

EVALUATION OF THE RESULTS FROM ARTHROSCOPIC REPAIR ON ROTATOR CUFF INJURIES AMONG PATIENTS UNDER 50 YEARS OF AGE

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ABSTRACT

Objective: To assess the results from arthroscopic surgical treatment of rotator cuff injuries among patients under 50 years of age. **Methods:** Sixty-three patients with rotator cuff injuries who underwent arthroscopic surgical treatment performed by the Shoulder and Elbow Group of the Department of Orthopedics and Traumatology, in the Fernandinho Simonsen wing of Santa Casa Medical School, São Paulo, between August 1998 and December 2007, were reassessed. The study included all patients with rotator cuff injuries who were under 50 years of age and had been followed up postoperatively for at least 24 months.

Results: According to the UCLA evaluation criteria, 59 patients (92%) showed excellent and good results; five (8%) showed fair results; and none showed poor results. The postoperative evaluation showed that the mean range of motion was 145° for elevation, 47° for lateral rotation and T10 for medial rotation. Unsatisfactory results were associated with prolonged duration of the injury, with a statistically significant relationship. **Conclusion:** Arthroscopic repair of rotator cuff injuries in young patients produces excellent or good results for most patients.

Keywords – Rotator Cuff; Arthroscopy; Evaluation Studies

INTRODUCTION

Rotator cuff injuries are common in orthopedic practice, with prevalence ranging from 5 to 33% of the population⁽¹⁻⁴⁾. Little information is available in the literature on this type of injury when it occurs in patients under the age of 50 years^(5,6). Hawkins et al⁽⁷⁾ demonstrated that out of 100 surgically treated patients within this age group, only two presented a complete rotator cuff tear.

While the population over the age of 50 years is

more commonly affected and tends to present larger injuries because of tendon degeneration, the young population (under the age of 50 years) has lesions that are predominantly of traumatic etiology^(1,5,6,8).

With regard to healing, younger patients tend to evolve more satisfactorily, although there is still no evidence in the literature to sustain this affirmation⁽⁵⁾.

Very few scientific articles have documented the clinical results from arthroscopically treated rotator cuff injuries in young patients who make high func-

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tional demands (both professional and sporting)^(9,10). Some authors have demonstrated satisfactory long-term clinical results in patients aged up to 50 years who were operated to treat rotator cuff injuries^(5,7,11-14).

The aim of this study was to assess the clinical results obtained from arthroscopic treatment of rotator cuff injuries in patients aged up to 50 years.

Sample and Methods

Between August 1998 and December 2007, 89 patients with rotator cuff injuries underwent arthroscopic surgical treatment performed by the Shoulder and Elbow Group of the Department of Orthopedics and Traumatology, School of Medical Sciences, Santa Casa de Paulo, “Fernandinho Simonsen” Wing. Out of this total, 63 patients were reassessed, since 26 were lost because they did not fulfill the minimum criteria for the postoperative follow-up. The inclusion criteria taken for this study were that the subjects should be patients aged up to 50 years who were operated due to complete rotator cuff tears and were followed up postoperatively for at least two years. The exclusion criteria were that these patients should not present a partial tear; or a complete tear with age greater than 50 years; or a postoperative time of less than two years.

There were 36 male patients (57.1%) and 27 females (42.8%). The mean age was 44.8 years, with a range from 32 to 50 years. The duration of pain before the operation ranged from one to 192 months, with a mean of 21 months. The dominant side was affected in 55 cases (87.3%), and two cases were bilateral (cases 3 and 7). Among the injuries, 23 (36.5%) resulted from trauma or high physical demand on the shoulder affected. There were also 23 patients (36.5%) who practiced sports in which they used their arms, and of these, nine (39.1%) presented associated traumatic etiology (Table 1).

In relation to the initial size of the lesion, according to the classification of Hawkins et al⁽⁷⁾, 22 were small (33.8%), 33 were medium (50.7%) and ten were large (15.5%). No cases of extensive lesions were observed (Figure 1).

All the patients underwent the surgical procedure in the “deckchair” position, under general anesthesia associated with anesthetic block of the brachial plexus. Arthroscopic inspection of the joint was per-

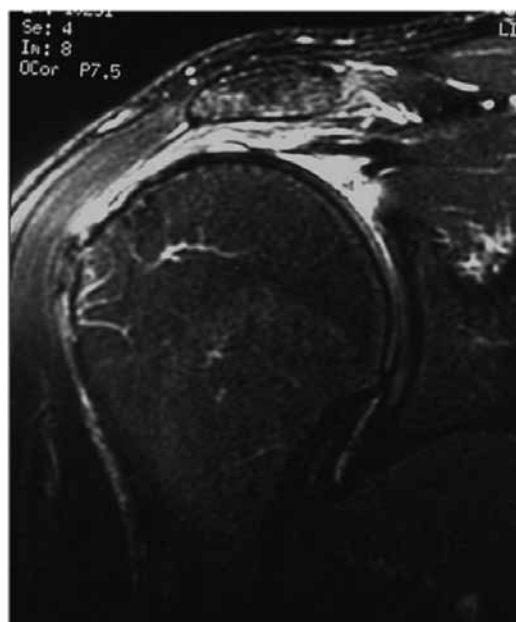


Figure 1 – T2 magnetic resonance image of right shoulder in coronal slice, showing large lesion in the supraspinatus tendon.

med before repairing the cuff. The subacromial space was then opened, and bursal debridement, tendon mobilization and bleeding of the bone bed of the humeral head were performed. Resection of the lateral portion of the clavicle, tenotomy and tenodesis of the long head of the biceps were performed as associated procedures, as necessary (Table 1). Acromioplasty was performed on all the patients. The suturing was done as a single row using between one and four anchors (mean of 1.5). None of the cases were sutured in a double row (Figures 2 and 3).

The mean duration of postoperative immobilization, using a functional sling, was seven weeks, with a range from four to twelve weeks.

During the postoperative period, the patients were reassessed clinically using the method of the University of California at Los Angeles (UCLA)⁽¹⁵⁾. Joint mobility was assessed using the parameters described by Hawkins and Bokos⁽⁸⁾.

For the statistical analysis, version 17.0 of the SPSS software (Statistical Package for the Social Sciences) was used to obtain the results, and an interval of 95% was considered statistically significant ($p < 0.005$). The Mann-Whitney test was applied to the trauma variables and UCLA score; Spearman's correlation analysis, to the duration of symptoms and UCLA score; and the Kruskal-Wallis test to lesions size and UCLA score.

Table 1 – Demographic data, procedures performed and results.

Pat	Sex	Dom	Sp	Tr	AL	MUM	TB	ΔT	Siz	Δtt	UCLA	COMPLIC
1	F	+		+	+	+		8	G	36	23	torn again
2	F	+						12	M	24	33	
3	F	+		+				2	P	124	35	
3	F							24	P	93	33	
4	F	+			+	+		24	M	39	21	torn again
5	F			+	+	+		12	M	86	35	
6	F	+						11	M	80	33	
7	F	+			+	+		60	P	71	31	
7	F	+			+	+		48	P	36	33	
8	M	+		+	+			26	G	25	35	
9	F			+	+			24	G	42	35	
10	F	+			+	+		42	M	31	29	
11	M	+		+				24	G	28	23	torn again
12	F	+		+				24	P	28	22	joint stiffness
13	F							36	P	24	29	
14	M	+						11	G	24	27	torn again
15	M	+	+					192	P	22	35	
16	F	+						6	M	39	33	
17	M	+						12	M	52	35	
18	M	+	+	+	+			2	P	24	35	
19	M	+	+					2	M	65	35	
20	M	+		+				1	P	24	35	
21	M	+						6	M	82	35	
22	F	+			+	+		24	P	90	35	
23	M	+		+				1	M	115	35	
24	M	+		+				1	P	49	35	
25	M	+		+	+			1	P	79	35	
26	M	+		+				2	M	33	35	
27	M	+		+	+			1	M	60	33	
28	F	+	+		+	+		6	M	54	35	
29	M		+	+	+			2	P	56	35	
30	M		+	+				1	G	48	35	
31	F	+	+					5	M	47	35	
32	M	+	+					2	M	46	35	
33	M	+						13	M	44	35	
34	M	+	+		+			12	P	46	32	
35	M		+		+		+	1	M	24	35	
36	M	+	+		+		+	84	M	40	35	
37	F	+	+					12	M	24	35	
38	F	+	+		+	+		12	M	35	35	
39	F	+			+			6	P	26	35	
40	M			+	+			1,5	M	25	35	
41	M	+	+		+			48	M	24	35	
42	M	+	+		+	+		6	M	60	35	
43	F	+	+					24	M	81	35	
44	F	+						3	M	32	35	
45	M	+	+	+				1	G	122	35	
46	M	+	+	+				5	M	25	35	
47	F	+			+	+		24	P	28	33	
48	M	+	+					4	P	103	35	
49	F	+	+					5	M	101	35	
50	M	+	+	+				1	G	104	35	
51	F		+		+	+		6	P	93	33	
52	F	+	+					6	G	102	35	
53	M	+	+		+	+		6	G	106	35	
54	M	+	+	+				24	M	92	35	
55	M	+	+		+			60	M	84	29	
56	M	+	+	+				180	P	61	35	
57	M	+	+		+	+		2	M	90	35	
58	M	+	+	+	+			3	P	82	33	
59	M	+			+	+	+	36	P	45	32	
60	M	+	+					12	P	80	35	
61	F							24	M	78	35	
62	M	+	+		+			5	M	76	35	
63	M	+	+		+			96	M	65	35	

Source: Medical files of DOT-SCMSP.

Legend: Pat- patient number; Sex (F- female and M- male); Dom- dominance; Sp- sport; Tr- trauma; AL- associated lesion; ACP- acromioplasty; MUM- Mumford; TB- tenodesis of the biceps; ΔT- duration of symptoms in months before the operation; Siz- size of the lesion (L- large; M- medium; S- small); Δtt- length of postoperative follow-up in months; Complic- complication.



Figure 2 – Arthroscopic image (posterior portal) of rotator cuff injury to the right shoulder.



Figure 3 – Arthroscopic image (posterior portal) after suturing of the rotator cuff injury to the right shoulder.

RESULTS

From analysis on the results from the 63 patients who were operated, we found that the mean UCLA score was 33.3 points (range: 21 to 35). The results were considered excellent in 71.4% of the cases and good in 20.6% (Table 1). The results were unsatisfactory in 8% (five cases), which were classified as fair (Table 1).

The mean range of motion in the postoperative evaluation was 145° for elevation, ranging from 80° to 160°; 47° for lateral rotation, ranging from 35° to 60°; and T10 for medial rotation, ranging from L3 to

T5. The mean length of follow-up after the operation was 58 months, ranging from 24 to 124 months.

The statistical analysis did not show any statistically significant correlation between lesion size and the presence of trauma, in comparison with the results ($p > 0.050$). On the other hand, the duration of the symptoms had a statistically significant relationship ($p = 0.003$) with the results, given that the greater the time elapsed between the injury and the surgery, the worse the results were.

From evaluating our unsatisfactory results, five cases (8%) presented a fair UCLA score. Of these, four cases presented new symptomatic tears, proven using magnetic resonance (cases 1, 4, 11 and 14); and one case presented mobility limitations and significant symptoms (case 12).

DISCUSSION

Complete tearing of the rotator cuff in patients in their first five decades of life is rare, although it has already been described by some authors^(5,11,16). Anatomical studies on cadavers have shown that degeneration of the rotator cuff is a normal process of human aging^(11,17-19). However, the etiological factors involved in rotator cuff injuries in young patients differ from those in elderly individuals^(18,21). While impact syndrome and tendon degeneration predominate in elderly individuals, young individuals show associations with traumatic mechanisms, especially glenohumeral dislocation⁽¹¹⁾.

Rotator cuff injuries resulting from a single episode of trauma are rare. Cofield et al⁽²¹⁾ found that the incidence of an acute traumatic event was 8% in a series of 510 patients who were treated surgically for rotator cuff injuries. However, in our study, 23 patients (36.5%) reported that the start of symptoms in the shoulder was associated with traumatic etiology.

Imaging studies using magnetic resonance have shown rates of new tears following arthroscopic repair that range from 31 to 94%, and most cases have been asymptomatic⁽²²⁻²⁴⁾. In the present sample, we found new tears in four cases (6.5%), which were symptomatic and proven through imaging examinations.

Among these four cases of symptomatic new tears, the primary lesion was large in three cases and medium-sized in one case. Only two of the cases were

associated with an initial traumatic mechanism (cases 1 and 11). The fifth case of dissatisfaction (case 12) consisted of limitations to mobility that were observed during the postoperative follow-up. We believe that the prolonged duration of symptoms in this case may have caused the unfavorable result.

CONCLUSION

Arthroscopic treatment of rotator cuff injuries in patients aged up to 50 years gave rise to a rate of excellent and good results of 92%, when assessed using the UCLA functional method.

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