

# 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 included 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 that 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 may reduce the incidence of failure rates. **Implications:** Double-row 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

## CLINICAL SCENARIO

- Rotator cuff tears occur pre-dominantly in people who perform repetitive overhead motions and are seen often in the overhand athlete including sports such as baseball, swimming, volleyball, and the quarterback position in American football.
- The risk for a rotator cuff tear increases with age.
- When rotator cuff tears happen, they may require surgery depending upon the severity of the injury.
- When looking at repairs it’s important to look at the retear rates associated with the specific surgery.
- Single-row repair have been proven to be effective.
- Recently, double-row techniques have been employed in clinical studies showing promising results. This study looked at failure rates associated with these two repair techniques.

## FOCUSED CLINICAL QUESTION

- With surgical repair of the rotator cuff, which surgery has a lower incidence of failure, double-row or single-row surgical repair?

## SEARCH STRATEGY

- 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 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 were 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.

## RESULTS AND SUMMARY OF SEARCH

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

Author	# subjects	Patient characteristics	Intervention	Comparison	outcome	P values
Burks et al <sup>1</sup>	40	Average age of 56.5 years	20 single-row repairs	20 double-row	SR: 15% (3) DR: 20% (4)	P ≤.05
Shin et al <sup>9</sup>	84	Mean age 58.2 ± 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 = .947
Franceschi et al <sup>3</sup>	58	Mean age of 61.8 years	25 single-row	25 double-row	SR: Full: 24% (6) Partial: 36% (9) DR: full: 8% (2) Partial: 20% (5)	P ≤.05
Franceschi et al <sup>4</sup>	60	Mean age of 63.5 years	30 single-row	30 double-row	SR: Partial 33.33% (10) Full: 6.67% (2) DR: Partial: 23.33% (7) Full: 3.33%(1)	P ≤.05
Shen et al <sup>8</sup>	428	N/A	216 single-row	212 double-row	SR: 25% (54) DR: 14.6% (31)	P = .005
Tudisco et al <sup>10</sup>	40	DR: 63 ± 7 year SR: 66 ±8	20 single-row	20 double-row	SR: 60% (12) DR: 25% (5)	P = .02
Lucena et al <sup>6</sup>	86	Average age of 59 years	18 arthroscopic knotted single-row. 31 arthroscopic knotless single-row	21 open double-row	Open DR: 48% (10) Knotted SR: 33%(6) Knotless SR: 26%(8)	P < 0.05
Gartsman et al <sup>5</sup>	83	N/A	40 single-row	43 suture bridge double-row	SR: 25% (10) DR: 7% (3)	P = .024
Ma et al <sup>7</sup>	64	DR: mean age of 61.6 SR: mean age of 60.8	27 single-row	26 double-row	SR: 37% (10) DR: 23% (6)	P <.001

Table 1. Results from rotator cuff repair. Table show percentage of failed procedures and number of incidences that has occurred  
SR: Single-Row repair; DR: Double-row repair

## RESULTS AND SUMMARY OF SEARCH, CONT.

Fig 1. Single-Row Repair

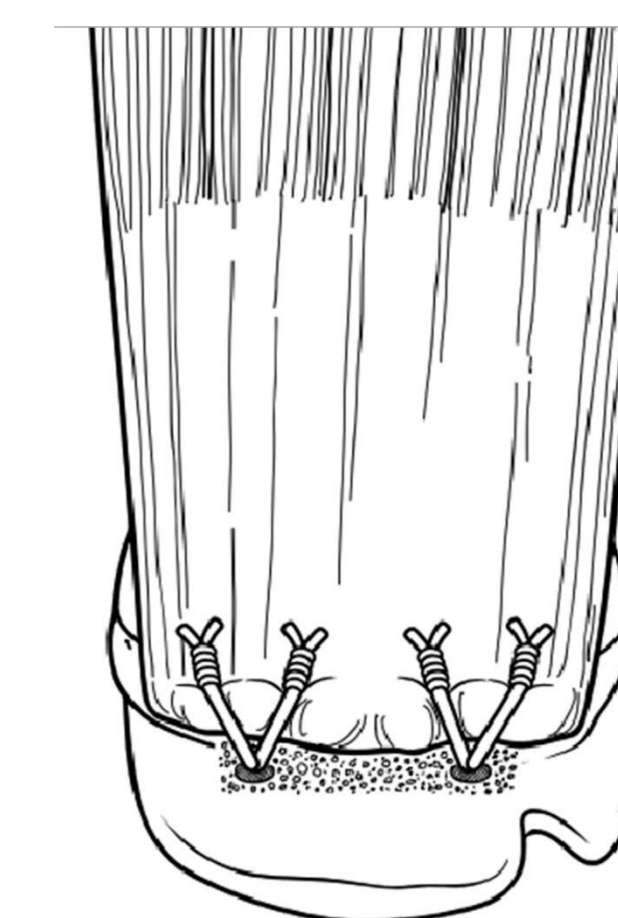


Fig 1. drawing of a final configuration of a single-row repair. Single-row repair incorporates a lateral row of suture anchors

Fig. 2 Double-Row Repair

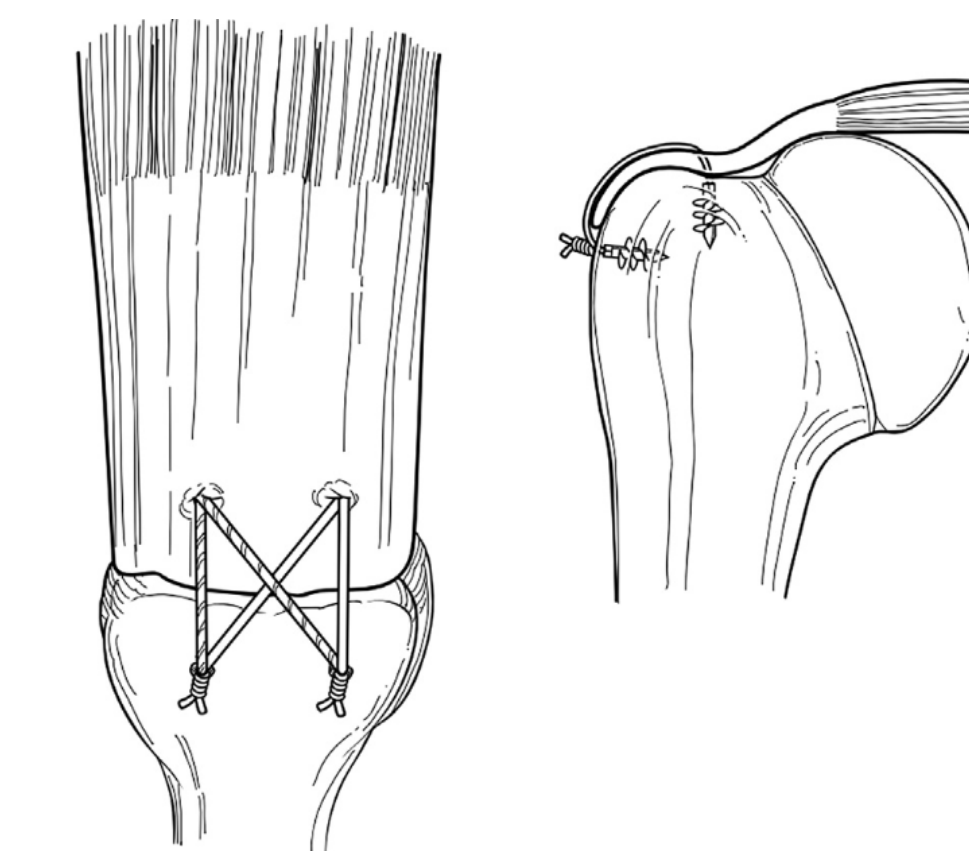


Fig 2. Drawing of a final configuration of a double-row repair. Double-row repair incorporates a medial and lateral row of suture anchors

- Single-row failure rates raged from 8.5% to 60%
- Double-row failure rates ranged from 7 to 48%
- Most of the studies were done on people over the age of 60 which could affect tendon healing

## CLINICAL BOTTOM LINE

- In reference to the “SORT” score the studies done demonstrated an A grading . Double-row 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 retear rates associated with single- or double-row repair In addition to studies looking at functional outcomes after repair.

## IMPLICATIONS

- 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. .

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