

Original Research Article

Mini open anterolateral rotator cuff tear repair with the help of suture anchor

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ABSTRACT

Background: It is generally accepted that mini open rotator cuff tear repair with the help of suture anchor gives satisfactory results in the long term, although most studies have so far shown a fairly high rate of good structural and functional outcome. The purpose of this study is to assess functional outcome of mini-open anterolateral rotator cuff tear repair with the help of suture anchor.

Method: The 30 consecutive rotator cuff tear patients were selected from outpatient department at medical college. All patients were diagnosed with full thickness rotator cuff tear and subsequently treated with mini-open anterolateral approach technique. Each patient was clinically assessed with DASH questionnaire and constant Murley score for their satisfaction.

Results: After a minimum of 12 month follow up period, the average clinical outcome scores all improved significantly at the time of final follow up.

Conclusions: Patient with mini-open anterolateral rotator cuff tear repair with the help of anchor suture showed improvement in their functional outcome and range of motion.

Keywords: Mini open, Rotator cuff tear repair, Anchor suture, Open anterolateral

INTRODUCTION

Rotator cuff tears can cause a variety of clinical manifestations, including debilitating shoulder dysfunction and impairment. The goal of rotator cuff repair is to eliminate pain and improve function with increased shoulder strength and range of motion (ROM).¹ Optimal repair of the rotator cuff includes achievement of good fixation strength, least gap formation and maintenance of mechanical stability under gradual loading and proper healing of tendon to bone.² In addition to adequate surgical repair, outcomes are dependent on appropriate rehabilitation. Successful postoperative management following rotator cuff repair is dependent on several variables, including surgical intervention method, patient age, activity level, chronicity of tear and tear size. With rapidly advancing surgical techniques and modes of

fixation, optimal rehabilitation following rotator cuff surgical repair has become increasingly important and challenging for the orthopedic surgeon and physical therapist. This article will address the mini-open rotator cuff repair and discuss the important postoperative implications of mini-open cuff repair techniques. Rotator cuff tears lead to debilitating shoulder dysfunction and impairment. The goal of rotator cuff repair is to eliminate pain and improve function with increased shoulder strength and range of motion. The outcomes of the surgical methods of rotator cuff repair (mini-open) vary, as this method provides an array of advantages and disadvantages. Although the open surgical technique has long been considered the gold standard of rotator cuff repair, surgeons are becoming more adept at decreasing patient morbidity through decreased surgical trauma from an all-arthroscopic approach. In addition to a surgery-

specific rotator cuff rehabilitation program, effective communication, and coordination of care by the physical therapist and surgeon are essential in optimal patient education and outcomes. In the ideal situation, a very well-educated therapist who has great communication with the treating surgeon can mobilize the shoulder early, re-establish scapulothoracic function safely and minimize the risk of stiffness and retear, while facilitating return to function. Treatment options can be individualized according to patient age, size and chronicity of tear, surgical approach, and fixation method. We recommend that patients who have undergone mini-open surgical repair with anchor suture to undergo accelerated postop rehabilitation program. Rational approach to therapy involves early, safe motion to allow optimal tendon healing, yet maintenance of joint mobility with minimal stress. As field of orthopedics and particularly, rotator cuff repair continues to develop with new technologies, patient, physical therapist, and doctor need to work together to ensure optimal outcomes and patient satisfaction.²⁻⁴

The purpose of this study is to assess functional outcome of mini-open anterolateral rotator cuff tear repair with the help of suture anchor.

METHODS

Prospective study done at government medical college and hospital Aurangabad between September 2021 to September 2022.

Study design

This prospective study was conducted in accordance with ethical guidelines established by the government medical college and hospital Aurangabad ethical committee.

Study approval

Institutional medical ethical committee approval was obtained for this study. Written and informed consent was obtained from all participating patients.

Study population

The study included 30 patients of various genders, aged between 20 and 80 years, who sought treatment at the Aurangabad government medical college and hospital.

Inclusion criteria

Patients who met the following criteria were included in the study: Age between 20-80, traumatic rotator cuff tear, MRI diagnosed rotator cuff tear and those who provide consent for the operative procedure

Exclusion criteria

Patients with age less than 20 and more than 80, non traumatic tear and patient denying consent for procedure were excluded.

RESULTS

After a minimum of 12 month follow up period, the average clinical outcome scores all improved significantly at the time of final follow up.

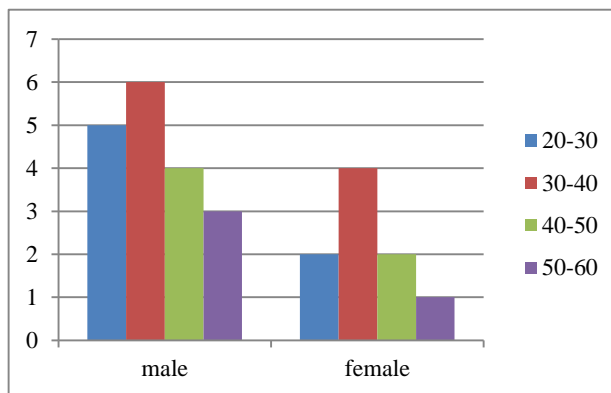


Figure 1: Age and sex.

Male were more commonly involved than female with most common age group 30-40 years.

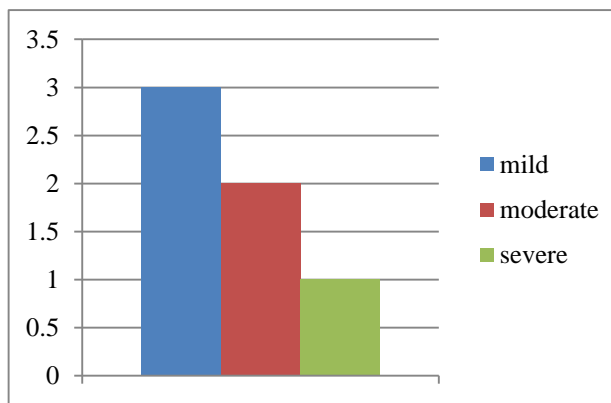


Figure 2: Joint stiffness after repair.

Mild stiffness-3, patients moderate-2 and severe-1.

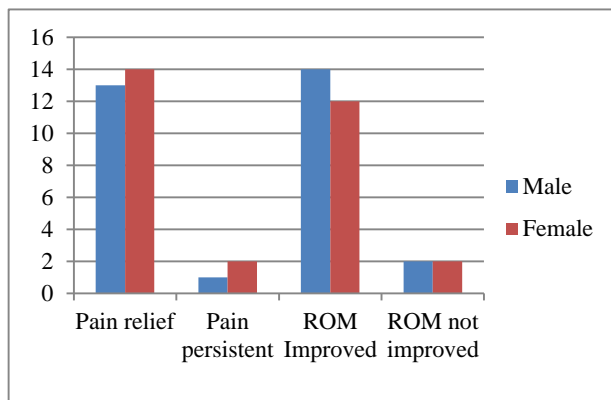


Figure 3: Ultimate pain relief and functional ROM.

Good pain relief, improve ROM seen in most of patients.

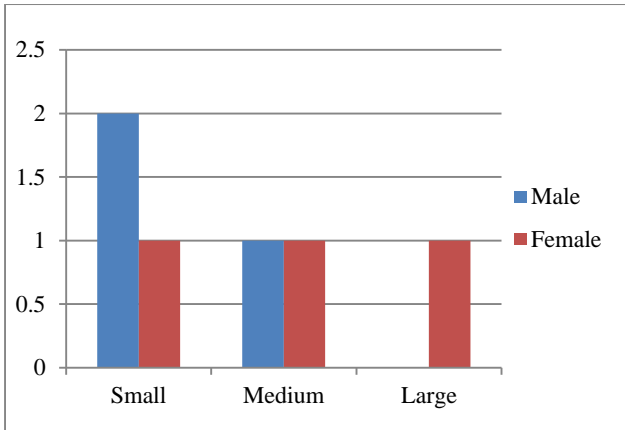


Figure 4: MRI analysis.

Retear was 6 of these 3 are male and 3 are female of small to large size.

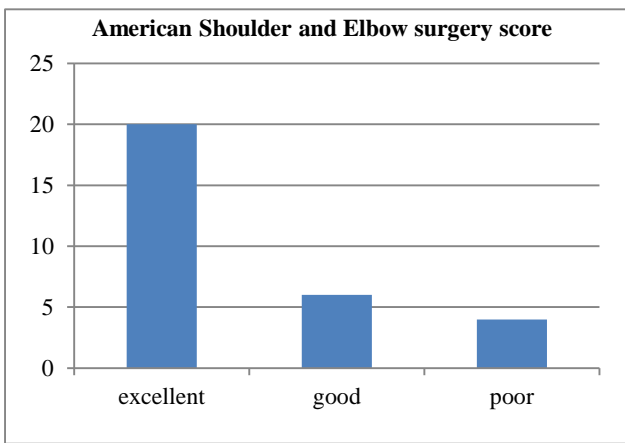


Figure 5: Clinical assessment.

Clinical assessment for all patients using American shoulder and elbow surgery (AESS) scoring system. (Excellent=20, good=6, poor=4).



Figure 6 (A and B): Pre and post operative.

DISCUSSION

Outcome studies of individuals who were treated with an mini-open rotator cuff repair have revealed good to excellent results in both functional improvement (75%-95% of patients) and pain relief (85% 100% of patients).³

Multiple studies have shown 80% to 94% of patients who have undergone open rotator cuff repair to have good to excellent results. In a study of 100 patients at 4.2-year follow-up, Hawkins et al reported that 86% of patients had no or slight pain.³³ The average shoulder abduction ROM increased from 81° preoperatively to 125° postoperatively. Neer et al reviewed the results of 245 patients who underwent open rotator cuff repair and reported a 91% satisfactory rate. In a review of 105 patients who had open rotator cuff repair,

Cofield et al found tear size to be the most important determinant of outcome with regard to active motion, strength, satisfaction, and need for reoperation.¹⁰⁻¹³

Harryman et al reported a 68% healing rate in a study of 105 patients at 5-year follow-up.^{14-18,30} Despite reports of high satisfaction rates with open cuff repair, the open repair is associated with several disadvantages related to deltoid dysfunction and postoperative pain. Loss of the anterior deltoid is a devastating complication of open cuff repair, as there are no reasonable fixation alternatives, and the patient loses anterior deltoid function. Moreover, deltoid takedown and repair requires a postoperative period of protection of at least 4 weeks, which precludes accelerated postoperative rehabilitation (no active motions). Previous studies have noted a 0.5% incidence of postoperative deltoid avulsion. Several studies have also shown that open repair is associated with greater postoperative pain than arthroscopic-assisted cuff repair. Increased pain, which can hinder early postoperative physical therapy and lead to longer recovery times, has been associated with the trans deltoid approach of the open technique. One of the primary concerns following rotator cuff repair surgery is shoulder stiffness.

Dockery et al performed 7 shoulder exercises while measuring activity levels of the shoulder musculature using electromyographic surface electrodes.¹⁹ The best approach for performing passive joint mobility exercises while minimizing muscular activity was to have the physical therapist perform the exercises with the patient in supine or when using a continuous passive motion (CPM) device. Conversely, the surrounding musculature was most active when doing the rope and-pulley ROM exercise. In our study prefer passive ROM exercise initially, then to progress to active assisted ROM exercise once adequate tissue healing occurs. Generally, we restrict passive shoulder external rotation to 45° with the arm at 30° to 45° of abduction in the scapular plane, and forward elevation to 120° to avoid excessive tension on the repair. Muscle retraining and strengthening exercises initiating rotator cuff and scapula stabilization strengthening exercises

should be approached with caution to prevent stress applied to the healing tissues. Stress applied too early or too aggressively could lead to gap formation, pain, re-tearing of the repair, and poor outcomes. When appropriate, we believe isometric exercises should be performed to prevent muscular atrophy and to minimize rotator cuff inhibition.

Costouros et al reported that 54% of patients with massive rotator cuff tears were found to also have a peripheral nerve injury, most commonly of the suprascapular nerve.¹⁵ Controlled activities that can safely activate the rotator cuff muscles include submaximal and pain-free multiangle isometrics for the external and internal rotator muscles. Furthermore, we initiate rhythmic stabilization exercises in the supine position to promote a contraction of the surrounding musculature. These exercises are designed to restore dynamic stabilization of the glenohumeral joint, which is an essential goal in treating patients with a rotator cuff repair. We begin these exercises in supine and with the glenohumeral joint in the “balanced position.” This position is defined as 100° of elevation and slight horizontal abduction (scapular plane). In this position, the physical therapist provides resistance in an alternating manner to require an isometric contraction of the shoulder flexors, extensors, and horizontal adductors/ abductors. Note that the amount of force is extremely low, usually approximately 0.5 to 1.5 kg of force. The goal is for the patient to activate the muscles of the rotator cuff but is not to achieve strengthening. We have found this exercise to be completely safe for patients who have undergone a rotator cuff repair. We utilize this balanced position because of the functional anatomy and the biomechanics of the glenohumeral joint. With the arm abducted to 30°, the deltoid muscle’s insertional angle generates a superiorly directed shear force.²⁰⁻⁵¹

Limitations

The study’s primary constraints encompassed a limited sample size and a short follow-up period. To conduct a thorough investigation of postoperative complications, an extended observation period would be essential.

CONCLUSION

Anterolateral approach for mini-open rotator cuff repair produces satisfactory results. It may also offer better visualization for rotator cuff tears of all sizes.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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