

A Comparative Study of Arthroscopic Repair versus Open Surgical Techniques for the Management of Recurrent Anterior Shoulder Instability

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Abstract

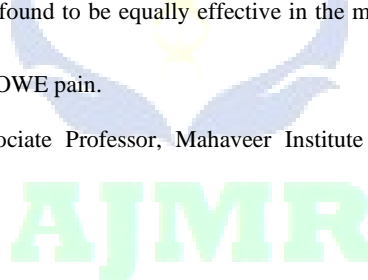
Background: To compare arthroscopic repair versus open surgical techniques for the management of recurrent anterior shoulder instability. **Subjects and Methods:** Fifty- eight patients with recurrent anterior shoulder instability of either gender were divided into 2 groups of 29 each. Group I comprised of patients managed with arthroscopic method and group II with open surgery. Modified Rowe score, ASES (American Shoulder and Elbow Society) score were recorded. **Results:** Group I had 15 males and 14 females and group II had 13 males and 16 females. The mean ROWE pain score at 4 weeks was 3.1 and 3.6 in group I and II respectively. The mean ROWE pain score at 4 weeks was 3.1 and 3.6 in group I and II respectively, at 6 weeks was 5.2 and 5.0 in group I and II respectively, at 9 weeks was 10.7 and 5.2 in group I and II respectively and at 12 weeks was 10.0 and 9.4 in group I and II respectively. The difference was non- significant ($P > 0.05$). The mean ASES pain score at 4 weeks was 2.9 and 1.4 in group I and II respectively, at 6 weeks was 4.6 and 2.3 in group I and II respectively, at 9 weeks was 2.9 and 2.1 in group I and II respectively and at 12 weeks was 3.7 and 3.2 in group I and II respectively. The difference was non-significant ($P > 0.05$). **Conclusion:** Both techniques found to be equally effective in the management of cases of recurrent anterior shoulder instability.

Keywords: shoulder instability, ASES pain score, ROWE pain.

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Introduction

The shoulder is a ball and socket joint made up of the humeral head (ball) from the upper arm, and the glenoid (socket) from the shoulder blade (scapula). Dislocation occurs when the ball is wrenched out of its socket. Shoulder instability in the pediatric population covers a spectrum of pathology including anterior, posterior, and multidirectional instability. Anterior instability represents the vast majority of shoulder instability in this population, and 19% of all anterior shoulder dislocations occur in patients between the ages of 15 and 19 years.^[1] In patients age 18 and younger, males and patients greater than 14 years of age have the greatest risk of recurrent shoulder instability, while patients with open physes are less likely to see a recurrence. Estimates of recurrence in the older adolescents with conservative management are as high as 92%.^[2]

The shoulder can become dislocated during any significant injury where the force is great enough to overcome the stabilising structures of the shoulder joint. This can be from a fall, on the sporting field, or during a car accident. Occasionally it can occur with minimal force in someone with inherently lax joints. Recurrent shoulder dislocation is

defined as more than or equal to three documented dislocations in a year.^[3] Surgical shoulder stabilization has been shown to reduce the risk of recurrence with some authors recommending intervention even after a single dislocation, though this remains controversial. Despite lower reported recurrent anterior instability with operative treatment, recurrence after primary stabilization surgery remains high in adolescents.^[4] Considering this, the present study compared arthroscopic repair versus open surgical techniques for the management of recurrent anterior shoulder instability.

Subjects and Methods

We selected fifty- eight patients with recurrent anterior shoulder instability of either gender after considering the utility of the study and obtaining approval from ethical review committee of the institute. All selected patients agreed to participate with their written consent.

Demographic data of each patient was recorded. All patients were divided into 2 groups of 29 each. Group I comprised of patients managed with arthroscopic method and group II with open surgery. Modified Rowe score and ASES

(American Shoulder and Elbow Society) score were recorded. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

Results

Table I Patients distribution

Groups	Group I	Group II
Method	Arthroscopic method	Open surgery
M:F	15:14	13:16

Group I had 15 males and 14 females and group II had 13 males and 16 females (Table I).

Table II Assessment of ROWE pain score

Duration (Weeks)	Group I	Group II	P value
4	3.1	3.6	0.94
6	5.2	5.0	0.91
9	10.7	5.2	0.03
12	10.0	9.4	0.67

The mean ROWE pain score at 4 weeks was 3.1 and 3.6 in group I and II respectively, at 6 weeks was 5.2 and 5.0 in group I and II respectively, at 9 weeks was 10.7 and 5.2 in group I and II respectively and at 12 weeks was 10.0 and 9.4 in group I and II respectively. The difference was non-significant ($P > 0.05$) (Table II).

Table III Assessment of ASES pain score

Duration (Weeks)	Group I	Group II	P value
4	2.9	1.4	0.02
6	4.6	2.3	0.05
9	2.9	2.1	0.95
12	3.7	3.2	0.87

The mean ASES pain score at 4 weeks was 2.9 and 1.4 in group I and II respectively, at 6 weeks was 4.6 and 2.3 in group I and II respectively, at 9 weeks was 2.9 and 2.1 in group I and II respectively and at 12 weeks was 3.7 and 3.2 in group I and II respectively. The difference was non-significant ($P > 0.05$) (Table III).

Discussion

Successful treatment of anterior instability of the shoulder requires a balance between restoring joint stability and minimizing loss of glenohumeral motion. The choice of treatment should be individualized on the basis of the patient's occupation and level of participation in sports, as well as on the degree of instability of the shoulder.^[5]

A variety of promising arthroscopic techniques have been developed for the treatment of anterior shoulder instability; however, open stabilization remains the standard, especially for severe instabilities, revision procedures, and for athletes who participate in contact sports.^[6] Regardless of which procedure is chosen by a surgeon, the treatment should follow the guidelines taught by Rowe: anatomic dissection at the time of surgery, identification and repair of the

lesions responsible for the instability, returning tissues to their anatomic locations, and early postoperative range of motion.^[8] The present study compared arthroscopic repair versus open surgical techniques for the management of recurrent anterior shoulder instability.

Our results revealed that group I had 15 males and 14 females and group II had 13 males and 16 females. Pagnani et al^[9] in their study fifty-eight football players underwent open stabilization with use of a standardized technique for the treatment of recurrent anterior shoulder instability. Forty-seven patients had recurrent dislocations, and the remaining eleven had recurrent subluxations. The average age of the patients was 18.2 years, and the average duration of follow-up was thirty-seven months. Patients were evaluated according to the shoulder scoring system of the American Shoulder and Elbow Surgeons and with use of the shoulder instability score. There were no postoperative dislocations. Postoperative subluxation occurred in two patients, neither of whom had a dislocation prior to the operation. Forward flexion and external rotation returned to within 5 of those of the contralateral shoulder in forty-nine patients. The average score according to the system of the American Shoulder and Elbow Surgeons was 97.0 points, and the average Rowe and Zarins score was 93.6 points. Fifty-five patients had a good or excellent result, and fifty-two of the fifty-eight returned to playing football for at least one year. One patient was forced to stop playing because of recurrent instability.

We found that the mean ROWE pain score at 4 weeks was 3.1 and 3.6 in group I and II respectively. The mean ROWE pain score at 4 weeks was 3.1 and 3.6 in group I and II respectively, at 6 weeks was 5.2 and 5.0 in group I and II respectively, at 9 weeks was 10.7 and 5.2 in group I and II respectively and at 12 weeks was 10.0 and 9.4 in group I and II respectively. Kralinger et al^[10] noted that age between twenty- one and thirty years was at risk factor for recurrence in a retrospective series of 180 patients.

The mean ASES pain score at 4 weeks was 2.9 and 1.4 in group I and II respectively, at 6 weeks was 4.6 and 2.3 in group I and II respectively, at 9 weeks was 2.9 and 2.1 in group I and II respectively and at 12 weeks was 3.7 and 3.2 in group I and II respectively. Lenters et al^[11] found that arthroscopic repairs were associated with significantly higher risks of recurrent instability, recurrent dislocation and a reoperation. When considered alone, arthroscopic suture anchor techniques were associated with significantly higher risks of recurrent instability and recurrent dislocation than were open methods. Arthroscopic approaches were also less effective than open methods with regard to enabling patients to return to work and/or sports. On the other hand, analysis of the randomized clinical trials indicated that arthroscopic repairs were associated with higher Rowe scores than were open methods. Similarly, analysis of the arthroscopic suture anchor techniques alone showed the Rowe scores to be higher than those associated with open methods.

Conclusion

Both techniques found to be equally effective in the management of cases of recurrent anterior shoulder instability.

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