



## A Study on Outcomes of Mini Open Procedures on Rotator Cuff Injuries

Nageswararao Y<sup>1</sup>, Shinde GM<sup>2</sup>, Chemboli JM<sup>3\*</sup>

<sup>1</sup>Department of Orthopaedics, Rangaraya Medical College Kakinada, Andhra Pradesh, India.

<sup>2</sup>Department of Orthopaedics, Maharashtra Post Graduate Institute of Medical Education and Research, MUHS, Nashik, India.

<sup>3</sup>Department of Orthopaedics, Government Medical College, Vizianagaram, Andhra Pradesh, India.

**Correspondence to:** Chemboli JM, Department of Orthopaedics, Government Medical College, Vizianagaram, Andhra Pradesh, India.

**Received date:** May 04, 2023; **Accepted date:** May 26, 2023; **Published date:** June 02, 2023

**Citation:** Nageswararao Y, Shinde GM, Chemboli JM. A Study on Outcomes of Mini Open Procedures on Rotator Cuff Injuries. *J Med Res Surg.* 2023;4(3):43-45. doi: 10.52916/jmrs234106

**Copyright:** ©2023 Nageswararao Y, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

### ABSTRACT

**Background:** Many treatment options exist for the management of rotator cuff tears, varying from non-operative-benign neglect to complex arthroscopic partial repair using an interval slide technique. Although satisfactory results may be obtained with many of these options, it should be remembered that few prospective, randomized trials exist comparing these treatments. Thus, controversy remains as to the absolute indications for each, and individual patient factors may significantly affect the final treatment decision.

**Methods:** Hospital-based observational study. Informed consent was taken from the patients. A total of 30 patients who got admitted to the Department of Orthopaedics, Government General Hospital, Kakinada from November 2018 to September 2020 were included in the study.

**Results:** Twenty five cases showed excellent results four cases showed good results and one showed poor result using University of California Los Angeles shoulder scale. Twenty nine cases showed excellent results and one case showed good result with Constant Murley Score.

**Conclusion:** In the era of arthroscopic rotator cuff surgery the mini open technique with open acromio plasty and rotator cuff repair adds to rural surgeon as an elective procedure and can produce clinically competing results that of other contemporary techniques.

### Keywords:

Rotator cuff D017006, Shoulder joint D012785, Arthritis D001168, Range of Motion (ROM)

### Introduction

Traditional treatment of full-thickness tears of the rotator cuff consisted of open surgical repair with 70% to 95% satisfactory outcome. Repair of the rotator cuff was first described by Codman over a century ago. The current practice trend is Mini-Open (MO) repair which has been regarded as the gold standard for rotator cuff tear repair for decades. It has been proved to achieve good to excellent results in 90% of patients. It was the first choice for many surgeons due to its stronger suture fixation and shallow learning curve. The goal of rotator cuff repair is to improve shoulder function with increased shoulder Range of Motion (ROM) and to eliminate pain. In addition to adequate surgical repair, outcomes are dependent on appropriate rehabilitation. Successful post-operative management following rotator cuff repair is dependent on several variables, including surgical intervention method, patient age, chronicity of tear, tear size and activity level. With rapidly advancing modes of fixation and surgical techniques, optimal rehabilitation following rotator cuff surgical repair has become important and challenging for the orthopedic surgeon and physical therapist. One of the main advantages of the mini-open rotator cuff repair is deltoid preservation, thereby eliminating the risk of postoperative deltoid dehiscence.

### Aim and Objectives

**Aim:** To evaluate the clinical outcomes and assess the effectiveness of the mini-open procedure for patients with rotator cuff injuries.

**Objective:** To evaluate the functional outcomes of rotator cuff injuries operated with a mini-open procedure using UCLA and CMS scoring systems.

### Material and Methods

#### Surgical Procedure

All the cases were operated under general anesthesia and in supine position with sandbag underneath the shoulder. Surgical approach was anterolateral deltoid splitting after identifying the bony landmarks (acromion), a straight skin incision of 3-5 cm given from the lateral border of the acromion on the anterolateral aspect of the shoulder. Subcutaneous fat and deltoid fascia divided, deltoid muscle split in the line of fibers for 3-5 cm. Subacromial bursa resection and decompression performed. Under direct visualization of rotator cuff tendons tears identified, debridement done. Preparation of the footprint over the bone is performed. Mobilization of tendons to the footprint was done and fixed with ethibond and suture anchors trans osseously with a gap of at least 1.5 to 2 cm between the suture anchors. Suture technique may be a simple or locking stitch if the quality of the tendon is not good. Movements and fixation checked. Deltoid muscle repaired with intermittent sutures, wound closed in layers.

### Inclusion Criteria

- Patient in the age group of 18-60 years of age
- Patient undergoing the mini-open procedure for rotator cuff injury
- Patient accepting a minimum of 6months follow up after surgery

### Exclusion Criteria

- Patient refusal
- Age less than 18 and more than 60 years
- History of diabetes and severe metabolic comorbidities
- Glenohumeral instability or restricted glenohumeral movements a result of adhesive capsulitis
- Glenohumeral arthritis
- Rheumatoid arthritis
- History of acute trauma to the shoulder
- History of previous shoulder surgery

### Results

In this study, two cases (6.6%) were in the age group of 20-30 years. Six cases (20%) were in 31-40 years, fourteen cases

(46.6%) were 41-50 years, and eight cases (26.6%) were 51-60 years. The majority of patients were between age 41-50 years age group. The mean age was 44.2 years In the current study, no. of male patients were 28 and females were two. Out of 32 patients, 20 injured their shoulders due to unspecified falls, 6 due to road traffic accidents. and 4 due to assault. Most of them were daily laborers. Jobs test was positive in all cases. The majority of patients complained of inability to lift the shoulder following trauma. All the cases taken into the study were full-thickness tears. Acromioplasty and subacromial decompression provided better pain relief postoperatively and it was helpful in physiotherapy. We performed acromioplasty in every case to prevent further impingement and occurrence of re-tears. Out of thirty shoulders that underwent mini-open repair, 28 cases showed significant improvement with a decrease in pain, and 2 cases had mild pain on strenuous activities. Postoperatively range of movements was good except for a slight decrease in abduction compared to the normal side at 6 weeks and 3 months follow up, but by the end of 6th month, they attained a range of movements as that of the normal side. The mean values of preoperative and postoperative Range of motion of the affected shoulder were listed in the Table 1.

**Table 1:** Comparison of ROM.

Category	Preoperative value degrees	Postoperative value degrees
Forward flexion	88	153
Abduction	79	154
External rotation	42	78
Internal rotation	44	65

There is a significant improvement in the active ROM at 6 months follow up. Activities of daily living and strength and power of muscles are assessed and scored in UCLA and CMS scores In the current study, one case had developed limitation of ROM to less than 90 degrees of abduction, remaining all the cases are without any complications at 6 months of follow up.

### Discussion

The gold standard treatment of symptomatic full-thickness rotator cuff tears as described by Codman has been open rotator cuff repair [1]. Klepp, et al. and others have documented the validity and reproducibility of this procedure [2]. Although good results were seen with open rotator cuff repair, prolonged rehabilitation and significant morbidity have been associated with the requisite deltoid take-down and repair [3]. The mean age of the present study was the youngest of the compared studies listed in Table 2.

**Table 2:** Mean age of various studies.

Study	Mean age years
Stone, et al. (4)	62
Kose et, al. (5)	62
Liem et, al. (6)	62.1
Youm et, al. (7)	59
Current study	44.2

Mean follow-up in the current study was less when compared with other studies. The current study means follow-up was 12

months.

**Table 3:** Mean follow up in months.

Study	Follow up (Months)
Stone, et al. (4)	24
Kose, et al. (5)	21.56
Liem, et al. (6)	17.6
Youm, et al. (7)	37.6
Kim, et al. (8)	39
Current study	12

In the current study, the mean UCLA Score was 34.43 when compared to other studies Kose, et al. (5) and Youm, et al. (7) were 28.8 and 32.3, respectively Table 4.

**Table 4:** ULCA score compared.

Study	UCLA score
Kose, et al. (5)	28.8
Youm, et al. (7)	32.3
Current study	34.43

Birslin KJ, et al. in their case series of 236 cases for post arthroscopic rotator cuff repair complications reported a complication rate of 10.6%.present study reported only 3.33% complication which was far less. This was probably due to the decompression added by acromioplasty for all cases [9]. Chul-Hyun, et al. in their study of mini open rotator cuff repair technique reported better satisfactory out come in men than in

women [10]. They did not add acromioplasty as decompression procedure.

### Limitations

The current study spanned in a very short period; hence the long-term results and complications are compromised. The study sample is small (n=30), so the results cannot be applied to the larger population.

### Conclusion

In the era of arthroscopic rotator cuff surgery the mini open technique with open acromio plasty and rotator cuff repair adds to rural surgeon as an elective procedure and can produce clinically competing results that of other contemporary techniques.

### Conflict of Interest

The author has no known conflict of interest to disclose.

### Funding

No.

### References

1. Codman EA. Complete rupture of the supraspinatus tendon: Operative treatment with report of two successful cases. *J Shoulder Elbow Surg.* 2011;20(3):347-349.
2. Klepps S, Bishop J, Lin J, et al. Prospective evaluation of the effect of rotator cuff integrity on the outcome of open rotator cuff repairs. *Am J Sports Med.* 2004;32(7):1716-1722.
3. DePalma AF, Callery G, Bennett GA. Variational anatomy and degenerative lesions of the shoulder joint. *Instr Course Lect.* 1949;6:255-281.
4. Colegate-Stone T, Allom R, Tavakkolizadeh A, et al. An analysis of outcome of arthroscopic versus mini-open rotator cuff repair using subjective and objective scoring tools. *Knee Surg Sports Traumatol Arthrosc.* 2009;17(6):691-694.
5. Kose KC, Tezen E, Cebesoy O, et al. Mini-open versus all-arthroscopic rotator cuff repair: comparison of theoperative costs and the clinical outcomes. *Adv Ther.* 2008;25(3):249-259.
6. Liem D, Bartl C, Lichtenberg S, et al. Clinical outcome and tendon integrity of arthroscopic versus mini-open supraspinatus tendon repair: a magnetic resonance imaging-controlled matched-pair analysis. *Arthroscopy.* 2007;23(5): 514-521.
7. Youm T, Murray DH, Kubiak EN, et al. Arthroscopic versus mini-open rotator cuff repair: a comparison of clinical outcomes and patient satisfaction. *J Shoulder Elbow Surg.* 14(5):455-459.
8. Kim SH, Ha KI, Park JH, et al. Arthroscopic versus mini-open salvage repair of the rotator cuff tear: outcome analysis at 2 to 6 years' follow-up. *Arthroscopy.* 2003;19(7):746-754.
9. Brislin KJ, Field LD, Savoie III FH. Complications After Arthroscopic Rotator Cuff Repair. *J Arthro Rel Surg.* 2007: 23(2);124-128.
10. Cho CH, Song KS, Min BW, et al. Anterolateral approach for mini-open rotator cuff repair. *Int Orthop.* 2012;36(1):95-100.