Point/Counterpoint:
Single vs Double Row RCR

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Disclosures
• None

The Problem
• Numerous studies show good to excellent functional results of arthroscopic RCR
• Healing rates range from 91%-10% on MRI/Ultrasound based on size of tear
The Problem

• No one technique has been shown to be superior
• Questions that remain
  – Single vs double row
  – Number of anchors
  – Sutures per anchor
  – Anchor material

Single Row

• Potential for low tension repair
• Allows marrow elements to exit tuberosity
• Technically easier and faster
• Lower cost per case

Single vs Double Row

• Older literature that suggests better biomechanical results mostly with single or double loaded anchors
• Newer anchors with triple loaded sutures
Triple Loaded Anchors

- Biomechanical advantages of triple-loaded suture anchors compared with double-row rotator cuff repairs
- Barber et al, Arthroscopy 2010
- Biomechanical testing of 5 different suture configurations
- Single row with triple loaded anchors vs different double row techniques
- Double-row repairs with either crossing sutures or 4 separate anchor points were more likely to fail (5- or 10-mm gap) than a single-row repair loaded with 3 simple sutures.

Number of sutures

- Suture Number Determines Strength of Rotator Cuff Repair
  Jost et al, JBJS 2012
- Biomechanical test comparing 2, 4, 6 stranded SR vs 4 suture DR
- “…increasing the number of sutures decreased cyclic gap formation and increased load to failure. Single and double-row repairs are biomechanically equivalent when the number of sutures is kept constant.”

Single Row

- Meier and Meier 2006 JSES
- Double row significantly better than single row
- All single row anchors were double loaded
Tension in RCR
• Double row repairs can overtension the cuff
• Can lead to catastrophic failures at the muscle tendon junction
• Burkhart, Arthroscopy 1997

Failed DR Repair
• Failure at muscle tendon junction
• Destined for reverse TSA

Double Row
• Pulling the cuff laterally to perform a double row overloads the repair site
• This can reduce the native tension on the normal cuff and lead to dysfunction
Double Row Failures

- When the cuff is pulled laterally undue tension placed at repair site
- Can lead to catastrophic failure at the muscle tendon junction
- Mazzocca et al, Kim et al, Park et al

SR vs DR

- Clinical and structural outcomes after arthroscopic single-row versus double-row rotator cuff repair: a systematic review and meta-analysis of level I randomized clinical trials
- Millett et al, JSES 2014
- Meta-analysis
- Single-row repairs resulted in significantly higher re-tear rates compared with double-row repairs, especially with regard to partial-thickness re-tears. However, there were no detectable differences in improvement in outcomes scores between single-row and double-row repairs

SR vs DR

- Arthroscopic Single-Row Versus Double-Row Rotator Cuff Repair: A Meta-analysis of the Randomized Clinical Trials
- Bedi et al, Arthroscopy 2013
- Level I meta-analysis
- 5 studies
- ASES, Constant, UCLA scores
- No difference single row vs double row RCR
SR vs DR

- Single-row, double-row, and transosseous equivalent techniques for isolated supraspinatus tendon tears with minimal atrophy: A retrospective comparative outcome and radiographic analysis at minimum 2-year followup
- Improvement in ASES scores for all 3 techniques
- No difference across all secondary outcome measures including re-tear on MRI

Cost

- Double row repairs can cost ~ $1000 more than single row
- Many insurance carriers do not reimburse for implants
- Can DR repairs be done at ASC's??

Do you want this?
Summary

• Single row repairs are have excellent functional outcomes
• No difference in outcomes with SR vs DR
• Triple loaded anchors best option for SR repairs
• DR may only have advantage in large or massive RC tears