

Original Article

Functional Outcome of Patients Operated by Mini Open Rotator Cuff Repair in Tertiary Care Hospital of Ahmedabad City

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Background : Rotator Cuff Tear is likely due to trauma and age related degeneration. The incidence of rotator cuff tears increases with age. Symptomatic large full thickness tear can be progress, so needed early intervention. In management of rotator cuff pros and cons of operative and non-operative treatment should be consider along with patient age and occupation of patient.

Aims and Objectives : (1) To evaluate the outcome of rotator cuff repair by mini open technique. (2) To assess post operative pain in rotator cuff repair patients.

Materials and Methods : In this prospective study, 30 patient treated with mini open rotator cuff repair between March, 2021 to March, 2023 are considered. Outcome of this patient was evaluated with oxford shoulder score.

Results : 30 patient with operated for rotator cuff tear with mini open rotator cuff repair between age 18 to 65 were studied. Most common cause was degenerative (43.4%), by chronic impingement (33.3%) and by Traumatic (23.3%). Optimum range of movement was achieved in these patient in mean time to 1.5 months with minimal residual pain or discomfort. 86.7% patients had 40-48 Oxford shoulder score. 56.7% patients had no difficulties postoperatively in follow-up.

Conclusion : Result of this study indicate that rotator cuff tear repair with mini open technique shows good outcome in term of range of movement at shoulder joint and minimal or no postoperative pain with minimal postoperative complication.

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Key words : Rotator Cuff Repair, Mini Open Technique, Oxford Shoulder Score, Outcome.

The rotator cuff is formed by 4 muscles of the shoulder which maintains the humeral head in glenoid cavity and maintains the glenohumeral joint. The rotator cuff includes the subscapularis, supraspinatus, infraspinatus and teres minor muscles¹⁻³.

Glenohumeral joint is a ball and socket type of joint in which a large humeral head fits in a smaller glenoid. This makes the joint highly mobile but also makes the joint unstable. The labrum around the joint, capsule and the glenohumeral ligament along with the rotator cuff muscles makes the joint more stable. The labrum increases the depth of the socket by 50% around the humeral head and increases its stability. The tendinous insertions of rotator cuff muscle, the articular capsule, the coracohumeral ligament and glenohumeral ligament complex blends into a confluent sheet before its insertion over the humeral tuberosities. The tendons of the infraspinatus and supraspinatus muscles fuse

Editor's Comment :

- The results of mini open rotator cuff repair are equivalent to that of arthroscopic rotator cuff repair in terms of function outcome and recovery.
- Mini open rotator cuff repair can be performed at a low cost operation theatre setup as compared to arthroscopic rotator cuff repair.
- Arthroscopic rotator cuff repair has a longer learning curve in comparison with mini open rotator cuff repair.

approximately 15mm proximal to their insertion and cannot be easily separated by blunt dissection. The infraspinatus and teres minor fuse near their musculotendinous junction. The supraspinatus and subscapularis tendons join as a sheath that surrounds the biceps tendon at the entrance of the bicipital groove. The roof of this sheath consists of portion of the supraspinatus tendon and a sheet of subscapularis tendon forms the floor. The rotator cuff act simultaneously and synergistically.

Rotator cuff can be repaired either by mini open surgery or arthroscopically. For the purpose of this study, 30 patients were operated by mini open technique and the torn tendon was fixed with a 2.8mm suture anchor. The purpose of this study is to determine functional outcome of the patient treated with mini open rotator cuff repair technique.

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MATERIALS AND METHODS

The 30 patients who were part of this study were primary evaluated clinically following which an MRI of the affected shoulder was done to determine the tear and the retraction (Figs 1 & 2).

Mini Open Rotator Cuff Repair :

A small skin incision of size 3-4 cm from anterolateral edge of the acromion is made and dissection is done up to the raphe between the anterior and middle deltoid. The raphe is split and subacromial bursectomy is done. Care must be taken to protect the biceps tendon. The torn tendon of supraspinatus is identified. In case the tendon is retracted to the level of coracoid process, the tendon is pulled out closer to the insertion site at the greater tubercle by mobilizing the tendon. A suture anchor is gently hammered at the outer edge of the insertion site and the suture is passed 5mm medial to free end of the tendon. Suture anchor is tied down on top of the tendon with four or five knots to prevent impingement of suture materials. The suture is secured by single row repair. Wash with normal saline given. Overlying deltoid muscle is repaired. Further closure is done in layers^{4,5}.

Inclusion Criteria :

- Age between 18 to 65 years with restricted range of movement
- Full passive range of movement at shoulder joint
- Fresh injury (retraction not beyond coracoid process)

Exclusion Criteria :

- Associated bony injury
- Retraction of rotator cuff beyond coracoid process
- Patient with overlying skin disease
- Stiff shoulder

Follow-up of all patients was done at regular pre-decided intervals of 6 weeks, 3 months, 6 months and 12 months.

RESULT

30 patients operated for rotator cuff tear with mini open rotator cuff repair between the ages of 18 and 65 were studied. Most common cause was traumatic (17 patients) followed by chronic impingement (10 patients) and degeneration (3 patients) (Tables 1 & 2).

The average duration of operation was 86 minutes. 8 patients were found to have retraction greater than suggested in MRI and so the duration in these patients was more. Postoperative stay were uneventful for these patients. Patients were advised to keep the shoulder in abduction for 1 week. Arm sling was given for 4



Fig 1 — Intra-operative pictures



Fig 2 — 6 weeks Postoperative Clinical Photos

weeks. Range of movement physiotherapy such as gentle assisted forward flexion, extension and pendulum movement were started on the first postoperative day. Patients were allowed full active range of movements at 3 months postoperatively. All patients were encouraged to increase their range of movement gradually. Out of 30 patients, 1 patient encountered failure of repair which needed revision surgery. Surgical site infection was seen in 2 patients, which was managed by regular dressing and antibiotics. Optimum range of movement was achieved in these patients in an average time of 3.5 months

Small	<1 cm
Medium	1-3 cm
Large	3-5 cm
Massive	> 5 cm

Mode of rotator cuff tear	Number of patients
Traumatic	17
Chronic impingement	10
degenerative	3

Score	Number of patients
0 (no difficulties)	11
1-25 (mild difficulties)	12
26-50 (moderate difficulties)	5
51-75 (sever difficulties)	2
76-100 (unable)	0

with minimal residual pain or discomfort.

Patients were evaluated at 3 weeks, 6 weeks, 6 months and 12 months interval. The functional outcome of these patients was assessed on the basis of DASH score. Most patient had a good functional outcome (Table 3).

DISCUSSION

In this study, patients between the age of 18 and 65 years were selected, mean age of the patients was 45 years. Among these patients, the most common cause was traumatic followed by chronic impingement and least common case was degenerative changes. Most patients had a good outcome with minimal postoperative pain and good range of motion except 1 patient, who had failure and underwent revision surgery. Two other patients presented with residual pain and no improvement in range of movement due to inadequate physiotherapy. Overall, 23 patients as had improvement in range of movement and minimal to no pain at shoulder.

CONCLUSION

Result of this study indicates that rotator cuff tear repaired with mini open technique shows good outcome in term of range of movement at shoulder joint and minimal or no postoperative pain with minimal postoperative complication. Early postoperative physiotherapy may give good result. Mini open rotator

cuff repair still stands as an effective treatment for rotator cuff tear. However, studies with a greater number of patients and a better design are needed to validate the outcome.

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