Surgical Failure Rates of Rotator Cuff Repair

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ABSTRACT

Clinical Scenario: Rotator cuff tears are particularly common in the overhead athlete and the prevalence of such injuries increase with age. After a tear, surgery may be necessary to provide support and get the athlete back to RTP. Focused Clinical Question: With surgical repair which surgery has a lower incidence of failure, double-row or single-row surgical repair?

Search Strategy: Initial search of PubMed included the search term “rotator cuff repair” this resulted in 3477 hits. This was then narrowed down to 17 hits using the search term “rotator cuff repair double-row vs single-row”. This was then used to get results in CINAHL, ProQuest Nursing, and Cochrane where 10 articles were selected. Studies were excluded if the patients had a rotator cuff tear that was repairable with either a double-row or single-row repair. Studies were excluded if they were in a foreign language, done on animals, cadavers, or used other surgical techniques that didn’t involve a variation of the Double- or single-row technique.

Evidence Quality Assessment: Studies were assessed using the PEDro scale and the oxford levels of confidence. Scores for PEDro ranged from 4/10 to 8/10 and Oxford 2011 Levels of Evidence ranged from level 2 through level 4.

Results and Summary of Search: There was no significant difference between the repair techniques in two studies. Failure rates for patients who underwent double-row failures ranged from 7% to 48% failure. Failure rates for patients who underwent single-row failed repairs ranged from 8.5% to 60% failure. However, most of these studies the populations involved were over the age of 60 years old. Bottom Line: In reference to the “SORT” score these studies demonstrated an “A” grading. Double-row repair may increase the incidence of failure rates. Implications: Double-row repair appears to demonstrate better tendon healing possibly leading to lower failure rates. With athletes, they may be willing to sacrifice long term durability for the benefits of short term function. Detailed discussions with the athlete may help them determine which surgical procedure is best for them.

Word Count: 341

RESULTS AND SUMMARY OF SEARCH, CONT.

- Popular databases including: PubMed, CINAHL, ProQuest, and Cochrane were searched.
- Starting with PubMed, “rotator cuff repair” was searched and resulted in 3477 results. This was narrowed down this down to 17 by searching “single-row vs double-row”.
- This was then used as a search question strategy with 10 articles being selected.
- Studies were included if the rotator cuff was deemed repairable using a single- or double-row technique in English.
- Studies were excluded if the study was done on animals or cadavers, were in another language other then English, and other possible surgical techniques that are not a variation of a single- or double-row surgical technique.

Evidence Quality Assessment:

- Scores for PEDro ranged from 4/10 to 8/10
- Oxford 2011 Levels of Evidence ranged from level 2 through level 4.
- For statistical analysis a P-value of < 0.05 was determined as statistically significant.

Table 1. Surgical Failures Rates of Single-Row and Double-Row Rotator Cuff Repair

| Author | N subjects | Patient characteristics | Intervention | Comparison | Outcome | P values |
|--------|------------|-------------------------|--------------|-----------|---------|----------|----------|
| Burks et al 4 | 40 | Average age 56.5 years | 20 single-row repairs | 20 double-row | SR: 16% (6) | DR: 20% (4) | P = 0.65 |
| Shin et al 8 | 84 | Mean age 58 ± 9.0 years | 47 treated with modified mason-allen single-row | 37 treated by double-row suture bridge | SR: 8.5% (4) | DR: 8.1% (3) | P = 0.947 |
| Franceschi et al 4 | 58 | Mean age 61.8 years | 25 single-row | 25 double-row | SR: Full: 24% (6) | Partial: 36% (9) | DR: Full: 20% (2) | Partial: 20% (5) | P = 0.05 |
| Franceschi et al 4 | 60 | Mean age 63.5 years | 30 single-row | 30 double-row | Partial: 33.3% (10) | Full: 6.67% (2) | DR: Partial: 23.3% (7) | Full: 3.33% (1) | P = 0.05 |
| Shen et al 8 | 428 | N/A | 216 single-row | 212 double-row | SR: 25% (54) | DR: 14.6% (33) | P = 0.005 |
| Tudisco et al 4 | 40 | DR: 63 ± 7 year | 20 single-row | 20 double-row | SR: 60% (12) | DR: 25% (5) | P = 0.02 |
| Lacuna et al 8 | 86 | Average age 59 years | 18 arthroscopic suture bridge | 21 open double-row | Open DR: 48% (10) | Knotted SR: 33% (6) | Knotted SR: 26% (8) | P < 0.005 |
| Gartner et al 4 | 83 | N/A | 40 single-row | 43 suture bridge double-row | SR: 25% (10) | DR: 7% (3) | P = 0.024 |
| Ma et al 8 | 64 | DR: mean age 61.6 years | 27 single-row | 26 double-row | SR: 37% (10) | DR: 23% (6) | P = 0.001 |

Results and Summary of Search: In reference to the “SORT” score these studies demonstrated an “A” grading. Double-row repair appears to have a lower incidence of failures when compared to Single-row therefor double-row would lower the incidence of surgical failures. More studies should be done looking at reret rates associated with single- or double-row repair in addition to studies looking at functional outcomes after repair.

CLINICAL BOTTOM LINE

- Double-row surgical repair seems to demonstrate better tendon healing.
- Double-row could possibly translate into fewer failed surgeries.
- When educating a patient the possibility of a retear should be discussed in addition to functional outcomes expected after surgery.

IMPLICATIONS

- Double-row surgical repair may be considered.
- Double-row repair could demonstrate better tendon healing.
- Double-row repair could decrease the risk of reret rates.
- When educating a patient the possibility of a retear should be discussed in addition to functional outcomes expected after surgery.

REFERENCES