Arthroscopic Primary Rotator Cuff Repairs in Patients Aged Younger Than 45 Years

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Purpose: The purpose of this study was to evaluate the mechanism of injury, patient characteristics, tear size, and clinical outcomes after arthroscopic primary rotator cuff repair of full-thickness tears in patients aged younger than 45 years. **Methods:** A total of 70 consecutive patients were reviewed in a retrospective, multicenter (2 institutions) study evaluating prospectively collected data. Fifty-three patients, with a mean age of 37.5 years (range, 16.2 to 44.9 years), were available for follow-up at a mean of 35.8 months (range, 13.8 to 59.1 months). Exclusion criteria included patients with revision procedures, repair of partial tears, and follow-up of less than 12 months. Follow-up evaluation included physical examination with dynamometer strength testing and clinical outcome measures including the Single Assessment Numeric Evaluation score, American Shoulder and Elbow Surgeons (ASES) score, Constant-Murley score, pain score on a visual analog scale, and Simple Shoulder Test score. **Results:** A total of 60% of the patients (32 of 53) had a traumatic etiology, with 38% (12 of 32) of these related to an athletic event. Of the tears, 36 (68%) were medium tears. Concomitant procedures performed at the time of rotator cuff repair included acromioplasty (51), biceps tenodesis or tenotomy (24), distal clavicle excision (10), anteroinferior stabilization (2), and labral repair (1). The mean postoperative ASES score was 84.6 (range, 21.6 to 100.0), with 2 patients recording ASES scores of less than 50 (21.7 and 41.7) at final follow-up. In the 38 patients available for clinical follow-up examination, forward flexion improved from 158.7° (range, 45° to 180°) to 168.4° (range, 120° to 180°) ($P = .014$). At the time of follow-up, no patients had undergone revision surgery. On the basis of poor clinical outcome scores, 2 patients (4.0%) were considered failures. **Conclusions:** Arthroscopic primary rotator cuff repair of full-thickness tears in patients aged younger than 45 years results in improved outcomes with regard to pain, subjective patient satisfaction, and shoulder function. **Level of Evidence:** Level IV, therapeutic case series.

Previous studies have reported the prevalence of rotator cuff tears in the general populace to be between 9.4% and 39.0%, with an increasing frequency in older individuals.[1-5] Although pathology of the rotator cuff is typically related to a degenerative etiology, there is a subset of young patients who have rotator cuff injury, often related to trauma.[6] A study by Yamamoto et al.[7] reported an incidence of 5.1% for persons aged between 20 and 50 years. In a magnetic resonance imaging (MRI) assessment of asymptomatic shoulders, Sher et al.[8] found a 4% rotator cuff tear rate in shoulders in patients aged younger than 40 years. Milgrom et al.[9] used ultrasound assessment and found no full-thickness tears, but partial-thickness tears were identified in 8% of patients aged between 30 and 50 years. Arthroscopic approaches for surgical management of rotator cuff injuries are well documented as having similar outcomes to or better outcomes than open techniques, with reproducible outcomes reported in multiple studies, generally with a mean patient age older than 50 years.[10-14] However, few studies have reported clinical outcomes after arthroscopic repair in a younger patient population.

Young patients have several biologic and mechanical factors favoring a successful rotator cuff repair. Meyer et al.[15] have shown that osteoporotic bone can be 1 of several weak links of surgical repair in rotator cuff surgery, a factor seldom found in a younger population.

In addition, tendon quality and vascular supply are improved in younger patients.[16] However, younger patients place higher demands on their shoulders, which may lead to impaired subjective or functional outcomes after repair. To our knowledge, there have only been 2 small cohorts that evaluated outcomes of arthroscopic rotator cuff repair of full-thickness tears in young populations.[17,18] In patients aged younger than 40 years with cuff tears of traumatic etiology, Krishnan et al.[17] found that repairs resulted in excellent pain relief and return to preinjury levels of function. Satisfactory postoperative forward flexion and external rotation were reported, but it is unclear whether these findings represented improvements over baseline status because these data were lacking. Burns and Snyder[18] examined patients aged younger than 50 years and reported a 97% patient satisfaction rate, with no significant loss of motion postoperatively. Other studies reporting on long-term outcomes of open rotator cuff repair in young patients have shown significant pain relief but limited return to function.[8,19,20]

The purpose of this study was to evaluate the mechanism of injury and short-term clinical outcomes after arthroscopic primary rotator cuff repair in patients aged younger than 45 years. Our hypothesis was that the majority of patients younger than 45 would have larger, traumatic rotator cuff tears, but that after arthroscopic repair of full-thickness tears, they would have excellent functional outcomes and minimal pain.

Methods

Records of all patients who had undergone an arthroscopic repair of a full-thickness rotator cuff tear before September 2009 at 2 institutions were reviewed. Exclusion criteria included open procedures, revision procedures, presence of a subscapularis tear, repair of partial tears, and follow-up of less than 12 months. Seventy consecutive patients were identified who met the study criteria. All patients aged younger than 45 years at the time of surgery with a follow-up period of greater than 1 year were included. The study was approved by the institutional review boards at both medical centers.

Surgical Technique

All the surgeries were performed by 7 fellowship-trained orthopaedic surgeons, 4 in a hybrid academic-private practice and 3 in a military practice. The choice of general anesthesia or a regional block was determined by patient or institutional preference. Patients were placed in a beach-chair position, and 3 to 6 arthroscopic portals were used to perform the surgery. Distal clavicle excision was performed based on the patient's individualized preoperative subjective and objective examination findings regarding the acromioclavicular (AC) joint. Subacromial decompression with acromioplasty was performed as deemed necessary by the surgeon. When

the tissue edges of the rotator cuff could be reduced over the greater tuberosity with minimal tension, mobilization was considered adequate. Single- or double-row suture anchor configuration was dependent on surgeon preference and tear characteristics.

Cuff tears were classified arthroscopically based on size, thickness (full or partial), and tendons involved (supraspinatus, infraspinatus, and/or subscapularis). The systems of DeOrio and Cofield[21] and Burkhart et al.[22] were used to classify tear sizes and patterns. In brief, tears were defined by size as small ($\leq$1 cm), medium (1 to 3 cm), large (3 to 5 cm), or massive (>5 cm).[21] Tear shape was also recorded as described by Burkhart et al. into either crescent-shaped tears or U-shaped tears.

Postoperative Rehabilitation

All patients followed the same postoperative rehabilitation protocol, which involved immediate shoulder immobilization in a sling for 6 weeks. Initial therapy consisted of pendulum exercises and restricted passive range of motion (ROM) supervised by a physical therapist. After 6 weeks, the sling was discontinued and patients began active ROM exercises. Resistance exercises were started at 3 months. Unrestricted return to work or sports was allowed at 6 months postoperatively.

Patient Evaluation

Patients meeting the study criteria were contacted to participate in the study. Operative reports and clinic notes were reviewed to identify factors of interest including previous procedures, mechanism of injury, diagnosis at the time of surgery, and concomitant procedures. Preoperative ROM of the affected shoulder, demographic information (age, sex, hand dominance, side of shoulder surgery), occupation, history of diabetes, and tobacco use were recorded. At follow-up, a shoulder examination was performed by a trained, independent observer assessing active ROM and strength. Given the multicenter nature of this investigation, several trained observers performed the assessments; one independent examiner with similar training and instrumentation performed the assessments at each institution. ROM was assessed with a goniometer with regard to forward elevation with the arm in the scapular plane, as well as external rotation with the arm at the side. Strength in forward flexion and external rotation was quantified with a manual muscle dynamometer (PowerTrackII; JTech Medical, Salt Lake City, UT). This instrument and method of testing rotator cuff strength have been validated in prior studies.[23,24] Handheld dynamometry has both interobserver and intraobserver reliability for assessment of shoulder muscles and is considered a reliable and valid instrument in comparison with the gold standard of isokinetic dynamometry.[25-27] Forward flexion strength was measured with the arm in the scapular plane while the patient was standing; external

rotation strength was measured with the arm at the side and the elbow in 90° of flexion. The maximum value from 3 trials was used. This value was then divided by the power obtained from the contralateral "healthy" arm to obtain a normalized value. The maximum normalized value allowed was 1.

Each patient was asked to complete a postoperative questionnaire including 4 standardized assessment tools: Single Assessment Numeric Evaluation (SANE) score, pain score on a visual analog scale (VAS), Simple Shoulder Test (SST) score, and American Shoulder and Elbow Surgeons (ASES) score. A normalized Constant-Murley score was computed by dividing each patient's score by the age- and sex-matched normal Constant-Murley score reported in the literature.[28] Scores were reported as a percentage of the normal value. Patients were also asked to declare their satisfaction using a binary scale.

Statistical Analysis

Statistical analysis was performed with GraphPad software (GraphPad, La Jolla, CA). Paired *t* tests, χ^2 analysis, and Spearman correlation coefficients were used where applicable. Descriptive statistics included frequencies, means, standard deviations, and ranges. $P < .05$ was considered statistically significant. Clinical failure criteria were defined as revision surgery or an ASES score under 50.

Results

Of the 70 patients who met the study criteria, 53 patients, with a mean age of 37.5 years (range, 16.2 to 44.9 years; SD, 6.5 years), were available for follow-up at a mean of 35.8 months (range, 13.8 to 59.1 months; SD, 10.2 months). Of the patients, 39 were seen in the clinic and 14 were available only for questionnaire and telephone follow-up, whereas 17 were lost to follow-up.

Patient Demographics

Of the patients who chose to participate, 75% (40 of 53) were male patients, 43% (23 of 53) had a history of tobacco use, and 0% had diabetes. The dominant extremity was involved in 53% of patients (28 of 53). Forty-five percent (24 of 53) had work-related injuries, and 11% (6 of 53) had ongoing legal claims related to the injury (Table 1).

A total of 60% of the patients (32 of 53) had a sudden traumatic etiology. Of these injuries, 25% (8 of 32) were due to a fall, 31% (10 of 32) were sustained while patients were lifting heavy objects, and 38% (12 of 32) were related to an athletic event (Table 1).

Of the 21 patients who reported a chronic process leading up to the rotator cuff tear, 2 reported persistent pain from distal clavicle fractures sustained several years before presentation with worsening symptoms and one attributed her symptoms to years playing

Table 1. Patient Demographics

	Data
Age (yr)	37.5 (16-45)
Follow-up (mo)	35.8 (14-59)
Male	75%
History of tobacco use	43%
Dominant extremity	53%
Work related	45%
Traumatic etiology	60%

volleyball, whereas the remaining patients did not associate specific causes with their symptoms.

All patients had full-thickness rotator cuff tears. There were 4 small tears, 36 medium tears, 10 large tears, and 3 massive tears. Of the tears, 83% (44 of 53) were repaired with double-row suture configurations and 17% (9 of 53) were repaired with single-row suture configurations.

Previous Procedures

Of the patients available for follow-up, 11% (6 of 53) had previous procedures before their primary rotator cuff repair. Previous procedures included one diagnostic arthroscopy, one AC reconstruction, and 3 acromioplasties. The remaining patient had undergone a posterior glenoid osteotomy and bone grafting before the rotator cuff tear occurred.

Concomitant Procedures

All of the study patients (53 of 53) had additional procedures performed at the time of the rotator cuff repair. These procedures included acromioplasty (51), biceps tenodesis or tenotomy (24), distal clavicle excision (10), anteroinferior stabilization (2), and labral repair (1). The decision to perform additional surgical procedures was made based on preoperative clinical examination and intraoperative diagnostic examination findings. Acromioplasty was performed when an anterior spur was present or additional space was required for visualization or instrumentation in the subacromial space. Biceps procedures were performed on patients with anterior shoulder pain, pain with palpation over the bicipital groove, and/or a positive O'Brien test or other biceps provocative testing. Preoperative examination findings were combined with intraoperative evaluation before the decision was made to excise the intra-articular aspect of the long head of the biceps. The selection of biceps tenodesis versus tenotomy was determined based on surgeon preference; however, in this younger population the majority of patients underwent biceps tenodesis. Patients who underwent distal clavicle excision had preoperative tenderness over the AC joint and pain with cross-body adduction, refractory to conservative treatment including rest, modification of activities, nonsteroidal anti-inflammatory drugs, and corticosteroid injections. Labral repairs were performed in

patients either with anterior instability on preoperative examination under anesthesia (2) or with obvious intra-articular pathology (1).

Complications

No intraoperative, perioperative, or postoperative complications were reported in our study group. There were no infections, neurovascular injuries, revision procedures for shoulder stiffness, or other complications requiring repeat surgical intervention. No patients had revision of their rotator cuff repair or additional shoulder surgery.

Clinical Outcomes

The mean postoperative SANE score was 80.8 (range, 10.0 to 100.0; SD, 20.0). The mean postoperative ASES score was 84.6 (range, 21.6 to 100.0; SD, 16.8), with 2 patients recording ASES scores of less than 50 at final follow-up (21.7 and 41.7). The mean postoperative VAS pain and SST scores were 1.2 (range, 0.0 to 10.0; SD, 2.0) and 10.7 (range, 3.0 to 12.0; SD, 2.3), respectively (Table 2). Patient satisfaction was 96.2%.

At the intermediate follow-up time point available, 2 patients (3.8%) were considered failures based on poor clinical outcome (ASES score <50). The first patient was a 36-year-old smoker and Workers' Compensation patient who fell on his outstretched nondominant arm and presented with persistent shoulder pain and disability. He underwent an arthroscopic rotator cuff repair along with a subacromial decompression and distal clavicle excision. At follow-up, his function was limited primarily by pain. He had full ROM in forward flexion and external rotation, albeit with pain. Relative to the uninjured arm, normalized strength in forward flexion and external rotation was 100% and 90%, respectively. No further surgical treatment was recommended. The second patient was a 42 year old who was injured when his arm was suddenly pulled backward from an outstretched position. He underwent an arthroscopic rotator cuff repair along with a subacromial decompression and coracoacromial ligament release. This patient stated that he had not adhered to the limitations set by his postoperative rehabilitation protocol, because he had to return to work. An MRI study obtained at 6 months postoperatively showed a full-thickness tear of the supraspinatus with retraction, indicating non-healing of the rotator cuff. It was discussed with the patient that there were no good surgical solutions and recommended that he consider an occupation that would not require heavy physical demand on the shoulders.

In the 38 patients available for clinical follow-up examination, the mean Constant score was 81.7 (range, 51.5 to 98.0; SD, 12.1). Forward flexion improved from 158.7° (range, 45° to 180°; SD, 33.2°) preoperatively to 168.4° (range, 120° to 180°; SD,

Table 2. Outcomes After Rotator Cuff Repair

	Mean	Range	SD
ROM (°)			
FE			
Preoperative	158.7	45-180	33.2
Postoperative	168.4	120-180	17.3
ER			
Preoperative	61.8	30-90	15.7
Postoperative	61.1	25-90	17.5
Strength (%)*			
FE	86.5	47.5-100	16.7
ER	91.3	58.6-100	21.9
Constant score	81.7	51.5-98.0	12.1
ASES score	84.6	21.6-100	16.8
SANE score	80.8	10-100	20.0
SST score	10.7	3-12	2.3
VAS pain score	1.2	0-10	2.0

ER, external rotation; FE, forward elevation.
*Measured as percentage of uninvolved extremity.

17.3°) postoperatively (P = .014). External rotation changed from 61.8° (range, 30° to 90°; SD, 15.7°) preoperatively to 61.1° (range, 25° to 90°; SD, 17.5°) postoperatively, which was not significant. Normalized postoperative strength in forward elevation and external rotation was 86.5% (range, 47.5% to 100.0%; SD, 16.7%) and 91.3% (range, 58.6% to 100.0%; SD, 21.9%), respectively, compared with the healthy arm (Table 2).

Before injury or the onset of shoulder pain, 89% of patients (47 of 53) had been working. Of these patients, 91% (43 of 47) had returned to work at follow-up. The work level was recorded based on the *Dictionary of Occupational Titles* as follows: sedentary in 16, light in 4, medium in 2, and heavy in 25. Two patients with sedentary jobs did not return to work, both for reasons unrelated to their shoulder condition. Two patients with heavy jobs did not return to work. Both patients were no longer working because of their shoulder condition, although one reported not adhering to the postoperative rehabilitation protocol.

Subset analysis showed that SANE score, VAS score, ASES score, SST score, Constant score, degrees of ROM, and normalized strength were not significantly different based on sex, injury to the dominant shoulder, traumatic versus nontraumatic etiology, concomitant biceps tenodesis or tenotomy, or distal clavicle excision. The subgroups of non-acromioplasty (2), anteroinferior stabilization (2), and labral repair (1) had inadequate sample sizes for individual statistical analysis. There was also no correlation between age or time to follow-up with any outcome measures.

Discussion

The results of this short-term evaluation of patients aged younger than 45 years after arthroscopic rotator cuff repair show minimal pain and a high level of

shoulder function, as well as the capability to return to previous work. Most rotator cuff tears in this younger population were of traumatic etiology in nature and were of medium size, with few large or massive tears. Postoperative physical examination showed restoration of shoulder ROM and near-normal strength recovery.

Our results support findings of Krishnan et al.[17] that arthroscopic rotator cuff repair of full-thickness tears in a young population results in minimal pain and excellent return to preinjury levels of function. At 2 years' follow-up, Krishnan et al. reported a mean postoperative ASES score of 92, a return-to-work rate of 90%, forward flexion of 170°, and external rotation of 60°. Our study found slightly lower ASES scores, with a mean of 85; however, other functional measures were almost exactly the same, with a return to work rate of 91%, forward elevation of 168°, and external rotation of 61°. In addition, this study showed excellent postoperative strength and other objective and subjective patient outcomes. Patient satisfaction was similar to that described by Burns and Snyder,[18] with a satisfaction rate of over 95%.

Previous studies reporting on open rotator cuff repair in young patients showed worse outcomes than our data with arthroscopic rotator cuff repair.[8,19,20] Significant pain relief was achieved, with 76% to 79% of patients reporting reductions in pain and 34% to 62% of patients reporting no pain.[8,19,20] However, long-term functional results were unsatisfactory, and ROM was not significantly improved in forward flexion, abduction, external rotation, or internal rotation.[19,20] In a patient population similar to that evaluated in this study—patients aged 40 years or younger with full-thickness tears, at a mean of 5.7 years' follow-up—Hawkins et al.[19] reported a satisfaction rate of 68%, with 16% of patients requiring additional shoulder surgery. Only 63% of patients returned to full-time employment without requiring switching to an administrative position, and 47% of patients returned to sports activities.[19] Again in a similar study population of full-thickness rotator cuff repairs—patients aged 50 years or younger, with a minimum follow-up of 13 years—Sperling et al.[20] used criteria described by Neer[29] to grade the shoulders and found that 45% of patients had unsatisfactory results and 24% of patients required additional shoulder surgery. Tibone et al.[1] evaluated rotator cuff repairs in athletes with a mean age of 29 years; they found that 87% of patients believed that they were improved compared with their preoperative status, whereas only 56% of patients were able to return to their former competitive level without significant pain. Furthermore, 77% of patients who used their shoulder for sports activity still had difficulty with throwing at the latest follow-up.[22] Although this study focused on young patients, this is a notably different population than was examined in our

study. Our study had a large number of manual laborers, who can be considered industrial athletes with high demands on their shoulders, however. Like Krishnan et al.,[17] we found a much higher rate of clinically satisfactory outcomes and return to work in our patients treated with arthroscopic rotator cuff repair.

Our hypothesis that the majority of full-thickness tears in a young population would be larger and traumatic in nature was not supported by this study. Medium tears made up 68% of the tears, and only 60% of the patients reported a traumatic etiology. Although this still comprises the majority of patients, greater numbers of traumatic injuries were expected. However, this also allowed us to capture a subset of patients aged younger than 45 years with a nontraumatic etiology. These patients did not differ significantly in age or follow-up and had similarly excellent subjective and objective outcomes as patients with a traumatic etiology. This suggests that arthroscopic rotator cuff repair may be a useful treatment for cuff tears regardless of mechanism of injury.

Our postoperative subjective results are also comparable with previous short- and intermediate-term studies of older patient populations (mean, 57 to 61 years) after arthroscopic rotator cuff repair, specifically with regard to ASES score (mean, 80 to 95), VAS score (mean, 1.4 to 2.3), and Constant score (mean, 78 to 84).[11,13,14,30,31] All studies reported significant increases in strength relative to preoperative strength. Although we were unable to compare postoperative strength with preoperative strength, our patients recovered 85% to 90% of their strength in forward elevation and external rotation relative to their healthy arm. Eighty-five percent of patients (17 of 20) recovered strength in forward elevation and external rotation to at least 75% of their uninjured arm. Our patients showed significantly improved ROM in active forward flexion, as well as preservation of external rotation. All patients were able to elevate at least 120° in the sagittal plane. Whereas other studies have also all reported significant improvements in forward flexion, there have been differing results regarding changes in external rotation.[10,13,28]

At a minimum 1-year follow-up, the postoperative VAS score, ASES score, SST score, Constant score, forward flexion, and external ROM reported in this study compare favorably with 1-year results from a longer-term study by Cole et al.[30] Their study also showed that outcomes may improve or worsen slightly depending on the size of the rotator cuff tear. In a population of primarily small and medium tears, subjective scores and ROM improved from year 1 to year 2.[30] Conversely, in a study of large and massive rotator cuff tears comparing results from year 1 with results from year 2, ASES scores decreased from 85 to

80 and forward flexion decreased from 152° to 142°.[14] Longer-term follow-up is required in this younger group of patients to determine whether the positive outcomes seen at short-term follow-up are maintained over time.

A few studies have assessed the relation between age and outcome in arthroscopic rotator cuff repairs. Cole et al.[30] analyzed patient outcomes by age group (<50 years, 50 to 60 years, 60 to 70 years, and >70 years) and found that patients aged younger than 50 years had significantly better VAS scores and external rotation power than those aged older than 60 years. Milano et al.[32] found a negative correlation (−0.244) between age and Constant score. Gartsman et al.[11] found significant correlations between age and strength of forward flexion (−0.368) and the area of tear (0.346) but not with the preoperative or postoperative University of California, Los Angeles score. Boileau et al.[31] assessed the rotator cuff with computed tomography arthrogram or MRI and found that age was negatively associated with tendon healing: 95% of patients aged younger than 55 years had tendon healing compared with 58% of those aged 55 years or older. Furthermore, because tendon healing was associated with postoperative strength and Constant scores, both of these outcomes decreased with age.[31]

No characteristics of the patient or of the injury were found to be significant risk factors for negative outcomes. Although previous findings by Galatz et al.[14] had suggested that large and massive rotator cuff tears may lead to worse outcome because of a high rate of recurrent defects, the 3 patients with massive cuff tears all had clinically satisfactory outcomes at a mean of 2.5 years' follow-up. We acknowledge that our small sample size of massive cuff tears prevented a statistical analysis of differences.

Strengths of this study were the use of validated outcome scores and the detailed description of this unique patient population. Incorporating the results of many different surgeons who use different techniques, repair configurations, and anchor types allows for more generalizable results.[33,34] In addition, all tears were full-thickness tears and involved only the supraspinatus and/or infraspinatus tendons. We were able to corroborate the findings of Krishnan et al.[17] and Burns and Snyder[18] with a larger cohort and to report on several outcome measures (SANE score, SST score, Constant score, change in ROM) that have not previously been described in the young population.

Limitations

Limitations in this study include most notably the retrospective nature of the study and the lack of preoperative outcome scores with which comparisons could be made. Therefore we were unable to measure improvement in pain, function, or ROM. Follow-up fell short of the goal of 80% because of difficulty in locating this younger, more transient population. This can lead to performance bias because, theoretically, the 25% of the initial cohort who were lost to follow-up may have had poor results or failures, significantly affecting outcomes. Another limitation of our study is a possible bias from treatment of coexisting pathology. Internal analysis of our study group found no difference in outcome scores for patients who had been treated for biceps pathology or who had a distal clavicle excision, but the study was not designed or powered appropriately to truly state that concomitant treatment of this pathology did not contribute to patient outcomes. Like Krishnan et al.,[17] we performed subacromial decompressions on nearly every patient (96%), which makes it difficult to evaluate the effect on outcome. However, Burns and Snyder[18] found no significant difference for patients who underwent arthroscopic rotator cuff repair with or without subacromial decompression. The high standard deviations can also be considered a limitation in our data, indicating high variability in results. The short-term follow-up precludes evaluation of long-term complications and results. In addition, lack of postoperative imaging prevented assessment of retears, which would have provided additional objective data. Although Cole et al.[30] reported a retear rate of 8.3% for patients aged younger than 50 years, they did not find any differences in outcome measures between intact and retorn rotator cuffs. Postoperative imaging to assess the integrity of the rotator cuff repair is information that was not available to us and could have been an additional data point analyzed.

Conclusions

Arthroscopic primary rotator cuff repair of full-thickness tears in patients aged younger than 45 years provides excellent postoperative pain scores and patient-reported and functional outcomes. The ability to return to work is an important factor in this young patient population, and arthroscopic rotator cuff repair was able to return the vast majority of patients to their prior level of function.

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