can contribute to laxity
- Repair decreases laxity
- Decrease velocity!!
- End career.
- Surgery should SAVE career, not end it!!

Surgery? THROWERS…

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- Emerging data suggest that approximately 50% of patients with a *clinically significant* labral injury can become asymptomatic with guided rehabilitation.

  New Paradigms in the Throwing Shoulder: Labral Injury, Surgery, and Rehabilitation Kibler, Sciascia Instr Course Lect 2019;68:499-512.

- Surgical treatment, if necessary, should address all aspects of the labral anatomy so that all the roles of the labrum in shoulder stability are restored. *Kibler What is a Significant SLAP? Instr Course Lect 2013*

Collision Athlete / Physical

- Acute / traumatic origin

- Resulting laxity may require repair.

Collision Athlete / Physical

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- Resulting laxity may require repair.

- *THIS IS A DIFFERENT INJURY!!*

Collision Athlete / Physical

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- Acute / traumatic origin
- Resulting laxity may require repair.
- *THIS IS A DIFFERENT INJURY!!*
- *TREAT IT DIFFERENTLY!!*

Decision Making…SLAP, Thrower

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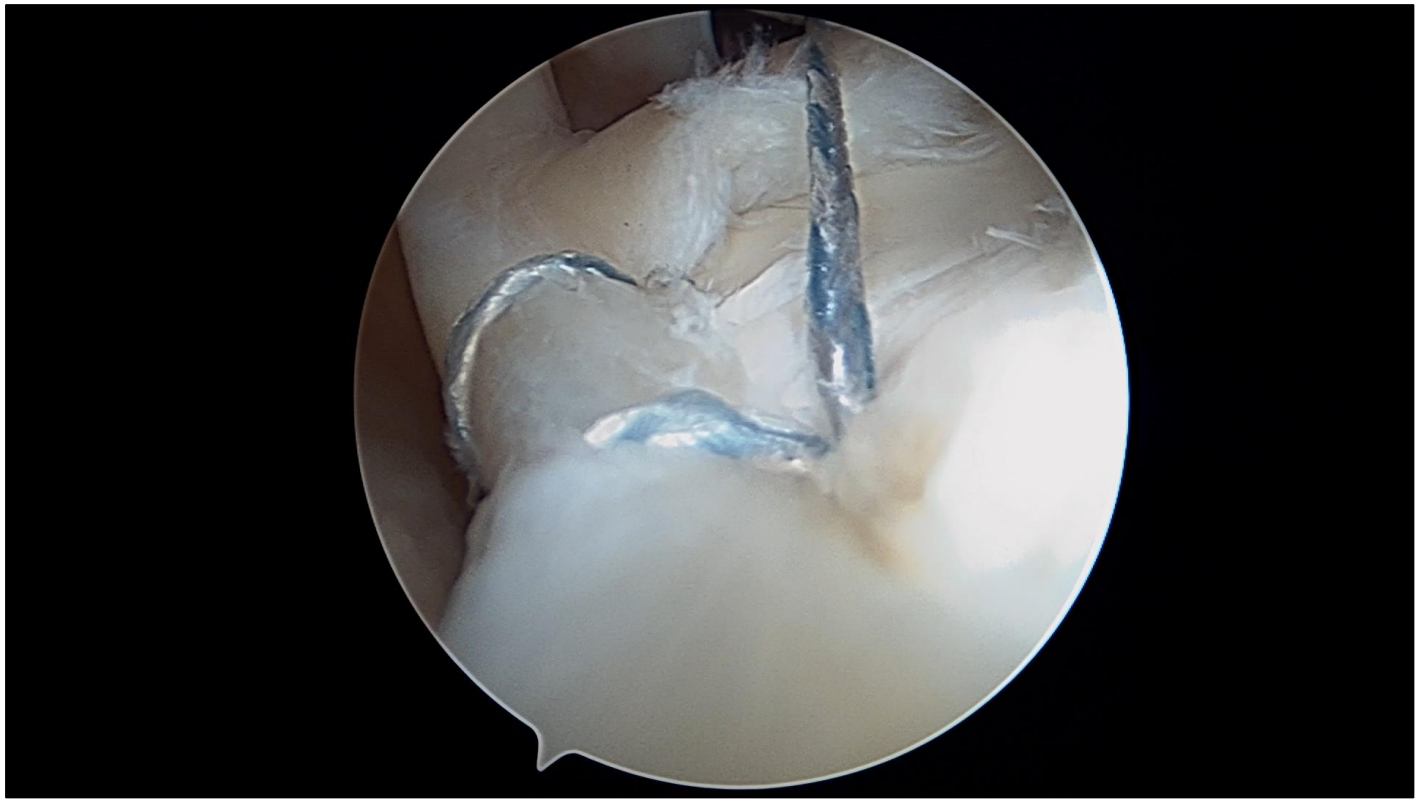
Failed Rehab x 2

- Repair
- Knotless anchors
- Behind bicep
  - Protect ER



Paletta data re Anchor Location

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SLAP Repair with Anterior Anchor

- Moderately high level of initial return to play (86.5%)
- Results deteriorate over short term
  - 64% throwing at same level or higher at final follow-up
- Low complication rate
- Low rate of failed repair (3%)
- Increased risk of ER loss in ABER position
  - >11% lost 10 degrees or more of ER at 90-90

SLAP Repair WITHOUT Anterior Anchor

- LOWER level of success in RTP (71.4% vs 86.5%)
- Results deteriorate over short term
  - 53% throwing at same or higher level at final follow up
- HIGHER reoperation rate (14% vs 6%)
- HIGHER rate of failed repair (12% vs 3%)
- LOWER risk of ER loss at 90-90 (2% vs 11.9%)

Sleeve Concept

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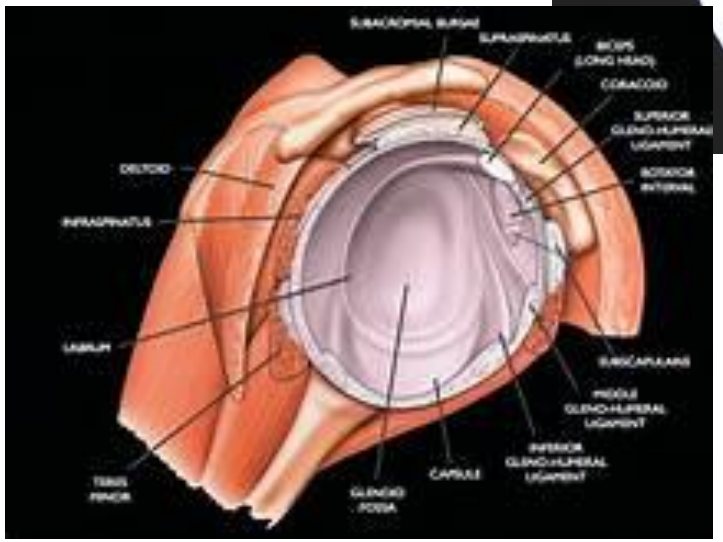
Repair SLAP and Anterior labrum

- If instability is the issue.
- Treat the labrum as a whole, less worry about components.
- Sleeve concept



Anterior

Posterior

Superior

Sleeve Concept

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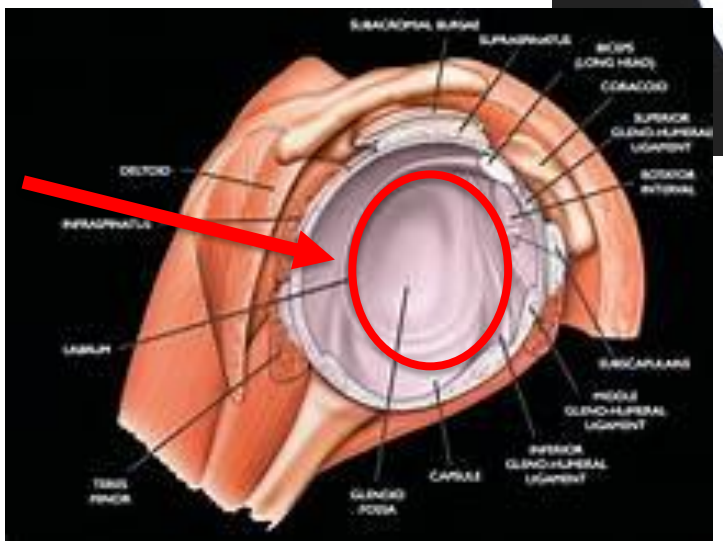

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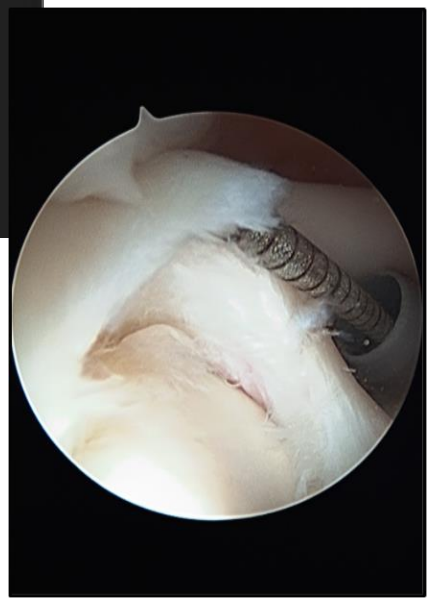
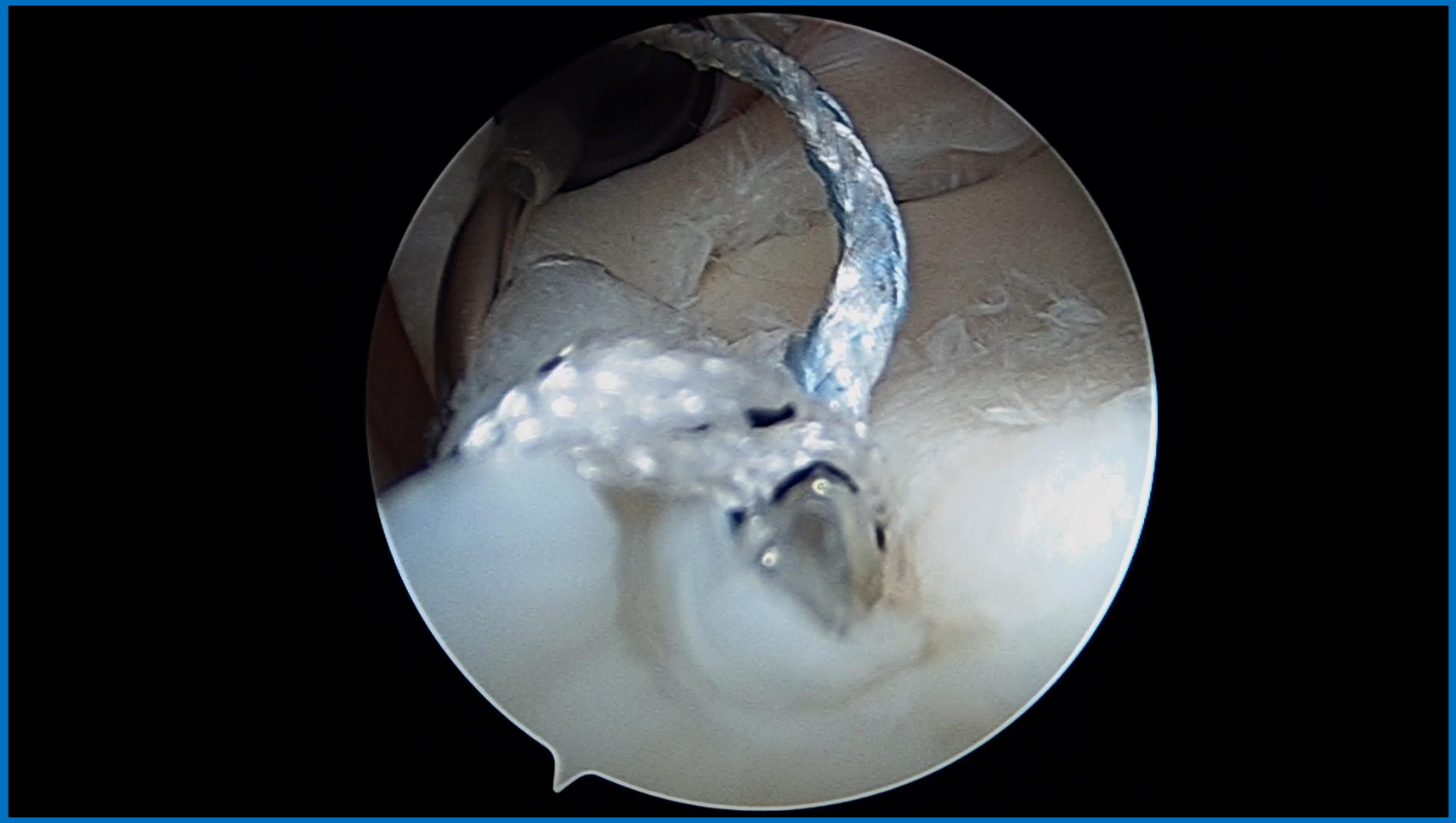
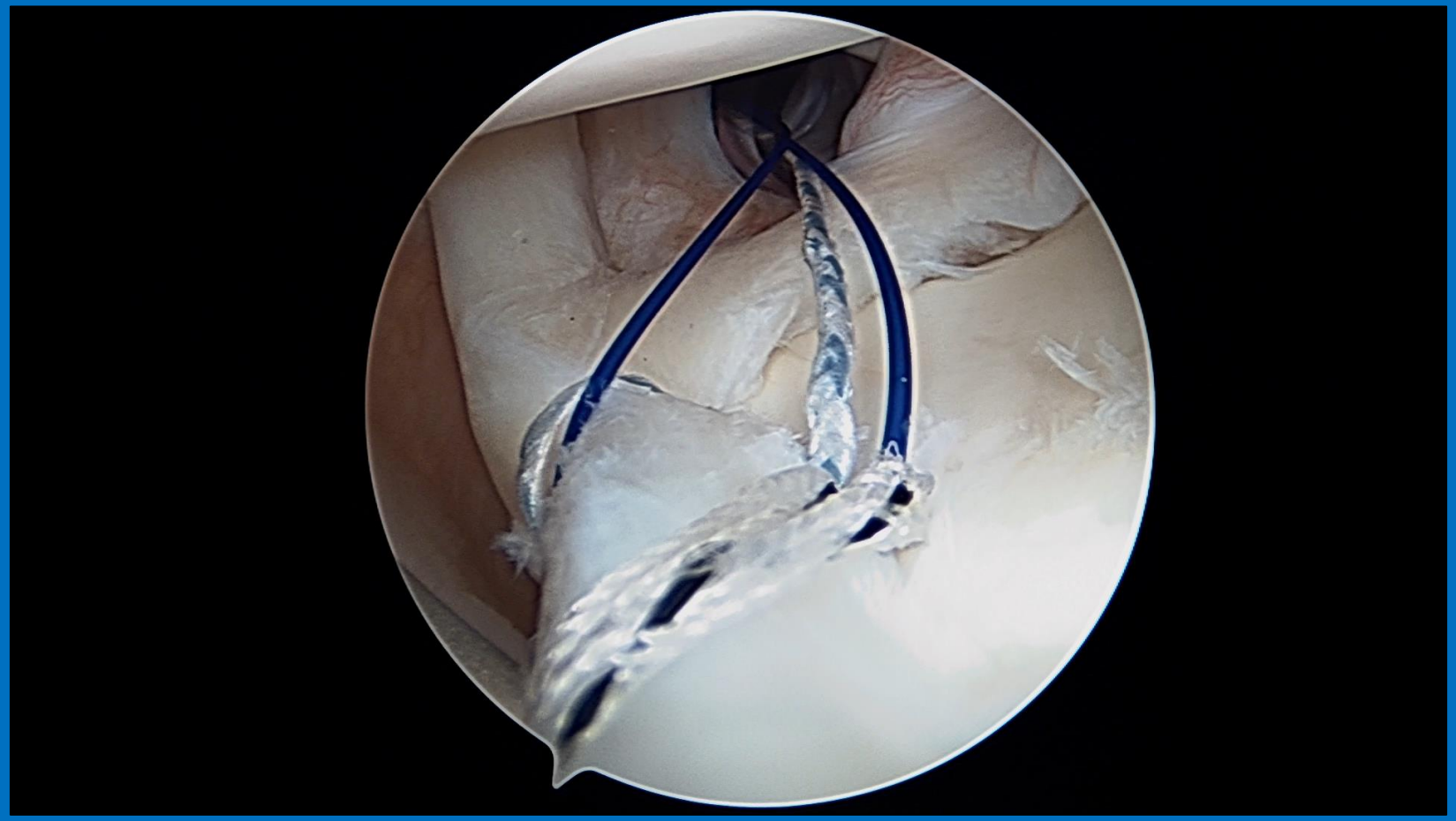


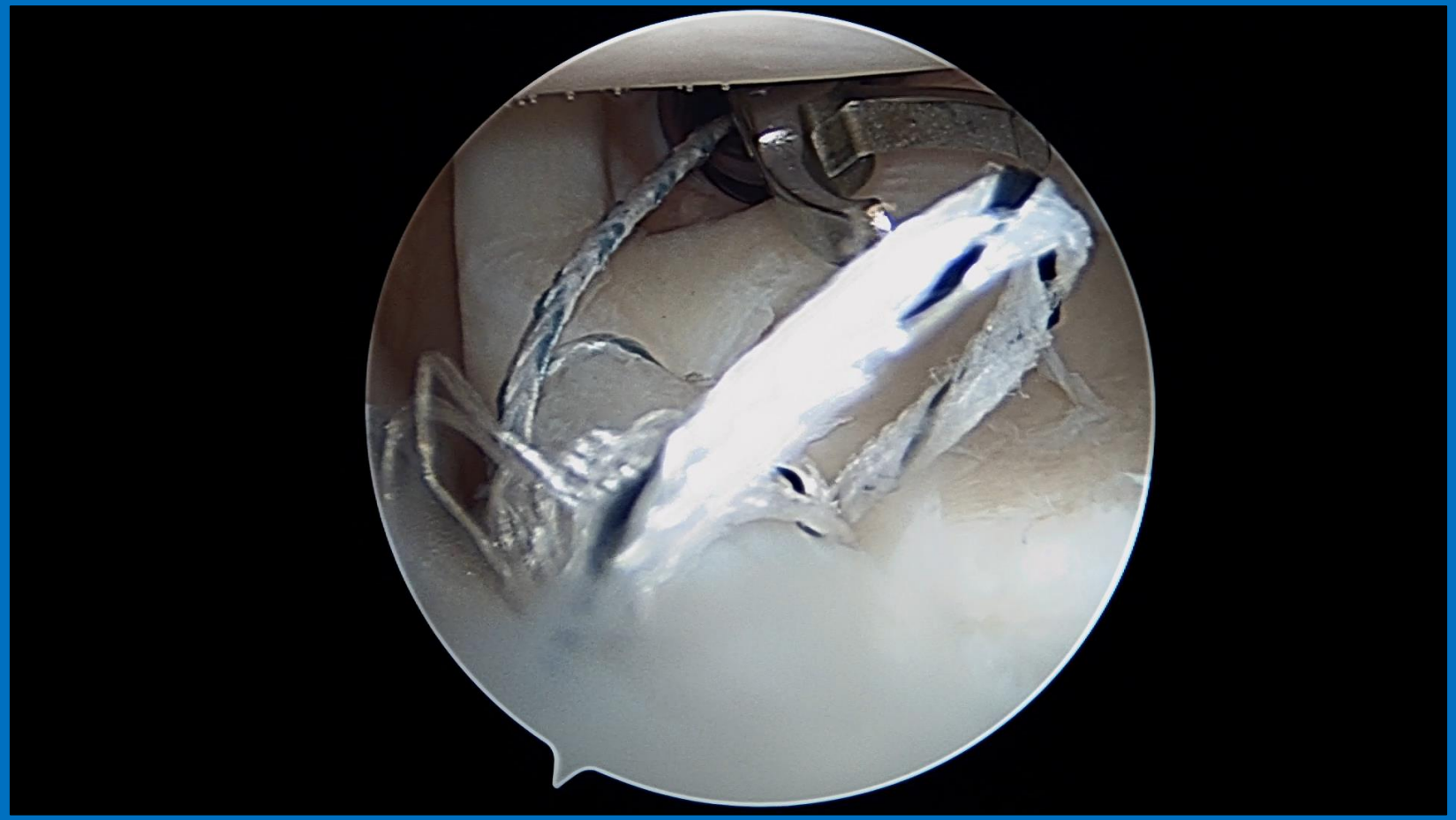
Pass suture shuttle



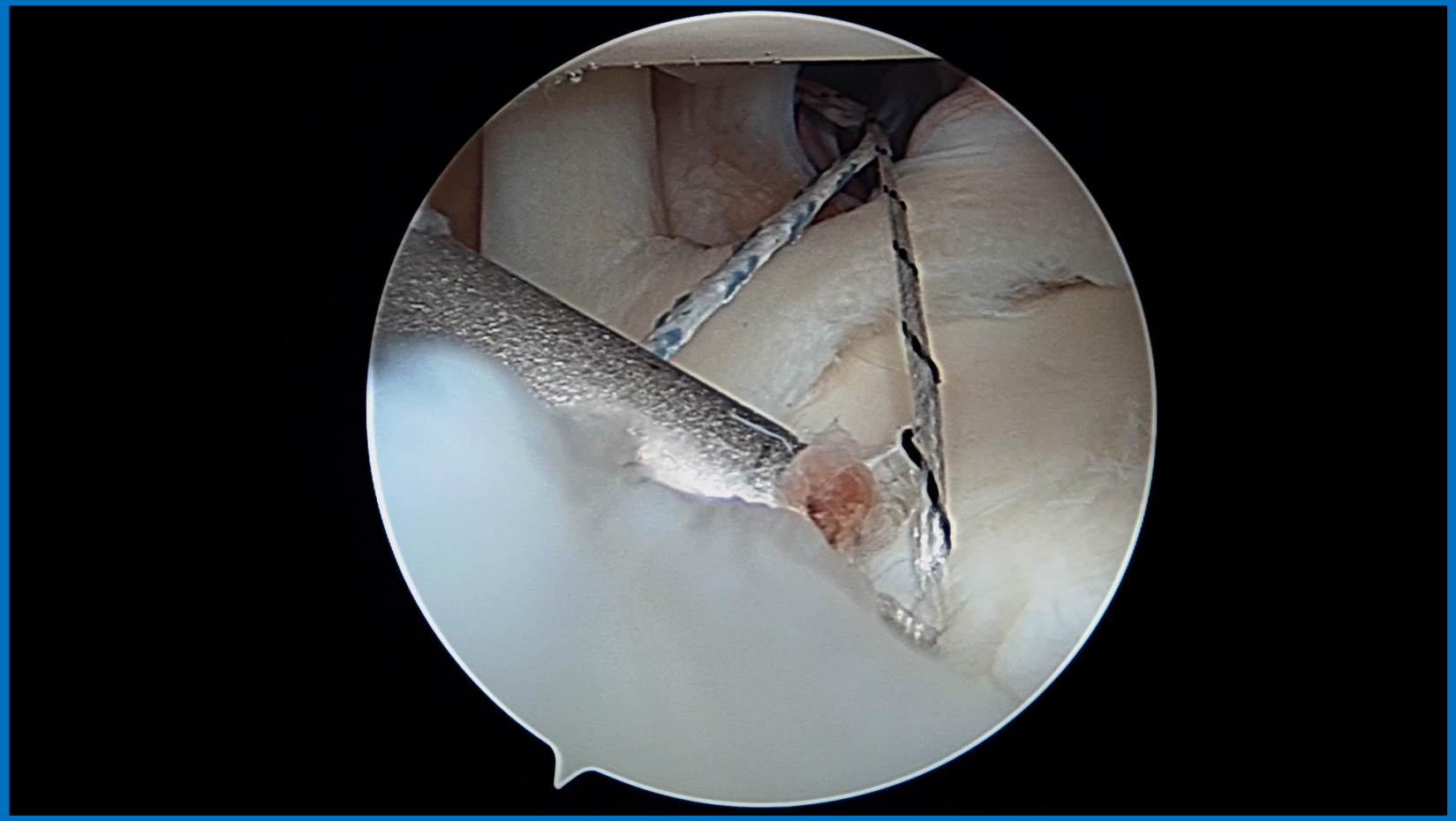
Shuttle suture around labrum



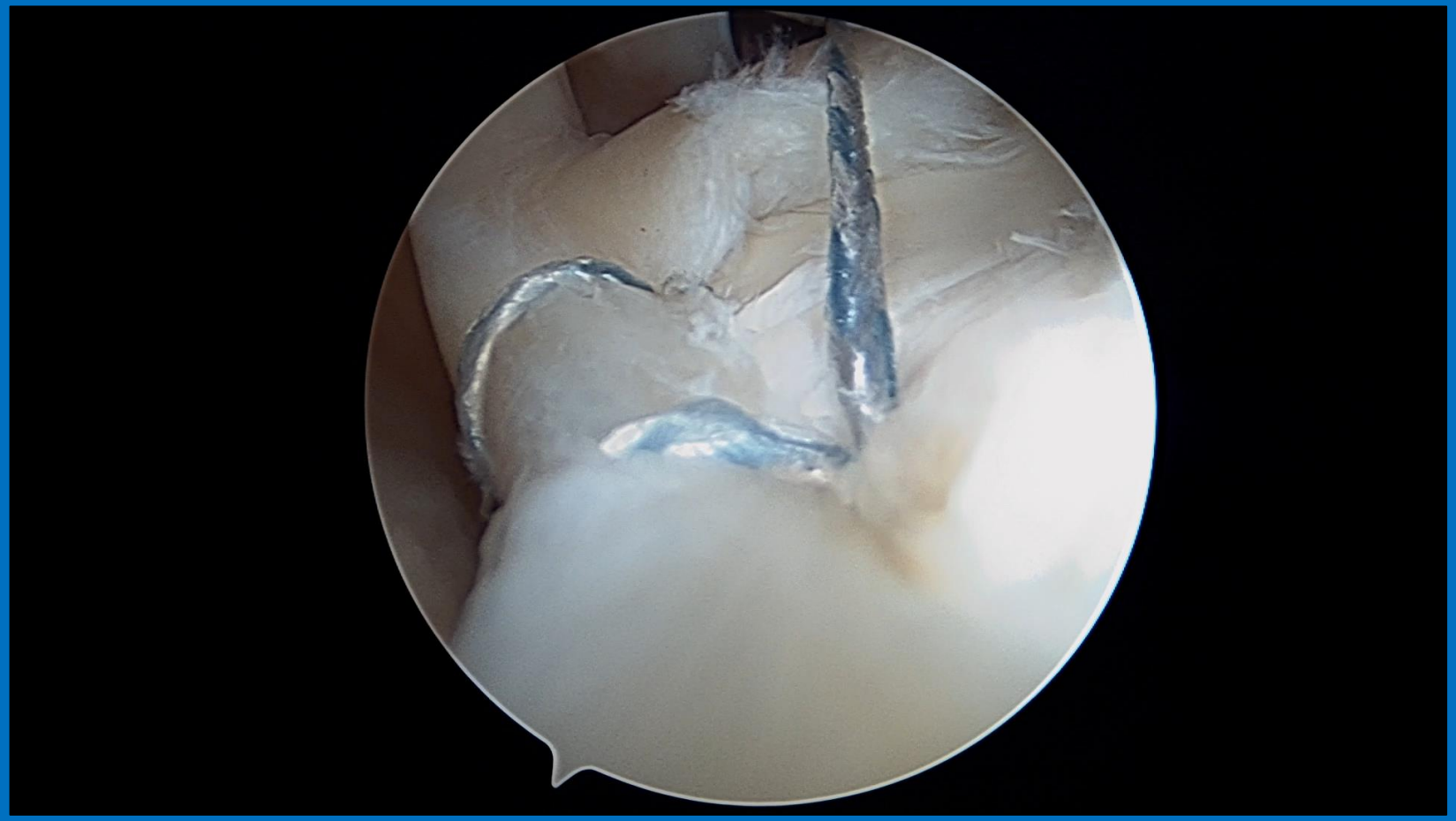
Nest the working suture with shuttle



Pass/tension working suture thru anchor



Tension working suture



THANK YOU!!

David Lintner MD

Chief of Sports Medicine Houston Methodist

Head Team Physician Houston Astros

Team Orthopedist Houston Texans

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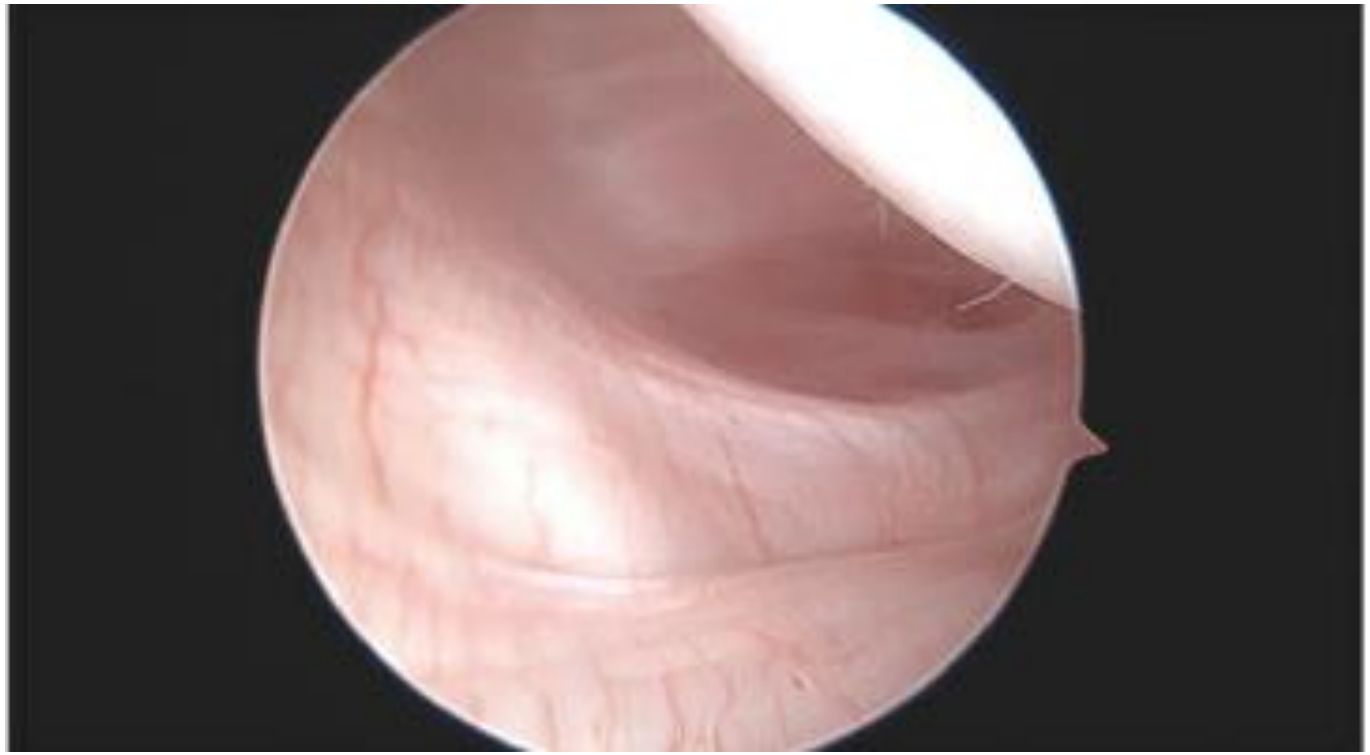
Decision Making

- If shoulder is unstable anteriorly,..
- Repair labrum where it is torn.
- Attend to capsule
  - Plication sutures
  - Capsule tear
  - HAGL



Decision Making

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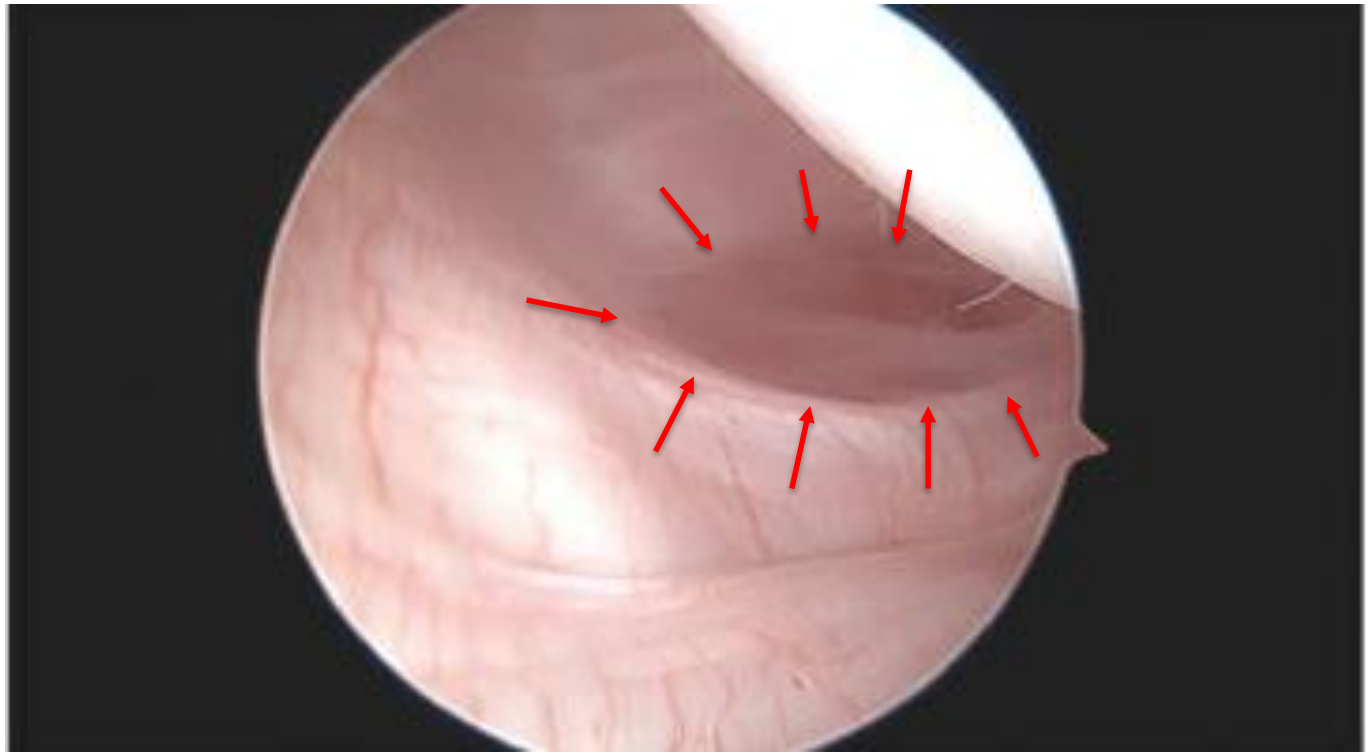
- If shoulder is unstable anteriorly,..
- Repair labrum where it is torn.
- Don’t forget the capsule!!
  - Plication sutures
  - Capsule tear
  - HAGL



Capsule repair

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