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ORIGINAL RESEARCH

Mini-open repair versus a completely arthroscopic technique for rotator cuff tears

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Abstract
Background: Rotator cuff pathology is one of the most common conditions affecting the shoulder. The present study compared mini-open repair versus a completely arthroscopic technique for rotator cuff tears.
Materials & Methods: 74 patients with rotator cuff injury of both genders were divided into 2 groups of 37 each. Group I patients were treated with mini open and group II with arthroscopic technique. In both groups, simple shoulder test (SST), university of California, Los Angeles (UCLA) rating scale, visual analog pain assessment (VAS) and SF12 was recorded.
Results: Group I had 20 males and 17 females and group II had 18 males and 19 females. The mean short shoulder test improvement was 5.4 in group I and 4.3 in group II, UCLA in group I was 17and in group II was 29, active forward flexion improvement was 34degrees in group I and 18 degrees in group II, VAS pain improvement was 3.6 in group I and 4.5 in group II and active abduction improvement was 29 degrees in group I and 20 degrees in group II. The difference was significant ($P< 0.05$).
Conclusion: Both mini-open repair versus a completely arthroscopic technique found to be equally effective in management of rotator cuff injury cases.
Key words: arthroscopic technique, rotator cuff, rating scale

Introduction

Rotator cuff pathology is one of the most common conditions affecting the shoulder.[1] Anatomic studies detailing rotator cuff tears in cadavers have noted a prevalence ranging from 17% to 72%. Traditional treatment of full thickness tears of the rotator cuff has consisted of open surgical repair.[2] Reported satisfactory outcomes for open repair have ranged from 70% to 95%. Although the effectiveness of open rotator cuff repair is well established, significant pain and morbidity can be associated with the procedure.[3]

The goal of rotator cuff surgery is to alleviate shoulder pain and to improve function. Traditional treatment of full thickness tears of the rotator cuff has consisted of open surgical repair.[4] Reported satisfactory outcomes for open repair have ranged from 70% to 95%. Although the effectiveness of open rotator cuff repair is well established, significant pain and morbidity can be associated with the procedure.[5] A significant limitation to rehabilitation after open repair is pain associated with reattachment of the deltoid to the acromion.[6] More recently, reports have described the evolution of rotator cuff repair to help minimize deltoid

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trauma and expedite post-operative rehabilitation. Good results have been reported with arthroscopically-assisted mini-openrepair and completely arthroscopic techniques.[7,8] The present study comparedmini-open repair versus a completely arthroscopic technique for rotator cuff tears.

Materials & Methods

The present study consisted of 74 patients with rotator cuff injury of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 37 each. Group I patients were treated with mini open and group II with arthroscopic technique. In both groups, simple shoulder test (SST), university of California, Los Angeles (UCLA) rating scale, visual analog pain assessment (VAS) and SF12 was recorded. Results thus obtained were subjected to statistical analysis; P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

Groups	Group I	Group II
Method	Mini open	Arthroscopic repair
M:F	20:17	18:19

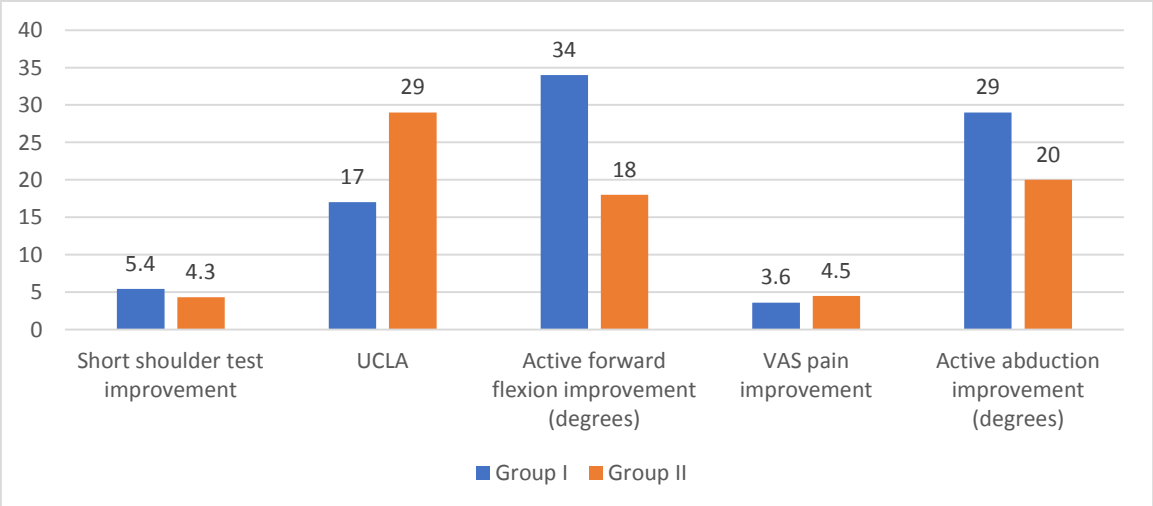
Table I shows that group I had 20 males and 17 females and group II had 18 males and 19 females.

Table II Comparison of parameters

Parameters	Group I	Group II	P value
Short shoulder test improvement	5.4	4.3	0.05
UCLA	17	29	0.04
Active forward flexion improvement (degrees)	34	18	0.02
VAS pain improvement	3.6	4.5	0.04
Active abduction improvement (degrees)	29	20	0.17

Table II, graph I shows that mean short shoulder test improvement was 5.4 in group I and 4.3 in group II, UCLA in group I was 17 and in group II was 29, active forward flexion improvement was 34 degrees in group I and 18 degrees in group II, VAS pain improvement was 3.6 in group I and 4.5 in group II and active abduction improvement was 29degrees in group I and 20 degrees in group II. The difference was significant (P< 0.05).

Graph I Comparison of parameters



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Discussion

Shoulder pain has a high prevalence in the population, ranging from 7 to 26%.[9] Rotator cuff conditions, the main cause of pain in the shoulder girdle, affect 20% of the general population and up to 50% of patients over 80 years.[10,11]Arthroscopic technique is a less invasive approach causing less injury to the deltoid muscle, which may prove advantageous for postoperative rehabilitation and outcome.[12,13] However, arthroscopic repair of the rotator cuff is technically difficult, and surgeons may not be able to achieve a successful repair using arthroscopic techniques.[14,15]The present study compared mini-open repair versus a completely arthroscopic technique for rotator cuff tears.

We found that group I had 20 males and 17 females and group II had 18 males and 19 females. Kim et al[16]compared the outcomes of arthroscopic repair of medium and large rotator cuff tears with the outcomes for mini-open repair of similar tears in which arthroscopic repair was technically unsuccessful. There were 39 men and 37 women, with a mean age of 56 years (range, 42 to 75 years). At a mean follow-up of 39 months (range, 24 to 64 months), the results of both groups were compared using the University of California Los Angeles and American Shoulder and Elbow Surgeons shoulder rating scales. Shoulder scores improved in all ratings in both groups. Overall, 66 patients showed excellent or good and 10 patients showed fair or poor scores by the University of California Los Angeles scale. Seventy-two patients satisfactorily returned to previous activity, and 4 showed unsatisfactory returns. The range of motion, strength, and patient satisfaction were improved postoperatively. No differences were seen in shoulder scores, pain, and activity return between the arthroscopic and mini-open salvage groups. However, patients with larger tears showed lower shoulder scores and less predictable recovery of strength and function. Postoperative pain was not different with respect to the size of the tear.

We found that mean short shoulder test improvement was 5.4 in group I and 4.3 in group II, UCLA in group I was 17and in group II was 29, active forward flexion improvement was 34degrees in group I and 18 degrees in group II, VAS pain improvement was 3.6 in group I and 4.5 in group II and active abduction improvement was 29 degrees in group I and 20 degrees in group II.Tauro[17]reported that patients who underwent arthroscopic repairs had less scarring and shorter hospital stays. He reported less postoperative pain and earlier rehabilitation compared with open repairs.

Pearsall et al[18]compared mini-open repair and completely arthroscopic technique in fifty-two patients. There were 31 females and 21 males. The average follow-up was 50.6 months. The average age was similar between the two groups. Twenty-seven patients underwent arthroscopic repair and 25 underwent repair with a mini-open incision. The average rotator cuff tear size was 3.1 cm. There was no significant difference in tear size between the two groups (arthroscopic group = 2.9 cm/mini-open group = 3.2 cm, $p = 0.3$). Overall, there was a significant improvement from pre-operative status in shoulder pain, shoulder function as measured on the Simple Shoulder test and UCLA Shoulder Form. Visual analog pain improved, on average, 4.4 points and the most recent Short Shoulder Form and UCLA scores were 8 and 26 respectively. Both active and passive glenohumeral joint range of motion improved significantly from pre-operatively.

Conclusion

Authors found that both mini-open repair versus a completely arthroscopic technique found to be equally effective in management of rotator cuff injury cases.

References

1. Pai VS, Lawson DA: Rotator cuff repair in a district hospital setting: outcomes and analysis of prognostic factors. J Shoulder Elbow Surg 2001; 10(3):236-241.

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2. Watson EM, Sonnabend DH: Outcome of rotator cuff repair. J Shoulder Elbow Surg 2002; 11(3):201-211.
3. Levy HJ, Uribe JW, Delaney LG: Arthroscopic assisted rotator cuff repair: preliminary results. Arthroscopy 1990; 6(1):55-60.
4. Ellman H, Hanker G, Bayer M: Repair of the rotator cuff. Endresult study of factors influencing reconstruction. J Bone Joint Surg Am 1986; 68(8):1136-1144.
5. Hawkins RJ, Misamore GW, Hobeika PE: Surgery for full-thickness rotator-cuff tears. J Bone Joint Surg Am 1985; 67(9):1349-1355.
6. Misamore GW, Ziegler DW, Rushton JL: Repair of the rotator cuff. A comparison of results in two populations of patients. J Bone Joint Surg Am 1995; 77(9):1335-1339.
7. Hawkins RJ, Morin WD, Bonutti PM: Surgical treatment of fullthickness rotator cuff tears in patients 40 years of age or younger. J Shoulder Elbow Surg 1999; 8(3):259-265.
8. Grondel RJ, Savoie FH, Field LD: Rotator cuff repairs in patients 62 years of age or older. J Shoulder Elbow Surg 2001; 10(2):97-99.
9. Liu SH, Baker CL: Arthroscopically assisted rotator cuff repair: correlation of functional results with integrity of the cuff. Arthroscopy 1994; 10(1):54-60.
10. Paulos LE, Kody MH: Arthroscopically enhanced "miniapproach" to rotator cuff repair. Am J Sports Med 1994; 22(1):19-25.
11. Park JY, Levine WN, Marra G, Pollock RG, Flatow EL, Bigliani LU: Portal-extension approach for the repair of small and medium rotator cuff tears. Am J Sports Med 2000; 28(3):312-316.
12. Posada A, Uribe JW, Hechtman KS, Tjin-A-Tsoi EW, Zvijac JE: Mini deltoid splitting rotator cuff repair: do results deteriorate with time? Arthroscopy 2000; 16(2):137-141.
13. Severud EL, Ruotolo C, Abbott DD, et al. All-arthroscopic versus mini-open rotator cuff repair: a long-term retrospective outcome comparison. Arthroscopy 2003;19:234–8.
14. 16. 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;19:746–54.
15. Tauro JC. Arthroscopic rotator cuff repair: Analysis of technique and results at 2- to 3-year follow-up. Arthroscopy 1998; 14:45-541.
16. Pearsall AW, Ibrahim KA, Madanagopal SG. The results of arthroscopic versus mini-open repair for rotator cuff tears at mid-term follow-up. Journal of orthopaedic surgery and research. 2007 Dec;2(1):1-8.