Double Row vs Single Row
Rotator Cuff Repair

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COMMITTEES LEADERSHIP
Program Chairman for the 2014 AOSSM Sports Medicine Meeting (Arciero president) and the 2018 ASES meeting (Romeo president)
Research Committee of the Arthroscopy Association of North America (AANA) 2010 to Present
Chairman Education Committee of the American Shoulder and Elbow Surgeons (ASES) 2017 to Present
Founder and Executive Committee Member of the New England Shoulder and Elbow Society (NESES) 2003 to Present

Why I use Double Row
Increased surface area of Repair
Ease of use-efficiency in the OR
Biomechanically Stronger
Positive Clinical Outcomes
Earlier start of Motion and ROM-randomized controlled study showing increased ROM earlier better clinical outcome
Biomechanically Are Double Row Rotator Cuff Repairs Superior to Single Row Rotator Cuff Repairs

- SR repair had less gap formation ($p<0.05$) and a trend towards higher load to failure under cyclic conditions ($p=0.058$)
• TOE repair had greater ultimate load to failure (p<0.05)
• No difference in gap formation or stiffness of the constructs

Mazzocca et al., Arthroscopy 2010

Biomechanics: Single row vs. Double row

Crossing TOE with highest contact pressure and force
Sig. decrease of contact force, pressure and area over time (160 min) for all techniques

Contact Pressure Decreases by 33% over time

Mazzocca et al., Arthroscopy 2010
This study taught us that a more efficient way to fix the cuff was anatomically superior than the gold standard.

All groups demonstrated superior biomechanical properties.
The double row anchor repair had:
- Less passes through the tissue
- Equal biomechanical properties
- Consistently larger footprint which may aide in biologic healing.

Sutures and anchors maximize rotator Cuff footprint coverage.
The theory being that a stronger biologic interface between tendon and bone the more predictable the healing.

Foot Print Compression

SR Restores 67% of Footprint
TOE Restores 85% of Footprint

DR > SR
TOE > DR
In biomechanical studies, double row repairs result in stronger constructs and more anatomic restoration of the rotator cuff footprint compared with single row repairs.

How about Clinical Results

Single and Double Row RCR
Clinical Relevance
Higher Retear rate in SR

Intact cuff = better function

- Increased range of motion in forward elevation was seen in 2 of 5 studies and increased strength in forward elevation in 3 of 8 studies.

- Total retear rate (complete and partial retears) was 33.1% for the single-row repair and 27.2% for the double-row repair (P = .037).
Clinical Relevance

In Double-Row Rotator Cuff Repair Clinically Superior to Single-Row Rotator Cuff Repair: A Systematic Review of Overlapping Meta-analyses

- 8 Meta Analyses Evaluated
  - Six meta-analyses: no differences
  - 2 favored DR RCR for tears greater than 3 cm.
  - 3 found DR repair to be superior for tears greater than 3 cm and 2 found DR repair to be superior for all tears.

3 concordant high-quality meta-analyses were selected, all of which found significantly better structural healing with DR compared with SR RCR.

Double-Row Repair Lowers the Retear Risk After Accelerated Rehabilitation.

58 patients were randomized to undergo either SR or DR repair with an accelerated Rehab plan.

Magnetic resonance arthrography showed a significantly lower full-thickness retear rate for the DR group than for the SR group (8% vs 24%, respectively; P < .05).

Franceschi et al AJSM 2016

Clinical and radiologic outcome of arthroscopic rotator cuff repair: single-row versus transosseous equivalent repair.

N=415 patients arthroscopic rotator cuff repair between January 2006 and December 2012.

Single Row vs Double Row.

SR and TOE repair provided similar clinical and radiologic outcome

The incidence of retear in the SR group was statistically significantly higher 28% only in large-sized tears.

Jeong et al 2017 JSES
Why Double Row when the clinical results are the same?

Retear rates and healing are different but patient reported outcomes are the same.
Ultrasound evaluation of arthroscopic full-thickness supraspinatus rotator cuff repair: single-row versus double-row suture bridge (transosseous equivalent) fixation. Results of a prospective, randomized study

Gary M. Gartsman, MD, Gregory Drake, DO, T. Bradley Edwards, MD, Russell A. Eldridge, MD, Steven M. Kameneman, MD, Daniel P. O’Connor, MD, Cynna M. Press, MD.

Background: The purpose of this study was to compare the structural outcomes of single-row vs double-row suture bridge rotator cuff repair in 70 patients with full-thickness tears in an average of 16 months. Single, vs double-row suturebridge repair has been shown to lead to tendon healing with lower retear rates than single-row repair. However, no studies have directly compared double- vs single-row repair. Ultrasonography was used to evaluate healing, including tendon thickness and infraspinatus fat pad thickness.

Results: There were no differences in tendon thickness or infraspinatus fat pad thickness between single- vs double-row repair. However, at 1 year, the retear rate for double-row repair was significantly lower (p=0.046) than for single-row repair (12.9% vs 47.1%). This was a statistically significant difference and demonstrated a significantly higher healing rate (as determined by ultrasound).

How can you justify 2x the implant cost with equal results in an ASC

You can not in a fee for service BUT for the extent and risk of revision I believe the retear rate tells the story
Conclusion

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