

# Long-term Survivorship of Rotator Cuff Repairs Using Ultrasound and Magnetic Resonance Imaging Analysis

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## Abstract

**Background:** Important differences in clinical outcomes likely exist between patients with healed and nonhealed rotator cuff repairs. The survival probability of rotator cuff repairs has not been published in a time-dependent manner up to now.

**Hypotheses:** Recurrent tears occur more frequently in the early postoperative period. Early failures of the repair are a prognostic factor for the long-term outcome.

**Study Design:** Cohort study; Level of evidence, 3.

**Methods:** A series of 107 consecutive patients undergoing arthroscopically assisted mini-open repair of the rotator cuff between 1998 and 2002 were evaluated in a prospective study. Of these, 95 patients finished the study after a maximum follow-up of 11 years. The evaluation included 1 postoperative magnetic resonance imaging scan as well as multiple ultrasonographies and determinations of the American Shoulder and Elbow Surgeons (ASES) and Constant scores at 3 months, 6 months, 1 year, and then yearly with a median follow-up of 96 months.

**Results:** The overall failure rate was 33% (35 of 107). The survivorship analysis revealed that 74% of all failures occurred atraumatically in the first 3 months and 11% occurred between the third and the sixth month after the repair. The remaining reruptures (14%) happened 2 to 5 years postoperatively and were related to sports activities or direct trauma. The overall clinical results did not deteriorate over time. The parameters healed tendon, rerupture of less than 2 cm<sup>2</sup>, and rerupture of more than 2 cm<sup>2</sup> at 6 months were predictors of the gender- and age-adjusted (normalized) Constant score at 84 months ( $P < .0001$ ).

**Conclusion:** The majority of recurrent tears occurred in the first 3 months after surgical repair. The parameters “recurrent tear” as well as “healed tendon” evaluated at 6 months postoperatively appear to be predictors for the clinical outcomes at 7 years. Efforts to improve healing during the initial 3 months have long-term implications for maintenance of cuff integrity and clinical outcomes.

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# When Do Rotator Cuff Repairs Fail? Serial Ultrasound Examination After Arthroscopic Repair of Large and Massive Rotator Cuff Tears

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## Abstract

**Background:** Despite advances in arthroscopic repair of rotator cuff tears, recurrent tears after repair of large and massive tears remain a significant clinical problem. The primary objective of this study was to define the timing of structural failure of surgically repaired large and massive rotator cuff tears by serial imaging with ultrasound. The secondary objective of this study was to investigate the association between recurrent tears and clinical outcome after rotator cuff repair.

**Hypothesis:** Recurrent tear after arthroscopic repair of large rotator cuff tears is more likely to occur late (>3 months) in the postoperative period and will be associated with inferior clinical outcome scores.

**Study Design:** Cohort study; Level of evidence, 3.

**Methods:** Twenty-two consecutive patients with large (>3 cm) rotator cuff tears underwent arthroscopic repair with a standardized technique. Serial ultrasound examinations were performed at 2 days, 2 weeks, 6 weeks, 3 months, 6 months, 12 months, and 24 months after surgery. Western Ontario Rotator Cuff (WORC) Index scores were also collected at these time points.

**Results:** Nine (41%) of the 22 arthroscopically repaired rotator cuff tears demonstrated recurrent tears. Seven of the 9 retears occurred within 3 months of surgery, and the other 2 occurred between 3 and 6 months. No retears occurred after 6 months. At 24-month follow-up, WORC scores favoring intact rotator cuffs over retears approached statistical significance (mean WORC intact 123.9 vs retear 659.8;  $P = .07$ ).

**Conclusion:** Recurrent rotator cuff tears are not uncommon after arthroscopic repair of large and massive tears. These recurrent tears appear to occur more frequently in the early postoperative period (within the first 3 months) and are associated with inferior clinical outcomes.

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