

Comparative Study

SHORT-TERM FUNCTIONAL OUTCOMES IN ROTATOR CUFF REPAIR: A PROMS-BASED COMPARISON OF SURGICAL TECHNIQUES

G. Pipino¹, E.C. Moretti², N.G. Biavardi², F. Anzano², G. Placella^{2,3}, M. Alessio Mazzola³, P. Caldora⁴, R. Borghi¹, D.C. Vaccarisi¹, F. Migliorini⁵ and V. Salini^{2,3}

¹Villa Erbosa, Bologna, Orthopedics III;

²Vita-Salute San Raffaele University, Milan, School of Specialization in Orthopedics and Traumatology;

³IRCCS San Raffaele Hospital, Milan, Hip and Knee Prosthetic Surgery, Sports Traumatology;

⁴San Giuseppe Hospital, Korian Group, Arezzo, Joint Prosthetic Surgery;

⁵Link Campus University of Rome, Research Department of Robotics

Correspondence to:

Enzo Claudio Moretti, MD

Vita-Salute San Raffaele University,

School of Specialization in Orthopedics and Traumatology,

Via Olgettina, 58

20132 Milano (MI), Italy

e-mail: moretti.enzo@hsr.it

ABSTRACT

Rotator cuff tears can be managed through surgical repair using mini-open (MO) or all-arthroscopic (AA) techniques. This study compares their functional outcomes and patient satisfaction using Patient-Reported Outcome Measures (PROMs). A retrospective, single-center cohort study included 81 patients undergoing rotator cuff repair at Villa Erbosa Hospital, Bologna, between May 2023 and May 2024. Patients were classified using Snyder's system (C1-C3) and divided into MO (n=49) and AA (n=32) groups. Functional outcomes were assessed preoperatively and postoperatively (1 and 3 months) using ASES, Constant-Murley, and WORC scores. Statistical analyses included linear mixed models, ANCOVA, and multivariate regression, adjusting for confounding factors. Both techniques resulted in significant postoperative improvements. However, the AA group demonstrated a faster recovery trajectory, with superior PROMs at 90 days (ASES: $p=0.019$; CM: $p=0.011$; WORC: $p=0.008$). The proportion of patients achieving the minimum clinically important difference (MCID) was significantly higher in the AA group ($p<0.05$). Multivariate analysis confirmed AA as an independent predictor of better short-term outcomes ($\beta=8.7$, $p<0.001$ for ASES90). The findings suggest that while both techniques improve functional outcomes, AA accelerates recovery and leads to higher patient-reported satisfaction. Potential biases include differences in surgeon expertise and variability in anchor types. Arthroscopic rotator cuff repair yields superior early postoperative outcomes compared with the mini-open approach. Further studies with short-term follow-up are needed to confirm sustained benefits.

KEYWORDS: *rotator cuff, tears, glenohumeral joint, surgery, repair*

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INTRODUCTION

The glenohumeral joint is classified as a ball-in-socket joint; however, the articular surface of the glenoid is significantly smaller than that of the humeral head, a relationship often described as resembling a golf ball on a tee (1). This anatomical configuration reflects a trade-off favoring mobility at the expense of stability (2). The rotator cuff, composed of the tendons of the supraspinatus, infraspinatus, subscapularis, and teres minor muscles, plays a critical role in providing both static and dynamic stability to this joint (3).

Partial or full-thickness tears of the rotator cuff are frequently asymptomatic or, when symptomatic, can often be managed effectively with physical rehabilitation therapy (4). In 2013, the American Academy of Orthopaedic Surgeons (AAOS) reported that approximately 53% of surgical treatments performed for full-thickness rotator cuff tears were deemed inappropriate. The organization issued guidelines to assist clinical decision-making based on various parameters (5).

The observation that rotator cuff tears are not always associated with clinical symptoms may be explained by Burkhart's discoveries regarding the rotator crescent and rotator cable. The crescent, a thinner portion of the cuff closer to the humerus, is more prone to tearing, whereas the cable, a thicker and more resilient structure adjacent to the crescent but located more medially, offers substantial structural support (6). A full-thickness tear confined to the rotator crescent, with an intact rotator cable, may remain asymptomatic due to the compensatory stabilizing role of the cable (4).

Several classification systems have been proposed for rotator cuff tears. Matsen's classification focuses on the etiology of the damage (7), while Cofield's system is based on the extent of the tear (8), Ellman's classification considers the shape and location of the tear (9), whereas Patte's classification assesses tendon retraction (10), Collin's classification evaluates which portion of the tendon is affected (11) and Snyder's classification further categorizes partial-thickness tears into articular-sided, bursal-sided, and full-thickness tears (12).

In terms of surgical repair, one widely adopted technique involves retensioning the remaining tendon following the debridement of degenerated tissue, using suture anchors to restore continuity. Among the various surgical methods, the single-row (SR) and double-row (DR) repair techniques have gained prominence (13, 14). These procedures can be performed using either a mini-open (MO) approach or an arthroscopic (AA) technique (15). The literature presents mixed findings regarding the outcomes associated with these methods. Some studies report no significant differences in results between MO and AA techniques (16, 17), while others suggest superior outcomes with arthroscopic procedures (18). Additionally, proponents of the mini-open approach have demonstrated favorable outcomes associated with this method (19).

The aim of this study is to compare functional outcomes and patient satisfaction between the two surgical approaches (MO and AA) using Patient-Reported Outcome Measures (PROMs). By evaluating PROMs completed by patients included in this study, the investigation seeks to provide a comprehensive assessment of the efficacy and patient-perceived benefits of mini-open versus arthroscopic techniques for rotator cuff repair.

MATERIAL AND METHODS

Ethical statement

This study was conducted in accordance with the principles outlined in the Declaration of Helsinki, ensuring ethical treatment for all participants. Written informed consent was obtained from each patient prior to inclusion, ensuring their understanding of the research, the procedures involved, and any potential risks associated with the study. The research design and reporting adhered to the guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) (20), which provide a comprehensive framework for transparent and systematic reporting of observational research. Adherence to these guidelines enhances the rigor of study design and improves the credibility and reproducibility of the findings. The detailed methods, study design, and subsequent analyses described herein were structured to align with the principles of the STROBE statement, thereby promoting high standards of scientific integrity.

Patients recruitment

This investigation was a retrospective, single-centered cohort study. All patients who underwent surgery for rotator cuff lesions between May 1, 2023, and May 1, 2024, at the III Orthopedic Division of Villa Erbosa Hospital in Bologna, Italy, were included. Patient selection was based on the severity of the rotator cuff lesion, initially identified via magnetic resonance imaging (MRI) and subsequently confirmed intraoperatively. The Snyder classification system was used to stratify patients. Only patients classified as Snyder type C (specifically subtypes C1, C2, and C3) were included.

Patients classified as Snyder type A, B, or C4 were excluded. Additional inclusion criteria were patient age between 40 and 70 years and an ASA score ≤ 3 . Patients with an ASA score >3 or age outside the specified range were excluded from the study. Another inclusion criterion was the severity of symptoms, specifically severe pain accompanied by limitation of shoulder abduction to less than 90° .

Patients with a range of motion (ROM) $>90^\circ$ in abduction or with mild or absent pain were excluded. Furthermore, patients who had not undergone at least six consecutive months of specific physical rehabilitation therapy for shoulder tendon lesions prior to surgery were excluded. Additional exclusion criteria included the presence of concurrent glenohumeral joint instability and a single or recurrent dislocation. Further exclusion criteria were conditions such as dementia or psychiatric disorders that precluded patients from independently providing informed consent.

Surgical techniques

Two surgical techniques were employed: the mini-open (MO) and all-arthroscopic (AA) approaches. For the MO technique, a longitudinal incision of approximately 3–4 cm was made, originating from the inferior border of the coracoid and following the division line between the anterior and lateral deltoid muscle bellies. The interval between the muscle bellies was identified, and a self-retaining retractor was placed to separate the muscle bellies.

In some cases, the proximal tendon of the lateral deltoid was detached from the acromion to improve visibility and was reattached with transosseous FiberWire (Arthrex) sutures at the end of the procedure. Intra- and extra-rotation movements of the arm were used to identify the inflamed bursa, which was excised to ensure proper visualization of the rotator cuff. The lesion was identified, and degenerated tendon portions were carefully excised with a conservative approach. Tension tests were performed, followed by insertion of a single suture anchor using a single-row (SR) technique.

After irrigation and hemostasis, the surgical wound was closed in layers. For the AA technique, a three-portal method was used: one posterior portal for the arthroscope and anterior and lateral portals for suturing. The inflamed bursa was excised using an arthroscopic shaver. The rotator cuff lesion was identified and its three-dimensional morphology assessed. Basket forceps were used to remove degenerated tendon portions, and one anchor was employed to re-tension the cuff onto the humeral head using an SR technique. A single-use Firstpass ST (S&N) device was used for suturing.

In the MO procedures, a modified Mason-Allen stitch was used to tension the tendon, and 5 simple surgical knots (knit and purl knots alternated) were used to close the suture. In the AA procedures, a modified Mason-Allen stitch was also used to tension the tendon, but the knot was closed first with a 1 Tennessee slider knot and then with 4 half-hitch knots (knit and purl knots alternated). Two surgeons participated in the study (Fig. 1).

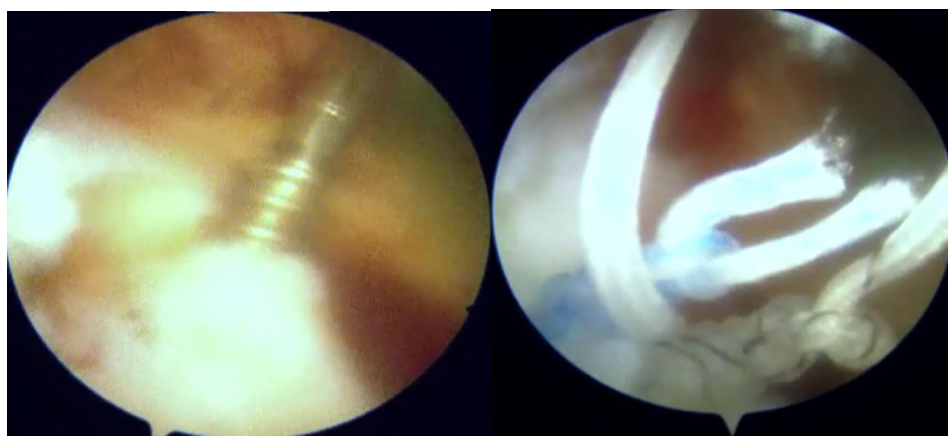


Fig. 1. *The placement of an anchor and the final image of some stitches in an arthroscopic procedure.*

The first surgeon exclusively performed MO procedures, while the second surgeon exclusively performed AA procedures. This represents a potential bias in the study, as the surgeons' differing experiences with the techniques could influence outcomes. The first surgeon was trained solely in the MO technique during his education, whereas the second surgeon specialized in the AA technique. Additionally, the suture anchors used by the two surgeons differed. For MO procedures, Mitek Healix anchors (DePuy Synthes) were used, while Twinfix anchors (S&N) were utilized for AA procedures. In both cases, the anchors were non-absorbable and featured three suture threads. This variability in anchor type constitutes another potential source of bias.

Another potential source of bias is attributable to the different types of knots used for sutures, even though the choice of slider knots for the AA procedure is necessarily conditioned by the arthroscopic setting. All patients wore a brace with a cushion for 15 days. After week 1, they began passive rehabilitation using Kinetec 3 times a day for 30 min (they continued Kinetec until the end of week 4). In the third week of rehabilitation, patients wore the brace with a cushion only at night; meanwhile, they began active physiotherapy under the supervision of a physiotherapist. All patients definitively abandoned the brace with a cushion on day 21 and continued active physiotherapy with 3 sessions per week until week 8 postoperatively.

Outcomes of interest

Data collected included patient age and gender. Preoperative MRI scans were reviewed to assess the extent of rotator cuff damage, which was further evaluated intraoperatively. Prior to surgery, patients were asked to complete the three most used self-assessment questionnaires for rotator cuff injuries (21-24): the American Shoulder and Elbow Society (ASES) score, the Constant-Murley (CM) score, and the Western Ontario Rotator Cuff (WORC) Index. Patients were instructed to complete these questionnaires again at 1 and 3 months postoperatively during routine orthopedic follow-up visits. To ensure unbiased responses, patients completed the questionnaires independently, without the presence of healthcare personnel and without guidance on how to complete them.

Statistical analysis

An a priori power analysis was conducted using G*Power 3.1, establishing a target effect size of Cohen's $d=0.65$, an α level of 0.05, and power ($1-\beta$) of 0.80, determining a minimum sample size of 78 patients. The final recruitment of 81 patients satisfied these criteria, ensuring adequate statistical power to detect clinically significant differences between groups. All statistical analyses were conducted using R (25, 26) (version 4.2.1; R Foundation for Statistical Computing) with specific packages for biomedical analyses (nlme, lme4, survival). Data distribution normality was verified using the Shapiro-Wilk test and visual inspection of Q-Q plots. Homogeneity of variances was assessed with Levene's test.

For continuous variables, both bias-corrected and accelerated (BCa) bootstrap 95% confidence intervals and traditional confidence intervals were calculated. A linear mixed model (LMM) was implemented to analyze repeated measures of functional outcomes, incorporating fixed effects for surgical technique (MO vs AA), follow-up time, and their interaction, with random effects to account for inter-patient variability. To control for potential confounding factors, analysis of covariance (ANCOVA) was performed, adjusting for age, gender, body mass index (BMI), and injury severity according to Snyder classification. Statistical significance was defined as $p < 0.05$, with Benjamini-Hochberg correction for multiple comparisons. Effect sizes (Cohen's d) with 95% confidence intervals were also calculated to quantify the magnitude of clinical differences between groups.

To assess the achievement of minimum clinically important difference (MCID), a treatment response analysis was performed using ROC (Receiver Operating Characteristic) curves and calculation of Number Needed to Treat (NNT).

RESULTS

Patient enrollment

In this single-center prospective cohort study, all patients undergoing rotator cuff repair surgery at the III Orthopedic Division of Villa Erbosa Hospital in Bologna between May 1, 2023, and May 1, 2024, were recruited. A total of 56 patients underwent surgery using the MO technique, and 35 patients were treated using the AA technique. Among the MO group, 1 patient was excluded due to concomitant schizophrenia and inability to provide informed consent, 2 patients were excluded due to mild symptoms and preserved ROM exceeding 90° abduction, 1 patient was excluded due to an ASA score of 4, and 3 patients were excluded as they did not meet Snyder classification criteria for type C1, C2, or C3 (confirmed intraoperatively). Consequently, 49 patients were eligible for inclusion in the MO group. In the AA group, 1 patient was excluded for preserved ROM exceeding 90° abduction and insufficient adherence to a rehabilitation protocol (only three months), 1 patient was excluded for not meeting Snyder classification criteria, and 1 patient was excluded for recurrent glenohumeral dislocations. Therefore, 32 patients were eligible for inclusion in the AA group (exclusion rates of 12.5% in the MO group and 8.6% in the AA group) (Fig. 2).

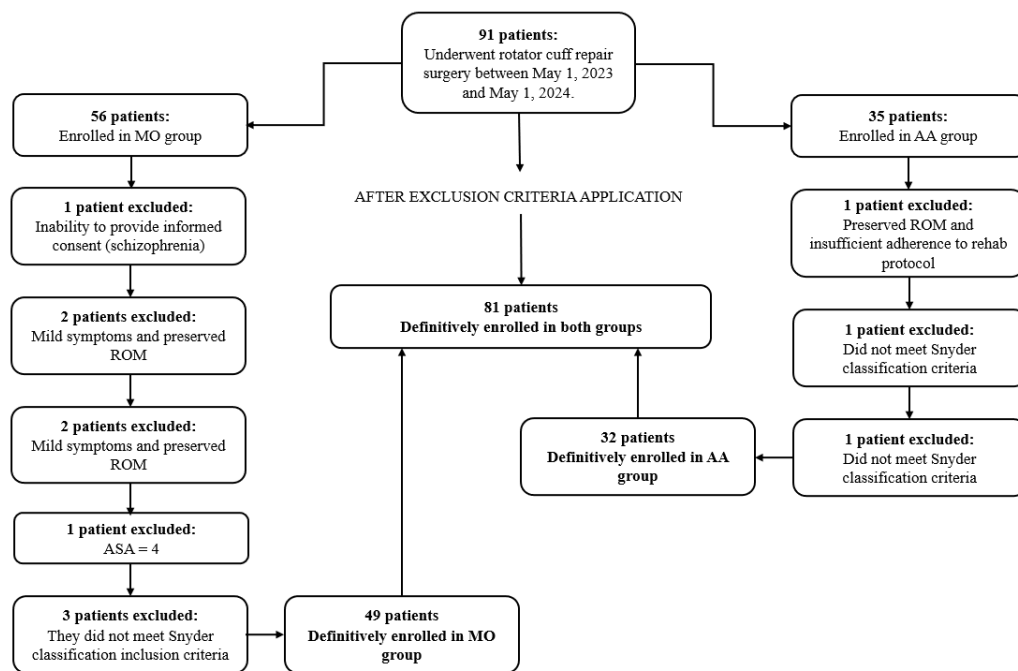


Fig. 2. Flow-chart of patient recruitment

Patient demographics

The total sample size included 81 patients across both groups, comprising 52 males and 29 females. Specifically, the MO group comprised 30 males and 19 females, whereas the AA group comprised 22 males and 10 females. The overall mean age of the patients was 58 years (range, 47–65 years). The mean age in the AA group was 52 years (range 47–61 years), whereas the MO group had a mean age of 59 years (range 53–65 years). A demographic equivalence analysis revealed a homogeneous distribution across groups for gender ($\chi^2 = 0.672$, $p = 0.412$), whereas a statistically significant difference emerged in mean age [$t = 3.85$, $df = 79$, $p < 0.001$; $d = 0.87$, 95% CI (0.41, 1.33)]. Table I reports complete demographic characteristics and baseline clinical parameters, including potentially confounding prognostic factors such as BMI, comorbidities, symptom duration, and Snyder classification.

Table I. Demographic characteristics and baseline parameters of study groups.

Variable	MO Group (n=49)	AA Group (n=32)	Difference (95% CI)	P-value
Age, years (mean $\pm$ SD)	59 $\pm$ 6.2	52 $\pm$ 8.1	7.0 (3.4 to 10.6)	<0.001*
Gender, n (%)				0.412
- Male	30 (61.2%)	22 (68.8%)		
- Female	19 (38.8%)	10 (31.2%)		
BMI, kg/m ² (mean $\pm$ SD)	27.3 $\pm$ 3.6	26.8 $\pm$ 3.9	0.5 (-1.1 to 2.1)	0.536
Snyder Classification, n (%)				0.621
- C1	17 (34.7%)	13 (40.6%)		
- C2	24 (49.0%)	13 (40.6%)		
- C3	8 (16.3%)	6 (18.8%)		
Symptom duration, months (median [IQR])	8.5 [5.2-14.3]	7.8 [4.9-13.1]	0.7 (-2.1 to 3.5)	0.388

*Statistically significant ($p < 0.05$) SD = Standard Deviation; IQR = Interquartile Range.

Outcomes of interest

Preoperative functional assessment scores were comparable between groups (ASES: $t = 0.93$, $p = 0.356$; CM: $t = 1.21$, $p = 0.230$; WORC: $t = 0.87$, $p = 0.389$), indicating a homogeneous baseline for postoperative comparison. The LMM analysis revealed a significant effect of time [$F(2,158) = 298.42$, $p < 0.001$], surgical technique [$F(1,79) = 5.68$, p

= 0.019], and their interaction [$F(2,158) = 4.23$, $p = 0.016$] on ASES scores. Similar results were observed for CM and WORC scores.

Notably, the significant interaction indicates that the trajectory of improvement differed between surgical techniques. After adjustment for age and other confounding factors in the ANCOVA analysis, differences between groups remained significant for all outcomes at 90 days (Table II). The AA group showed accelerated improvement between 30 and 90 days compared to the MO group (ASES increase: 15.3 vs 11.8 points, $p = 0.022$).

Table II. Comparison of functional outcomes between groups, adjusted for age, sex, BMI, and Snyder classification.

Outcome	MO Group (n=49)	AA Group (n=32)	Adjusted Difference (95% CI)	P-value	Effect size (d) (95% CI)
ASES					
- Preoperative	43.2 ± 8.7	45.1 ± 9.2	-1.9 (-5.8 to 2.0)	0.356	0.21 [-0.24, 0.65]
- 30 days	68.4 ± 9.5	74.7 ± 8.3	-6.3 (-10.4 to -2.2)	0.003*	0.70 [0.25, 1.15]
- 90 days	80.2 ± 7.8	90.0 ± 5.9	-9.8 (-13.2 to -6.4)	<0.001*	1.40 [0.92, 1.88]
CM					
- Preoperative	53.1 ± 6.8	55.2 ± 7.3	-2.1 (-5.5 to 1.3)	0.230	0.29 [-0.16, 0.74]
- 30 days	75.6 ± 8.9	81.4 ± 7.6	-5.8 (-9.7 to -1.9)	0.004*	0.69 [0.24, 1.14]
- 90 days	88.9 ± 6.5	94.3 ± 4.7	-5.4 (-8.2 to -2.6)	<0.001*	0.93 [0.47, 1.39]
WORC (%)					
- Preoperative	60.8 ± 9.2	62.5 ± 8.7	-1.7 (-5.6 to 2.2)	0.389	0.19 [-0.26, 0.63]
- 30 days	74.9 ± 7.8	80.6 ± 6.3	-5.7 (-9.0 to -2.4)	0.001*	0.79 [0.34, 1.24]
- 90 days	84.2 ± 5.4	90.4 ± 4.1	-6.2 (-8.5 to -3.9)	<0.001*	1.27 [0.79, 1.74]

*Statistically significant ($p < 0.05$) Values are presented as mean ± standard deviation.

The proportion of patients achieving MCID at 90 days was significantly higher in the AA group compared to the MO group for all outcomes (ASES: 93.8% vs 77.6%, $p = 0.015$; CM: 96.9% vs 83.7%, $p = 0.011$; WORC: 90.6% vs 71.4%, $p = 0.008$). The calculated NNT to obtain a clinically significant improvement with the AA technique compared to MO was 6.2 [95% CI (3.8, 15.4)] for ASES, 7.6 [95% CI (4.2, 36.1)] for CM, and 5.2 [95% CI (3.1, 16.7)] for WORC. Multivariate regression analysis identified independent predictors of superior outcomes at 90 days (Table III), with the AA technique emerging as a significant prognostic factor even after adjustment for covariates [$\beta = 8.7$, 95% CI (5.3, 12.1), $p < 0.001$ for ASES90].

Table III. Multivariate regression analysis of predictors for 90-day outcome in ASES90.

Predictor	Unstandardized β Coefficient	95% CI	P-value	VIF
Intercept	103.2	[88.9, 117.5]	<0.001*	-
AA Technique (vs MO)	8.7	[5.3, 12.1]	<0.001*	1.32
Age (per year)	-0.32	[-0.56, -0.08]	0.010*	1.45
Female sex	-2.1	[-5.5, 1.3]	0.224	1.18
BMI (per kg/m ²)	-0.47	[-0.92, -0.02]	0.041*	1.24
Snyder Classification C3 (vs C1)	-4.9	[-9.2, -0.6]	0.027*	1.38
Snyder Classification C2 (vs C1)	-2.3	[-5.7, 1.1]	0.182	1.29
Preoperative ASES	0.21	[0.06, 0.36]	0.007*	1.37

*Statistically significant ($p < 0.05$) Adjusted $R^2 = 0.53$; VIF = Variance Inflation Factor.

DISCUSSION

The scientific literature has identified substantial differences between the AA and MO procedures for rotator cuff repair (Table IV). Several studies highlight that, in the immediate postoperative period, patients undergoing the AA technique report less pain (16, 18, 27, 28). However, some studies haven't found a significant difference in post-surgery

pain between the two techniques (29, 30), while Kholeif's study (31) even reported a lower pain level in patients treated with the MO technique during the first postoperative week; nevertheless, after 30 days, pain levels were lower in patients undergoing the AA technique. The majority of reports on the subject confirm that joint function recovery and restoration of full ROM occur more quickly with the AA technique (27, 28, 32). As noted in Severud's study (32), this difference in outcome is likely attributable to the lower rate of adhesive fibrosis associated with the AA technique. Additionally, some studies indicate that patients treated with the AA technique experience a shorter average hospital stay (33, 34).

Given that the primary goals of these procedures are long-term pain reduction and restoration of proper shoulder function and ROM, most studies indicate that, in the long term, there are no substantial differences between the two techniques with respect to these outcomes (16, 29, 32, 35, 36). This finding is further corroborated by large meta-analyses (28, 30). Furthermore, a 2021 meta-analysis of 11 studies (37) demonstrated that failure rates to the final outcome were comparable between the two techniques.

Some authors note that comparable outcomes between the two techniques are observed only when the AA procedure is performed by an experienced surgeon, given the significantly longer learning curve of the arthroscopic technique compared with the open approach (34, 38, 39).

One study suggests that the MO technique, when combined with arthroscopic subacromial decompression, provides superior outcomes compared to the isolated arthroscopic approach. Other authors emphasize specific characteristics of each technique (40).

Baloch (41) suggests that the open technique is preferable for extensive rotator cuff tears, whereas Zhangbeibei (42) advocates for the arthroscopic approach, as it provides a more comprehensive view in such cases. However, both authors agree that the AA procedure presents a higher retear rate (41, 42).

By contrast, a six-year follow-up study of exclusively arthroscopically treated patients (43) found no significant retear rates. Despite the rehabilitation advantages of the AA technique, particularly in the immediate postoperative period, the MO technique is still preferred in some cases due to shorter operative times (44, 45) and lower costs (46). Nevertheless, due to higher patient satisfaction, the arthroscopic technique is gradually replacing the open approach (18).

It has been hypothesized that the arthroscopic approach may reduce infection rates compared to the open technique. Some studies have observed a lower prevalence of infections in cuffs treated with the AA technique (47, 48). However, given the extremely low infection rate in arthroscopic procedures, even in large population samples, obtaining statistically significant results remains challenging, as demonstrated by Baraza et al. (49).

Table IV. *The main differences between AA and MO were found in most comparisons in the literature.*

ASPECT	AA	MO
Postoperative Pain	Reduced postoperative pain due to smaller incisions and less tissue trauma.	More postoperative pain compared to arthroscopic repair.
Return to Function	Earlier return to daily activities and work.	Longer recovery period before returning to normal activities.
Range of Motion	Better ROM outcomes, particularly in the early postoperative period.	Comparable ROM outcomes in the long term but slower recovery.
Cosmetic Results	Smaller, less noticeable scars.	Larger scars.
Complications	Fewer complications related to wound healing and infection.	Higher risk of complications related to wound healing and infection.
Surgical Time	Generally requires longer surgical times.	Shorter surgical times.
Surgeon Expertise	Higher level of skill and expertise required.	Less demanding in terms of surgical skill.
Cost	Potentially higher costs due to specialized equipment and longer surgical times.	Lower costs.

This study aimed to evaluate short-term patient satisfaction following rotator cuff repair, specifically comparing PROMs between two surgical techniques: AA and MO. Unlike most of the existing literature, which predominantly focuses on analgesia and limb function over longer follow-up periods, this study assesses early postoperative outcomes.

The results demonstrated that ASES scores at 1 and 3 months postoperatively were significantly higher in the AA group than in the MO group. Furthermore, multivariate analysis identified gender and the presence of a Snyder C2 lesion rather than a C1 lesion as the only non-significant predictors of ASES outcomes, whereas patients with C3 tears benefited more from the AA technique. These findings contradict the existing literature, which reports that patients reportedly prefer the MO technique when assessed at approximately 20 months of short-term follow-up (31, 45, 50). However, it is important to note that the follow-up duration in these studies was considerably longer than in the present study. Despite this discrepancy, some evidence suggests no substantial long-term differences in ASES scores between surgical techniques (51, 52), with functional improvements maintained over time (52), although imaging has revealed a 33% retear rate at 8 years postoperatively (53). The assessment of Constant-Murley scores in this study favored the AA technique at both 30 days (CM30) and 90 days (CM90) postoperatively.

Literature regarding CM scores remains inconclusive. Consistent with this study's findings, one investigation reported higher CM scores among patients treated with the AA technique (54). This study included more than 120 patients with a mean age of 62 years and a mean follow-up of 1 year. However, most studies have reported no significant difference in CM scores between surgical techniques with a follow-up period of 1 to 2 years (52, 55-57). Some authors also failed to detect differences in CM scores between techniques at short-term follow-up (16, 41). Conversely, Vicenti et al. (44) reported that CM scores were significantly higher in the AA group at 6 months postoperatively, although no substantial differences were observed at 2 years. Additionally, other studies have reported higher CM scores in the MO group (35, 45), further contributing to the ongoing debate regarding the optimal surgical approach.

This study also identified superior early postoperative outcomes in the AA group, as assessed by the WORC index. However, the literature on the use of this score in rotator cuff repair remains limited despite its clinical relevance (58). In contrast to this study's findings, Kholeif et al. (31) observed a higher WORC index in the MO group during the immediate postoperative period. Furthermore, Nazari et al. (30) reported higher WORC scores in the MO group at one-year follow-up, a finding that is not directly comparable to the present study due to differences in follow-up duration.

Overall, the findings suggest that the AA technique is associated with superior short-term patient-reported outcomes compared to the MO technique. However, given discrepancies in long-term results reported in the literature, further studies with longer follow-up periods are warranted to assess the durability of these early advantages.

CONCLUSIONS

The findings in this study contrast with the prevailing literature, which generally favors the MO technique for short-term assessments, highlighting that patients undergoing the AA technique report superior early postoperative outcomes in terms of PROMs. By specifically evaluating the immediate postoperative period, this study provides novel insights into the early perceived benefits of arthroscopy compared with the open technique, suggesting that the AA approach may offer a more rapid improvement in patient satisfaction and functional recovery. However, given the discrepancies with existing literature and the lack of short-term follow-up, further studies are necessary to determine whether these early advantages translate into sustained clinical benefits.

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