Outcomes of Arthroscopic Rotator Cuff Repair in Patients Aged 70 Years or Older

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Purpose: To evaluate outcomes of arthroscopic rotator cuff repair in patients aged 70 years or older. **Methods:** We identified 44 consecutive patients aged 70 years or older undergoing primary all-arthroscopic repair of symptomatic full-thickness tears of the rotator cuff. A minimum 2-year follow-up was performed by an independent examiner including range of motion and dynamometer strength testing, and shoulder functional outcome scores including the American Shoulder and Elbow Surgeons score, Simple Shoulder Test score, and pain score on a visual analog scale were determined. Paired *t* tests were performed to compare preoperative and postoperative measures. Postoperative Constant-Murley scores were normalized with scores from age- and sex-matched healthy individuals. **Results:** Of the patients, 39 (88.6%) were available for follow-up evaluation, with a mean age of 75.3 ± 4.2 years (range, 70.1 to 89.8 years) and a mean follow-up of 36.1 ± 9.9 months (range, 24.3 to 59.4 months). The American Shoulder and Elbow Surgeons score improved from 45.8 ± 16.6 (mean ± SD) to 87.5 ± 14.4 at final follow-up ($P < .0001$). The Simple Shoulder Test score improved from 3.9 ± 2.3 to 9.8 ± 2.5 ($P < .0001$). The pain score on the visual analog scale improved from 4.6 ± 2.2 to 0.5 ± 0.9 ($P < .0001$), and forward elevation increased from 114.8° ± 42.0° to 146.2° ± 33.2° ($P = .0012$). Mean age- and sex-matched normalized Constant-Murley scores ranged from 88.3% to 97.2% of normal in men and 81.7% to 88.8% of normal in women. **Conclusions:** Arthroscopic rotator cuff repair provides significant improvement in pain and function in carefully selected patients aged 70 years or older with symptomatic full-thickness rotator cuff tears and has a low complication rate. **Level of Evidence:** Level IV, therapeutic case series.

Rotator cuff tears are frequently encountered when caring for elderly patients. Previous studies have reported the prevalence of full-thickness rotator cuff tears to be 5% to 33% in the general population[1-4] and 22% in those aged 65 years or older.[5] As described by Neer,[2] a vast majority of rotator cuff tears result from chronic

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degenerative changes due to impingement, and the incidence has been shown to increase with patient age.[6,7]

Because elderly individuals increasingly desire to remain physically active, their activity expectations often justify surgical treatment of a rotator cuff lesion. Many operative interventions have been advocated, and controversy exists over the indications for surgical management and indications for repair versus debridement alone in this age group. However, it is noted that rotator cuff repair has been shown to provide consistently better results than debridement alone.[8-10] Older patients, however, often present unique surgical challenges. As noted by Hattrup,[3] patients aged 65 years or older were significantly more likely to have a larger tear size, which could potentially increase the difficulty of repair. Histologic analysis of rotator cuff tendon tissue at different ages has shown that tendon cellularity and vascularity are markedly diminished at age 70 years, even when compared with corresponding tendon tissue at age 50 years.[11] Bone quality is also inferior, resulting from osteoporosis of the greater tuberosity, cystic degeneration, and irregularity of cortical margins,[11] which may significantly complicate suture anchor fixation. Finally, elderly individuals frequently have comorbidities (diabetes, rheumatoid arthritis, renal disease) that may weaken the healing response and complicate surgical management.

Although limited results have been reported with open and mini-open rotator cuff repair in the elderly,[3,12,13] results of arthroscopic rotator cuff repair (ARCR) in elderly patients, specifically those aged 70 years or older, have not been well studied. ARCR has the advantages of a small incision and no deltoid morbidity, resulting in quicker recovery than traditional approaches. In addition, it can commonly be performed as an outpatient procedure with the patient under regional anesthesia.[14] However, there may be concern that the quality of bone and tendon and the large tear size in this population may complicate suture anchor repair by use of minimally invasive methods.[11] The purpose of this study was to evaluate the outcomes of ARCR in patients aged 70 years or older and report our results in the context of normalized, age- and sex-matched shoulder score values. The hypothesis was that arthroscopic repair in patients aged 70 years or older would provide significant improvement in pain and function, with limited complications.

METHODS

Between September 2003 and May 2007, records of all patients undergoing ARCR, with a minimum 2-year follow-up, were reviewed. Four fellowship-trained orthopaedic surgeons performed all the surgeries in a high-volume clinical practice. Inclusion criteria consisted of patients with symptomatic full-thickness rotator cuff tears who underwent primary ARCR with suture anchors at age 70 years or older. Exclusion criteria were patients aged younger than 70 years at the time of ARCR and those with subscapularis involvement, revision repair, or partial repair. Patients whose ARCR had to be converted to an open or mini-open approach were also excluded.

Patients meeting the study criteria were contacted to participate in this study, which was approved by our institutional review board. All new patients to our practice complete a preoperative questionnaire that includes their demographic and social history, detailed medical history, and surgical history. Demographic information (age, sex, hand dominance, side of rotator cuff tear), occupation, history of rheumatoid arthritis, history of diabetes, tobacco use, nonsteroidal anti-inflammatory drug use, and steroid use were recorded. The preoperative questionnaire also included 3 standardized assessment tools: pain score on a visual analog scale (VAS),[15-17] American Shoulder and Elbow Surgeons (ASES) score,[18] and Simple Shoulder Test (SST) score.[19] Operative reports were reviewed to identify intraoperative factors of interest including both diagnostic information and concomitant procedures performed at the time of surgery. Rotator cuff tear size was determined after bursectomy of the subacromial space but before rotator cuff debridement. Rotator cuff tears were classified arthroscopically based on size (length), thickness (full or partial), and tendons involved. The tear size was measured in the sagittal plane at its insertion into its respective anatomic footprint, and the classification of DeOrio and Cofield[20] was recorded (small, medium, large, or massive). The decision to repair the cuff by use of a single- or double-row anchor configuration largely depended on the tissue quality and tension on the repair. If the tissue quality was appropriate, double-row fixation with a suture bridge construct was performed. If the tissue quality was compromised, a single-row fixation was performed because of concerns of over-tensioning the repair and failure at the tendon-suture interface.

Given the small number of massive tears, we grouped large and massive tears together for statistical analysis. The number of anchors, type of anchors, suture configuration (single or double row), and use of margin convergence (yes or no) were recorded in the chart review. Additional diagnoses were also noted

(yes or no), including osteophytes on the undersurface of the acromion, biceps pathology, and acromioclavicular joint osteoarthritis visible on radiography.

Postoperatively, compliance with rehabilitation, complications, and repeat shoulder surgeries were recorded in the chart review and patient interview. Failure of ARCR was defined in shoulders requiring additional revision rotator cuff repair or patients with a postoperative ASES score of less than 50.

Patients were contacted and invited to return for clinical evaluation at a minimum of 24 months postoperatively. At final follow-up, all examinations were performed by a trained, independent observer: an orthopaedic sports medicine research fellow removed from clinical and surgical decision making. Validated, clinical outcome tests including the Constant-Murley score,[21] Single Assessment Numeric Evaluation,[19] ASES score,[18] SST score,[19] and VAS score[15-17] were administered and scores calculated. Patient satisfaction was determined by asking patients whether they were satisfied (yes or no) and whether they would repeat the surgery again (yes or no). Physical examination was performed including range of motion (ROM). Forward elevation in the scapular plane and external rotation with the arm at the side were measured with a goniometer. The shoulder strength was quantified with a manual muscle dynamometer (Lafayette Manual Muscle Test System; Lafayette Instrument, Lafayette, IN) in forward elevation and external rotation. Forward elevation 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 with the elbow flexed 90°. The maximum value from 3 trials was used.

A normalized Constant-Murley score was computed by dividing each patient's score by age- and sex-matched normal Constant-Murley scores reported in the literature.[22-24] Scores were reported as a percentage of the normal value. Normalized Constant-Murley scores are useful because they help view objective score data in the context of degenerative, functional, and pain-related changes expected in the elderly population.

Descriptive analysis consisted of frequencies and percentages for discrete data and means and SDs for continuous data. Statistical analysis (GraphPad, La Jolla, CA) was done by use of a paired t test to compare preoperative ROM and VAS, ASES, and SST scores with corresponding postoperative measurements. $P < .05$ was considered statistically significant.

RESULTS

Between September 2003 and May 2007, we identified 51 patients who met the inclusion criteria. Of these, 7 patients were excluded because of subscapularis involvement, leaving 44 patients who met the study criteria; 39 (88.6%) of these were available for follow-up. The study group consisted of 39 patients with a mean age of 75.3 years (SD, 4.2; range, 70.1 to 89.8 years) and a mean follow-up of 36.1 months (SD, 9.9; range, 24.3 to 59.4 months). Of these 39 ARCR procedures, 21 were performed by surgeon A, 7 by surgeon B, 5 by surgeon C, and 6 by surgeon D. The decision to operate was based on the patient's history, physical examination (including muscle atrophy and weakness), and failure to respond to conservative management for 3 months or longer; conservative management consisted of physical therapy, nonsteroidal anti-inflammatory drugs, and/or steroid injections. In addition, rotator cuff repair surgery was limited only to tears that seemed amenable to repair on preoperative magnetic resonance imaging. Cuff tears with extensive fatty degeneration (Goutallier grade 3 or 4[15]) and severe retraction were not repaired or included in this study.

Demographic information for the cohort is described in Table 1. Men comprised 46.1% (n = 18) of the participants, and women comprised 53.8% (n = 21). Right-sided tears made up 51.3% (n = 20) of the cohort, and left-sided tears comprised 48.7% (n = 19). All but 1 shoulder had a full-thickness rotator cuff tear visible on magnetic resonance imaging. The injured extremity was the dominant hand in 53.8% (n = 21) and nondominant in 46.2% (n = 18). No patients (0.0%) reported a history of tobacco use, 4 patients (10.3%) had diabetes, and 2 patients (5.1%) were diagnosed with rheumatoid arthritis. Of the patients, 7 (17.9%) were working before surgery, but only 2 were Workers' Compensation patients.

At the time of ARCR, cuff tear characteristics as well as associated pathology were recorded. The mean rotator cuff tear size was 3.24 cm in the anterior-posterior direction (SD, 1.7; range, 1.0 to 6.0 cm). According to the classification of DeOrio and Cofield,[20] there were 13 small tears (33.3%), 19 medium tears (48.7%), and 7 large/massive tears (17.9%). Any additional pathology was noted and often addressed by the surgeon at the time of ARCR. Acromioplasty was performed in 92.3% (n = 36), biceps tenotomy or tenodesis in 35.9% (n = 14), and distal clavicle resection in 25.6% (n = 10). Rotator cuff tears were repaired with bioabsorbable or metal suture anchors in all shoulders.

By use of a mean of 2.56 ± 0.91 anchors (range, 1 to 4) per case, single-row suture anchor configuration was used in 62.1% of cuff repairs and double-row anchor configuration in 37.8%. Margin convergence was used in 28.6% of the cases. Standard rehabilitation included sling immobilization with passive ROM only until 6 weeks and active motion between 6 and 12 weeks, with progression to strengthening after 12 weeks.

Among the 7 patients who were working, all returned to full-duty work at their preoperative levels.

Postoperative outcomes are summarized in Tables 2 and 3. At final follow-up, mean active forward flexion significantly increased 31.4° ($P = .0012$), corresponding to active forward flexion of 114.8° preoperatively and 146.2° (SD, 33.2; range, 37° to 180°) postoperatively. Mean external rotation increased slightly, but the change was not significant. Regarding pain, 95.8% of patients had pain relief after the procedure. The mean VAS pain score decreased from 4.6 (SD, 2.2; range, 1 to 8) to 0.5 (SD, 0.9; range, 0 to 4) after ARCR ($P < .0001$). The mean ASES score increased by 41.7 after ARCR, corresponding to an improvement from 45.8 preoperatively to 87.5 (SD, 14.4; range, 48.3 to 100) postoperatively ($P < .0001$). SST scores also displayed a significant improvement: the mean SST score improved from 3.9 to 9.8 (SD, 2.5; range, 1 to 12) at final follow-up ($P < .0001$). Regarding strength, the mean dynamometer strength of the operated shoulder was 38.4 N in forward flexion and 45.0 N in external rotation at the side. Regarding patient satisfaction, 94.3% of the cohort said they were satisfied by the results and 94.1% would repeat ARCR again if they had to make the decision over.

Table 1. *Demographic Characteristics of ARCR Cohort (N = 39)*

Characteristic	Data
Age at surgery (mean) (yr)	75.3 ± 4.2 (range, 70.1-89.8)
Sex	
Male	46.1%
Female	53.8%
Dominant side involvement	
Yes	53.8%
No	46.2%
Comorbidities	
Diabetes mellitus	10.3%
Rheumatoid arthritis	5.1%
History of renal disease	7.7%
Social history: Current/recent tobacco user	0.0%
Medications before surgery	
Nonsteroidal anti-inflammatory drugs	38.5%
Corticosteroids	25.6%
Narcotic pain medication	7.7%
Tramadol	2.6%
Coumadin	5.1%
Preoperative imaging	
Acromioclavicular joint arthrosis visible on radiography	48.7%
Proximal humeral head migration on radiography	7.7%
Cuff tear evident on magnetic resonance imaging	97.2%
Concomitant shoulder pathology	
Biceps pathology	35.9%
Acromioclavicular joint pathology	20.5%
Impingement	56.4%
Cuff tear characteristics	
Tear size (mean) (cm)	3.24 ± 1.67 (range, 1-6)
Category*	
Small	33.3%
Medium	48.7%
Large	15.4%
Massive	2.6%
Tendon torn	
Supraspinatus	100.0%
Infraspinatus	38.5%
Subscapularis	0.0%
Side of tear	
Right	51.3%
Left	48.7%
Operative technique	
Single-row anchor configuration	62.1%
Double-row anchor configuration	37.8%
No. of anchors used (mean)	2.56 ± 0.91 (range, 1-4)
Concomitant procedures	
Acromioplasty	92.3%
Biceps tenotomy or tenodesis	35.9%
Distal clavicle resection	25.6%
Intra-articular debridement	25.6%

*Tear size groupings based on classification of DeOrio and Cofield.[20]

Table 2. *Outcomes of ARCR in Patients Aged 70 Years or Older*

Outcome	Preoperative	Postoperative	*P* Value*
Forward flexion ROM (°)	114.8 ± 42.0	146.2 ± 33.2	.0012
External rotation ROM (°)	48.0 ± 21.2	54.5 ± 15.5	.1448
VAS pain score (0-10)	4.6 ± 2.2	0.49 ± 0.94	< .0001
ASES score (0-100)	45.8 ± 16.8	87.5 ± 14.4	< .0001
SST score (0-12)	3.9 ± 2.3	9.8 ± 2.5	< .0001

*Paired *t* test (GraphPad).

Table 3. *Postoperative Outcomes in ARCR Patients Aged 70 Years or Older*

Outcome	Postoperative
Single Assessment Numeric Evaluation score (0-100)	87.1 ± 14.1
Forward flexion strength (N)	38.4 ± 19.2
External rotation at side strength (N)	45.0 ± 21.2
Patient satisfaction (yes/no)	94.3% yes
Would repeat surgery if had to (yes/no)	94.1% yes

TABLE 4. *Postoperative Constant-Murley Scores by Sex*

Source	Constant Score (0-100)	
	Male	Female
Current study	77.7 ± 8.4	66.4 ± 18.6
Age- and sex-matched normal value		
Katolik et al.[22]	88	81
Constant and Murley[23]	75	69
Yian et al.[24]	86	81

NOTE. Normal values of Constant-Murley scores from healthy men and women aged 70 years or older are also reported.

The mean Single Assessment Numeric Evaluation score at final follow-up was 87.1%, reflecting a good patient perception of shoulder function.

The mean Constant-Murley score, at final follow-up, was 77.7 ± 8.4 points in men and 66.4 ± 18.5 in women. Table 4 shows the mean Constant scores from this study with reference values published in the literature[22-24]—these scores were measured in age- and sex-matched patients with no previous shoulder problems. Postoperative Constant scores were 88.3% ± 9.5% of normal in men and 81.7% ± 22.7% of normal in women when compared with age- and sex-matched values reported by Katolik et al.[22] Normalized postoperative scores were 97.2% ± 6.9% of normal in men and 88.8% ± 21.8% of normal in women according to Constant and Murley.[23] Finally, postoperative scores were 90.2% ± 9.6% of normal in men and 81.7% ± 22.7% of normal in women when compared with age- and sex-matched Constant score values reported by Yian et al.[24] Normalized Constant scores[22] are listed in Table 5.

With regard to failures, no patients required further revision rotator cuff repair surgery, but 1 patient (2.6%) had a postoperative ASES score of less than 50 (ASES score, 48.3). This patient, an 80-year-old retired woman with diabetes, underwent ARCR for a medium-sized tear. Postoperatively, her VAS score improved from 7 to 2, but she continued to have notable functional deficits. When she was followed up at 44.2 months after surgery, forward flexion was 45°, external rotation (side) was 29°, and dynamometer strength testing showed maximum exertion of only 6.6 N in forward flexion and 13.2 N in external rotation (side). It is no surprise that she was dissatisfied with the results of the surgery; however, because of the pain relief, she said she would undergo surgery again if faced with the decision.

It should be noted that postoperative complications developed in 3 patients (7.7%) within 1 month of undergoing surgery. In 1 patient postoperative pneumonia developed requiring hospital admission. In another an anterior shoulder hematoma developed that resolved uneventfully. Lastly, 1 patient presented with an abscess at an arthroscopic portal site 4 weeks postoperatively; after the patient was given antibiotics, the abscess had to be surgically incised and drained. He eventually recovered and went on to have a good outcome (ASES score, 100; Constant score, 85.3).

DISCUSSION

Symptomatic rotator cuff lesions unresponsive to conservative care often produce a clinical dilemma in those aged 70 years or older, and treatment options remain controversial. In most cases the first choice remains conservative management, but when this fails, surgery may be considered. There is debate about which surgical option should be considered in this age group, either debridement or repair. Although many of these patients frequently are at a high functional status and stand to retain lifestyle activity levels with a surgically repaired rotator cuff, most are at an overall lower shoulder demand level when compared with younger patients. We have found that the presence of night pain is often a precipitating factor in the decision for surgery when nonoperative measures fail. Alternatively, one must consider that age-associated changes occurring in the elderly result in a rotator cuff tendon that may have a limited capacity for healing, and the rehabilitation required after repair is much more stringent compared with debridement alone.

Given the difficulties associated with rotator cuff repair in elderly individuals, some authors have advocated the use of decompression and debridement for

TABLE 5. *Normalized Postoperative Constant-Murley Scores (Reported as % of Normal)*

Reference Used for Normalizing Score	Normalized Score	
	Male	Female
Katolik et al.[22]	88.3% ± 9.5% of normal	81.7% ± 22.7% of normal
Constant and Murley[23]	97.2% ± 6.9% of normal	88.8% ± 21.8% of normal
Yian et al.[24]	90.2% ± 9.6% of normal	81.7% ± 22.7% of normal

NOTE. Normalized scores were calculated by dividing each patient's Constant-Murley score by the age- and sex-matched normal score according to the studies cited.

full-thickness cuff tears unresponsive to conservative treatment.[25] Rotator cuff reconstruction, however, has been shown to provide consistently better results than debridement alone.[8-10] Gartsman[26] followed up 33 patients who had irreparable rotator cuff tears and were treated by debridement and decompression alone. After a mean follow-up of 63.2 months, he stated that improvements in pain relief and active motion were inferior to comparable improvements in patients undergoing rotator cuff repair. Similarly, Grondel et al.[12] anecdotally reported that decompression and debridement frequently yield temporary pain relief but most patients are disappointed by the loss of function. The decision to operate must be carefully made, and patient expectations and goals should be considered.

The principal findings of this study show that ROM, pain, functional status, and patient satisfaction were significantly improved after ARCR in patients aged 70 years or older with full-thickness cuff tears unresponsive to conservative treatment. This is the largest series to date of all-arthroscopic repair in this age group. Previously published reports on rotator cuff repair in the elderly have reported good outcomes consistent with many findings in this article. Worland et al.,[13] in a retrospective review of 69 patients over the age of 70 years, showed good or excellent results after open rotator cuff repair in 78.2% of patients. Grondel et al.[12] reported good to excellent results in 87% of patients aged 62 years or older. In their study 105 consecutive patients were retrospectively reviewed, 92% of whom underwent repair with a mini-open approach and 8% of whom underwent repair arthroscopically. Rebuzzi et al.,[27] investigating outcomes of ARCR in 64 patients aged over 60 years, showed good or excellent results in 81.4% of the cohort. Similar to the findings in this study, active forward flexion of those patients increased 30° after ARCR and tear size did not influence postoperative outcomes.[27] Finally, Lam and Mok,[28] investigating 74 consecutive patients aged 65 years or older who were treated with open rotator cuff repair, reported that 93% of patients had reductions in pain, consistent with the 96.1% rate found in this study. The mean Constant score was 63, a figure slightly lower than the results in this study.[28]

With regard to postoperative complications and failures, the results from this cohort are comparable with the literature.[29,30] Brislin et al.[29] examined 263 consecutive patients undergoing primary ARCR. Complications occurred in 10.6% of that cohort and included shoulder stiffness, failure of healing, infection, reflex sympathetic dystrophy, deep venous thrombosis, and death. On the basis of the current study, our experience has been that the complication rate is not increased in older patients. Furthermore, we did not note an increased risk of anchor failure in this age group. In all patients secure repair was achieved with anchor fixation, and we noted no cases of anchor failure or need for revision surgery. Certainly, it is possible that anchor failure occurred and was unrecognized, but this was not associated with clinical failure.

The decision to perform rotator cuff repair with an open, mini-open, or all-arthroscopic technique is largely based on surgeon preference. Since their advent, arthroscopic-assisted and all-arthroscopic techniques for rotator cuff repair have been gaining popularity, particularly over the last decade. The underlying motivation stems from the idea that a smaller-incision procedure leads to less soft-tissue disruption, resulting in reduced pain and morbidity from the cuff repair. In a retrospective outcome study comparing all-arthroscopic cuff repair with mini-open cuff repair, Severud et al.[30] concluded that ARCR provides comparable outcomes and complication rates to arthroscopic decompression and mini-open repair. Similarly, Weber[10] compared the results of 126 all-arthroscopic rotator cuff repairs with 154 mini-open repairs, with a mean follow-up of 36.3 months. He found no significant difference in ASES, UCLA, and SST scores between the 2 groups but did note that perioperative morbidity was significantly decreased among those who underwent ARCR. This study did not compare an all-arthroscopic approach with other techniques for cuff repair in this age group. Nonetheless, it is our belief that less soft-tissue disruption during a successful cuff reconstruction can only be of benefit in this elderly population.

To our knowledge, this is the largest study on ARCR done in this age group and the only ARCR study that reports Constant-Murley scores in the context of age- and sex-stratified, normalized values. It has previously been mentioned by several authors that the Constant score will differ by sex and deteriorate with age.[22-24] Thus it is imperative that shoulder outcome studies in the elderly report results using an accurate frame of reference.

The most significant limitation in the study is the lack of a control group, which would allow for direct comparison to debridement alone. Another limitation is the retrospective nature of the study. A retrospective study design did not allow for preoperative Constant scores to be measured; however, this is a weakness shared by other studies on rotator cuff repair.[28] Third, it can be reasoned that the minimum follow-up period

of 24 months and the mean follow-up of 36.1 months were too short for adequate evaluation. Although a longer follow-up period would have been desired, previous studies have found maximum recovery to occur 6 to 9 months after rotator cuff repair,[31] with no change occurring in patients longer than 12 months postoperatively.[32]

An additional limitation of this study is potential selection bias while indicating patients for surgery. This study specifically looked at patients who had reparable tears and excluded partial repairs. It is likely that in a patient whose preoperative imaging suggested an irreparable tear with significant atrophy, fatty infiltration, or retraction, surgery would not have been offered or the patient may have undergone partial repair or an alternative surgical procedure such as reverse arthroplasty. Intraoperatively, it has been our practice to repair the tendon whenever possible, and none of our surgeons performs debridement alone in the setting of a reparable tear. The results of the study suggest that if a tear can be completely repaired at the time of surgery, a high rate of success with regard to subjective outcome can be expected. Other types of bias that may or may not have been present and are inherent to clinical observational studies include volunteer bias and compliance bias. All patients volunteered for the study and may have been less willing if a poor outcome had occurred. Furthermore, compliance was frequently noted to be better in those who were followed up; it should be noted, however, that a similar bias is inherent in previously published outcomes studies.[12,13,19,21,26-30]

Finally, the lack of postoperative imaging should be mentioned as a weakness of the study. Postoperatively, we did not have the ability to analyze the integrity of the cuff repair in this group. However, it is known that there is a high incidence of recurrent defects after rotator cuff repair in all age groups, and the association of structural failure with clinical outcome is poorly defined. Given that the goal of surgery is improvement in pain and function, we believe that our outcome data suggest a valid indication for repair in this group even in the setting of frequent recurrent defects.

CONCLUSIONS

ARCR provides significant improvement in pain and function in carefully selected patients aged 70 years or older with symptomatic full-thickness rotator cuff tears and has a low complication rate.

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