SCR (Superior Capsular Reconstruction) for the Massive Rotator Cuff Tear: A Game Changer

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Disclosure
• Stephen S. Burkhart, MD is a consultant for, and receives inventor’s royalties from, Arthrex, Inc. (Naples, FL). He also receives book royalties from Wolters-Kluwer (Philadelphia, PA)

What if the Tear Is Not Repairable? (<5% of cases)
• Partial repair
• Tendon transfer (lat dorsi)
• Consider augmentation with dermal allograft (Snyder et al)
• Consider superior capsular reconstruction (Mihata et al, Arthroscopy 2012)

Augmentation/Bridging with Dermal Allograft

Superior Capsular Reconstruction (SCR) with Dermal Allograft

SCR Results
- Mihata et al, Arthroscopy 2013
• 24 shoulders, 34 month average follow-up
• Irreparable RCTs
• Fascia lata patch
• Elevation
  – Pre-op 84°
  – Post-op 148°
• Acromiohumeral interval
  – Pre-op 4.6 mm
  – Post-op 8.7 mm
• No progression of OA or cuff muscle atrophy
Superior Capsular Reconstruction (SCR) with Dermal Allograft

Do We Pay Enough Attention to the Superior Capsule in Cuff Repair?

Delaminated Tears: Deep Layer is the Superior Capsule

Biomechanical Validation: Restoration of Superior Capsular Stability
- Mihata, Lee et al; AJSM 2012

Cases To Date
- 46 SCRs
- 2 categories of SCR candidates
  - Pseudoparalysis with irreparable RCT
  - Proximal migration with adaptive changes (femoralization of proximal humerus) but no DJD of GHJ; full motion with pain (due to A-H fulcrum)
BRASS SCR Study

- 80 patients
- Mean age 62 years (range 40 to 75 years)
- Mean change in AHD 2.4 mm
- Significant improvements in ASES and VAS scores
- 4 clinical failures (3 re-tears, 2 with 1 mm graft) and 1 infection

Technique of SCR

Bone Bed Preparation

Anchor Placement

Measuring Dimensions for Graft: Medial Dimension
Lateral Dimension

Posterior Dimension

Anterior Dimension

Add 5 to 10 mm Margins to Graft

Place Sutures Extracorporeally

Tie 2 Double Pulley Sutures
Tension Free Limbs of Double Pulley

Shuttle Graft into Shoulder

Complete Medial Fixation with Double Mattress/Double Pulley

Complete Lateral SpeedBridge Fixation

Consider Additional Anteromedial Anchor

Side-to-Side Sutures Between Graft and IS (and Between Graft and Comma Tissue)
Additional SCR Tips

**Anteromedial Anchor Should Be Anterior to Biceps Root**
- To prevent anterosuperior escape

**Anchor Anterolateral Graft to Biceps Tenodesis Implant**
- To prevent anterosuperior escape

**Zip-Line Modification:**
**If Glenoid Bone Quality is Poor**
The Role of Posterior Interval Slide

- Even if mobility of tendon is not improved, the exposure of superior glenoid is improved for medial fixation of dermal allograft
The Role of Superior Capsule

• Restraint against proximal migration
• If superior capsule absent, must reconstruct it

For Multiple Failed Cuff Repairs:

• Superior capsule is deficient or absent
• Side-to-side repair over top of SCR
  – 54 year old man, 2 failed RCRs

Combined Instability/ Cuff Problems

• 41 year old athletic male
• Works as physical therapist
• Anterior dislocation 6 months earlier
  – Massive cuff tear
  – Borderline bone deficiency
  – Pseudoparalysis
Choices

A. Open Latarjet and open SCR
B. Arthroscopic Bankart repair, arthroscopic remplissage, and arthroscopic SCR

Proximal Migration

- 66 year old active female (tennis, golf)
- Acromiohumeral fulcrum
- Pain and weakness with overhead motion

Bone Bed
Preparation of the Greater Tuberosity
One Year Post-Op

- No pain
- 5/5 strength

Does the Graft Heal?

- 56 year old male
  - Very athletic
  - Weight lifter
  - Prior failed cuff repair
  - 2 months after SCR, ruptured LHB lifting light weights (non-compliant patient)

Findings at the First Arthroscopy
Second Look

- 3 months post-op SCR, at time of revision biceps tenodesis

Healed Dermal Allograft

- Graft appeared to be tensioned physiologically
- Vascular ingrowth on periphery

Restraint to Superior Migration

- Probing the graft
- Pushing humeral head proximally

Courtesy of Chris Adams, MD
My Opinion on the Role of SCR

- Will generate a paradigm shift in treatment of massive RCTs
- Will significantly decrease the need for reverse TSR

SCR

- Very promising
- Could be a game-changer

Thank You!