Revision Rotator Cuff Repair: How To Do It Better

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Fact

• Functional outcome after cuff repair is better in patients with a healed rotator cuff.
  – Boileau et al. JBJS (Am) 2005.

However...

• Many patients have satisfactory outcomes despite persistent cuff defects
  – Galatz, Ball, Yamaguchi et al. JBJS (Am) 2004.

So...

• When should we do a revision cuff repair?

Historically

• Mixed results from open revision cuff repair
    • Only 17% good results overall
    • Only 12.5% good results for massive tears
    • Satisfactory (excellent, good, or fair) results in 67% of massive tears

Arthroscopic Revision Cuff Repair
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• Lo & Burkhart, Arthroscopy 2004.
• Keener, Galatz, Yamaguchi et al, JBJS (Am) 2010.
• Laedermann, Denard, Burkhart, Arthroscopy 2012.

Results much better than with open revision.

Arthroscopic Revision Repair Results

• Lo & Burkhart, Arthroscopy 2004.
  – 14 patients
  – 2 year follow-up
  – 63% good/excellent
  – 93% satisfied

Arthroscopic Revision Repair Results

• Laedermann, Denard, & Burkhart, Arthroscopy 2012.
  – 74 patients, 53 massive
  – 5 year average follow-up
  – 78% significantly improved and satisfied
  – No difference in functional outcome between massive and non-massive
  – ASES scores improved between 1 year and 5 years (results are durable)

Relevant Questions for Post-Op Painful Shoulder

• Is it re-torn?
• Does it need surgery again?
• Can surgery make the patient better?
• What can be done better the second time?
• How can we do it?

Is It Re-Torn?

• 48 year old female 4 months post-op arthroscopic cuff repair
• Pain and weakness
• MRI: recurrent cuff tear
MRI

• Can be deceptive in the vascular phase (up to 5 months post-op)
• In general, wait at least 6 months before considering post-op MRI.

MRI

• High-strength suture can cause artifact that looks like a cuff defect

Can Surgery Improve The Patient?

• In general, yes
  – 78% improved and satisfied
• If pseudoparalysis after failed surgery, prognosis is guarded
  – Pseudoparalysis without prior surgery, 90% regained overhead
  – Pseudoparalysis after prior surgery, 40% regained overhead

Fact

• Revision surgery for post-op pseudoparalysis must have a guarded prognosis

What Can Be Done Better? How Do We Do It?

Failure of Cuff Repair: Patient Factors and Extrinsic Factors

• Intrinsic non-healing (age, smoking)
• Intrinsic over-healing (post-op stiffness)
• Non-compliance
• Overly aggressive P.T.
Impact of Fatty Degeneration

- Traditional teaching
  - If ≥ 50% F.I., patients will not improve with repair
- My experience
  - Even if ≥ 50% F.I. (up to 75% FI), strength and function improve significantly after repair
  - Burkhart et al, Arthroscopy 2007

Impact of Retraction: BRASS Study Group 2014

- 56 patients with pre-op pseudoparalysis (worst-case scenario; most were retracted)
  - 53/56 reversed their pseudoparalysis (95%)
  - 51/56 were fully repairable (91%)

Reparability of Massive RCT

- 107/126 (85%) fully reparable during 1998-2005
  - Denard & Burkhart, Arthroscopy 2012

Current Reparability Rate for Massive RCT

- 95% fully reparable with current methods

Failure of Cuff Healing: Surgeon Factors

- Failure to detect all the pathology (e.g. subscap)
- Failure to properly detect tear pattern
- Failure to provide adequate mechanical fixation
- Failure to prescribe appropriate rehab (e.g. overly aggressive)

When Can Revision Surgery Be Successful?

- Post-op stiffness
- If surgeon failures are strongly suspected
Step Wise Approach

Address the Biceps and Subscap

Normal Torn Subscap Subluxed Biceps Coracoplasty Subscap Repair Biceps Tenodesis

Excavate SS/IS

Dealing with the Massive Adhesed Cuff Tear

Finding the Plane Between Acromion and Cuff

Finding the Correct Plane
- Lateral viewing portal
- Posterior working portal
- Bounce off scapular spine and push laterally through scar
Dissect the Plane

- Expose posterior gutter

Dissect Bursal Leaders

Expose Scapular Spine

- Keel-shaped bone is scapular spine
- The keel defines border between SS and IS

Excise Bursal Leaders

- greater tuberosity

Repair Supra & Infraspinatus

- If mobile tear, repair with single or double row
- If non-mobile tear, consider double interval slide
What if SS Will Not Reach Bone Bed After Interval Slides?

- Do repair of IS (balance force couples)
- Do side-to-side repair of SS to IS
- Leave residual defect (partial repair)

Case Presentation

- 48-year old man
- Failed repair of SS/IS
- Weak ER
- Positive belly-press
- Positive bear-hug

Case Presentation

- 2 prior opinions
  - Lat dorsi transfer
  - Reverse TSR

Recurrent Tear

- SS, IS
- Missed subscap

Subscap Repair
SS/IS Repair

• L-shaped tear pattern
• Double row repair

Post-op Rehab

• Avoid aggressive rehab
• No stretches for 6 weeks
• Strengthening at 4 months

Conclusion

• Arthroscopic revision cuff repair can give significant improvement
• Surgery requires meticulous attention to detail
• Rehab should be slow to avoid re-rupture
Thank you!