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Functional Outcome of Arthroscopic Repair of Full Thickness Rotator Cuff Tear

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Abstract: *The treatment of rotator cuff tears has evolved from an open procedure to an arthroscopic-assisted (mini-open) technique to an all-arthroscopic technique. With advances in arthroscopic techniques, complete rthroscopic repairs has become the standard of treatment. The potential advantages of this procedure include less pain, more rapid rehabilitation, the ability to treat intra-articular lesions, smaller skin incisions and an extremely low risk of deltoid detachment. Purpose of the study is to evaluate the functional outcome of arthroscopic repair of full thickness rotator cuff tears*

Materials and methods.Patients undergoing arthroscopic rotator cuff repair at Lourdes hospital from January 2008 to September 2009 were taken for the study. We performed a prospective study of full thickness rotator cuff repairs performed by a single shoulder trained surgeon, starting with his first repair. Patients between age between 30 – 75 years and only complete tears were included in the study. All patients had preoperative and postoperative functional assessment with the modified University of California, Los Angeles (UCLA), shoulder score. Repairs were performed with single row or double row repair techniques with concomitant subacromial decompression and acromioplasty that were consistent and unchanged in the surgeon's practice throughout the period of this study. Modified UCLA scores were recorded preoperatively, postoperatively 6 months and 12 months. 107 patients who satisfied our inclusion criteria were included in this study.

Results .93.5 % patients had good and excellent results based on UCLA scores and none of the patients had poor results. We got a mean UCLA score of 31.77. Two patients had superficial wound infection and three patients developed reflex sympathetic dystrophy and improved after physiotherapy at 6 months.

Conclusion.Arthroscopic rotator cuff repair can be recommended as the procedure fully comparable with the open technique. It gives the possibility to diagnose and treat all shoulder pathologies at one stage. Arthroscopic rotator cuff repair can achieve good and excellent results in a large percentage of patients. Results of arthroscopic rotator cuff repair are independent of tear size.

Keywords: *rotator cuff, ucla score, double row and single row*

I. Introduction

Rotator cuff pathology is one of the most common conditions affecting the shoulder. Anatomic studies detailing rotator cuff tears in cadavers have noted a prevalence ranging from 17% to 72%[1-4]. Traditional treatment of full thickness tears of the rotator cuff has consisted of open surgical repair[5-7]. Reported satisfactory outcomes for open repair have ranged from 70% to 95%[8-16] .Although the effectiveness of open rotator cuff repair is well established, significant pain and morbidity can be associated with the procedure. A significant limitation to rehabilitation after open repair is pain associated with reattachment of the deltoid to the acromion. early postoperative pain, deltoid weakness, and arthrofibrosis[17-19]. More recently, reports have described the evolution of rotator cuff repair to help minimize deltoid trauma and expedite post-operative rehabilitation. The treatment of rotator cuff tears has evolved from an open procedure to an arthroscopic-assisted (mini-open) technique to an all-arthroscopic technique. Mini-open repairs were developed because they had the potential advantage of less deltoid morbidity, and they have demonstrated results that have been similar to those of open repairs[20-25]. Good results have been reported with arthroscopically-assisted "mini-open" (< 3 cm incision) repair, as well as completely arthroscopic techniques. With advances in arthroscopic techniques, complete arthroscopic repairs has become the standard of treatment. The potential advantages of this procedure include less pain, more rapid rehabilitation, the ability to treat intra-articular lesions, smaller skin incisions and an extremely low risk of deltoid detachment[26-32]. In the short and long term, the arthroscopic approach has shown promising results. Purpose of the study is to evaluate the functional outcome of arthroscopic repair of full thickness rotator cuff tears

II. Materials And Methods

Patients undergoing arthroscopic rotator cuff repair at Lourdes hospital from January 2008 to September 2009 were taken for the study. We performed a prospective study of full thickness rotator cuff repairs performed by a single shoulder trained surgeon, starting with his first repair. Patients between age between 30 – 75 years and only complete tears were included in the study

Patients with previous shoulder surgery, associated fractures of same limb, partial thickness rotator cuff tear, irreparable tears, revision surgery and additional procedures such as biceps tenodesis, repair of a SLAP tear, stabilization for instability, and distal clavicular resection were excluded from the study. Patients who were lost to follow up before 12 months from date of surgery were also excluded.
All patients had preoperative and postoperative functional assessment with the modified University of California, Los Angeles (UCLA), shoulder score.

Pain	Present all of the time and unbearable, strong medication frequently	1
	Present all the time but bearable, strong medication occasionally	2
	None or little at rest, present during light activities; salicylates frequently	4
	Present during heavy or particular activities only; salicylates occasionally	6
	Occasional and slight	8
	None	10
Function	Unable to use limb	1
	Only light activities possible	2
	Able to do light housework or most activities of daily living	4
	Most housework, shopping, and driving possible; able to do hair and dress and undress, including fastening brassiere	6
	Slight restriction only; able to work above shoulder level	8
	Normal activities	10
Active forward flexion	150° or more	5
	120- 150°	4
	90 - 120°	3
	45 - 90°	2
	30-45°	1
	<30°	0
Strength of forward flexion (manual muscle-testing)	Grade 5 (normal)	5
	Grade 4 (good)	4
	Grade 3 (fair)	3
	Grade 2 (poor)	2
	Grade 1 (muscle contr.)	1
	Grade 0 (nothing)	0
Satisfaction of the patient	Satisfied and better	5
	Not satisfied and worse	0

Large rotator cuff tears were initially noted on ultrasonography and confirmed on arthroscopic examination.MRI were done only on chronic tears to know fatty infiltration. All patients underwent arthroscopic rotator cuff repair in the beach-chair position. Repairs were performed with single row or double row repair techniques with concomitant subacromial decompression and acromioplasty that were consistent and unchanged in the surgeon's practice throughout the period of this study. All patients underwent the same postoperative rehabilitation protocol with clinical follow-up visits at 1 week, 4weeks, 6 weeks, once in two weeks there after till 3 months, 6 months, and 1 year and then yearly thereafter or sooner if indicated. If the patient had regained satisfactory improvement at 6 months, he or she was given the option to return at 1 year or undergo follow-up as needed. At each time point, the previously listed data were prospectively gathered. Modified UCLA scores were recorded preoperatively, postoperatively 6 months and 12 months 154 arthroscopic rotator cuff repair surgeries were done during the study period. 107 patients who satisfied our inclusion criteria were included in this study. All small- and medium-sized tears were repaired with a single-row technique, whereas a double-row technique was used for large and massive tears.

Operative technique

After appropriate anesthesia was obtained (general anesthesia with interscalene block), the patient was placed in the seated beachchair position. A standard posterior-superior arthroscopic portal and an anterior-superior instrumentation portal were established.one or two lateral portals may also be used. Systematic examination of the glenohumeral joint was conducted. The arthroscope was removed from the glenohumeral joint and placed into the subacromial space. Subacromial bursectomy was performed outlining the confines of the acromion. The coracoacromial ligament was released but not resected. Acromioplasty was performed, using burr in selected patients. Attention was then turned to the rotator cuff. The margin of the rotator cuff was

debrided back to a healthy tendon stump. The mobility of the rotator cuff was assessed. The footprint of the greater tuberosity was lightly decorticated. Smith and Nephew or Stryker titanium fully threaded 5.5-mm suture anchors were placed along the footprint of the greater tuberosity. Sutures were shuttled through the rotator cuff in standard fashion, from posterior to anterior. Sutures were retrieved out of a working cannula and sequentially tied, reapproximating the rotator cuff. We then performed a double-row suture bridge technique using Smith and Nephew foot print. We shuttled sutures through the eyelet of the anchor(s) and impacted them into bone in standard fashion. This reapproximated the footprint. Patient is discharged on the next day with a shoulder immobilizer to prevent abduction and external rotation. Sutures are removed after 1 week. Pendulum movements are started 4 weeks after surgery. At 6 weeks physiotherapy is started with full passive range of motion assisted active range of motion and followed up every week by a trained physiotherapist. Abduction exercises are continued for 3 to 4 months depending on the progress of shoulder range of motion..

Image1 1

Image 2

Image 3

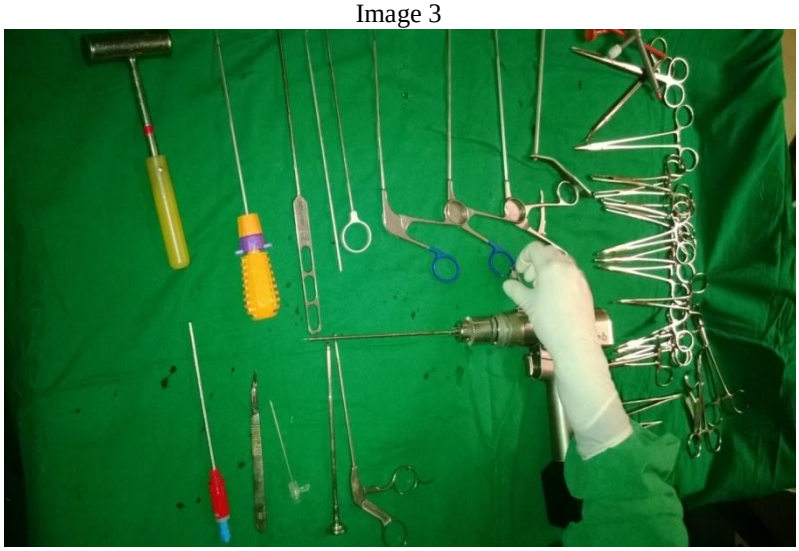


Image 4

Image 5

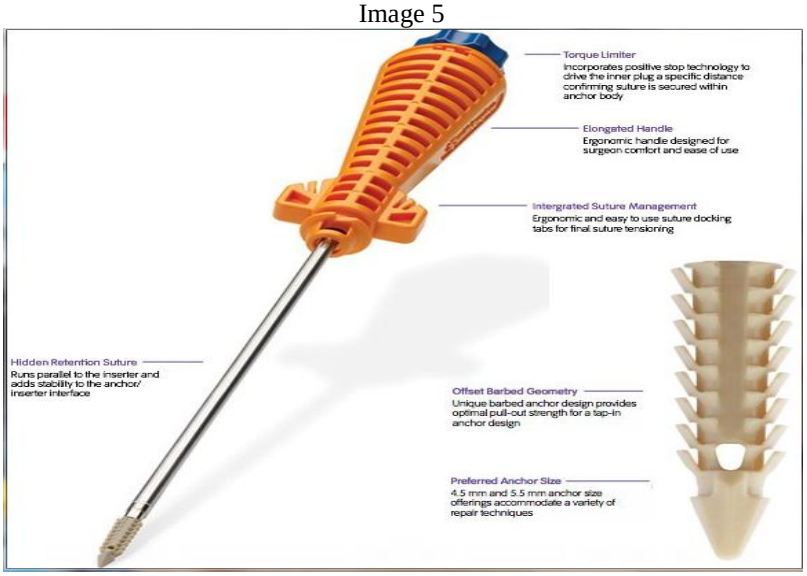
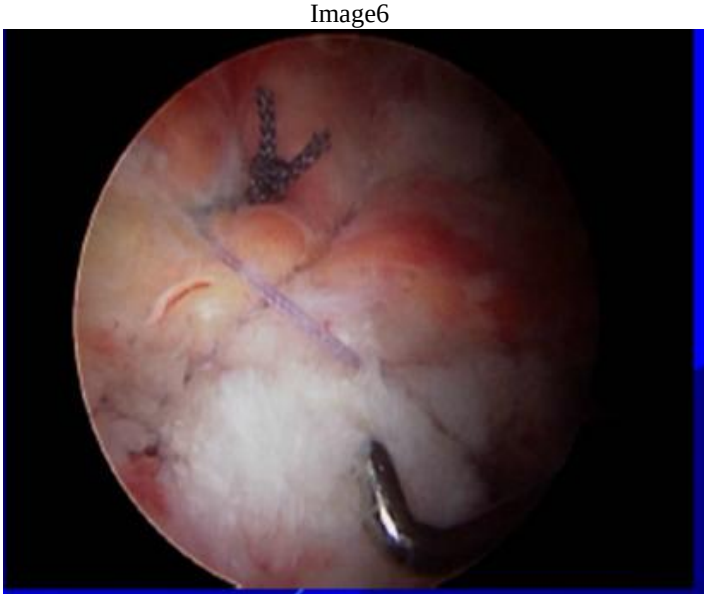


Image6



III. Statistical Analysis

This study deals with testing that if there is any significant difference in meanMUS0T, MUS6T and MUS12T. ANOVA test is used for this test.Paired T test is used for comparing MUS6T and MUS12T. One sample t test is used to test if the mean MUS12T is significantly equal to 35 or not. It is also tested if there is any significant difference in mean MUS6T and MUS12T among different age groups, timing of surgery. One-way ANOVA is used for this test. If any significant difference exists in mean MUS6T and MUS12T among different sex, mechanism of injury, S/D is studied using independent sample t-test. In all the analysis significance level is taken to be 0.05 (i.e., if the p-value is less than 0.05, reject the null hypothesis or it can be concluded that the null hypothesis is statistically significant). Statistical Analysis was carried out using statistical package,SPSS

IV. Results

Our study included 107 patients. Mean age of patients in our study was and mean time period of surgery after symptoms arise was There were 52 males and 55 females in our study.

Mean Ucla Score Preoperative And Postoperative

On comparing mean UCLA scores preoperatively and postoperatively there is a significant difference

	Value	F	Hypothesis df	Error df	Sig.
Wilks' Lambda	.020	2527.359	2.000	105.000	.000

Table 1: Multivariate Tests preoperative and postoperative ucla scores

From the above table it can be observed that there is statistically significant difference in mean MUS0T, mean MUS6T and mean MUS12T (Wilk'sLamda = .020, F (2, 105) = 2527.359, p-value = .000).

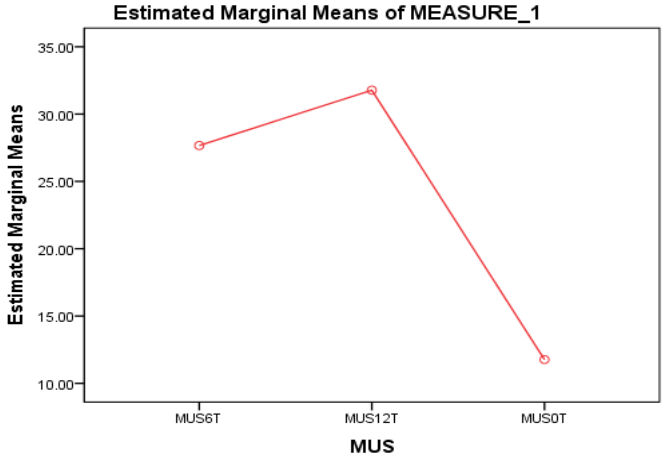


Figure 1: Means Plot of ucla scores at preoperative and postoperative 6 and 12 months

From the above plot it can be observed that mean total UCLA score is increased significantly after surgery and also that the mean UCLA score at twelve months had shown significant difference with score of six months postoperative**.**

It is tested if there is any mean difference in MUS6T and MUS12T. Paired t-test is used for this analysis. The null hypothesis is the mean difference in MUS6T and MUS12T is zero.

	Mean	N	Std. Deviation	Std. Error Mean
MUS6T	27.6636	107	2.24425	.21696
MUS12T	31.7757	107	2.34041	.22626

Table 2: Descriptive Statistics mean ucla at 6 months and 12 months

It can be observed that mean UCLA score at twelve months is higher than six months.

	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
MUS6T - MUS12T	-4.11215	1.62717	.15730	-26.141	106	.000

Table 3: Paired sample t-test mean ucla at 6 months and 12 months

From the above table it can be observed that the mean difference (t (106) = -26.141, p-value = .000) is **significantly different** from zero.

UCLA score at twelve months

UCLA scores are divided into 34-35 (Excellent), 28-33 (Good) and 21-27 (Fair) and less than 21 poor

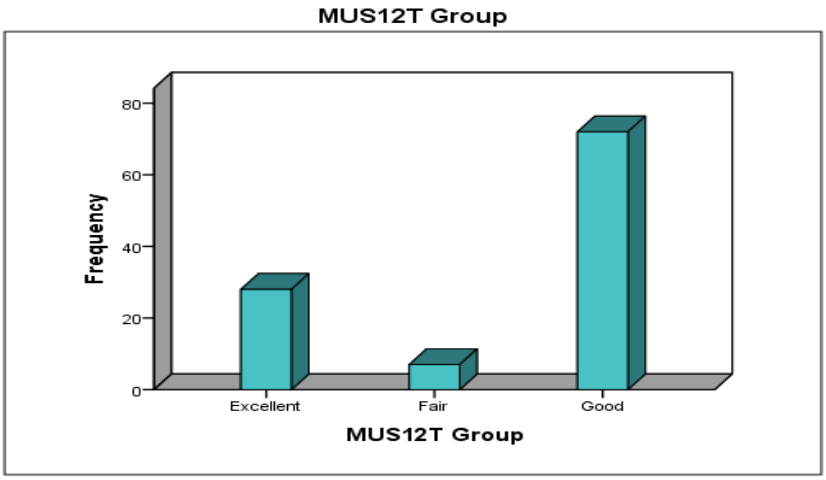


Figure 2: Bar chart of ucla score at 12 months

	Frequency	Percent	Cumulative Percent
Excellent	28	26.2	26.2
Fair	7	6.5	32.7
Good	72	67.3	100.0
Total	107	100.0	

Table 1: Frequency of UCLA Score at 12 months

From the above plot we can see that 28 patients have excellent results, 72 patients have good results and 7 patients have fair result. None of the patients have poor results.

Individual parameters UCLA scores preoperatively and postoperatively

Here it is tested if there is any significant difference in mean of individual UCLA parameters preoperatively(MUS0T) and postoperatively(MUS12T). Repeated measures ANOVA is used to test the null hypothesis that there is no statistically significant difference in mean MUS0T and mean MUS12T.

Effect		Value	F	Hypothesis df	Error df	Sig.
MUS	Wilks' Lambda	.001	43860.72	5.000	208.000	.000
MUS * Time	Wilks' Lambda	.001	42260.8	5.000	208.000	.000

Table 5: Multivariate Tests individual ucla parameters

From the above table it can be observed that there is statistically significant difference in each of the scores (Wilk'sLamda = .001, F (5, 208) = 43860.72, p-value = .000) and also there is significant difference in 0 months and 12 months (Wilk'sLamda = .001, F (5, 208) = 42260.8, p-value = .000).

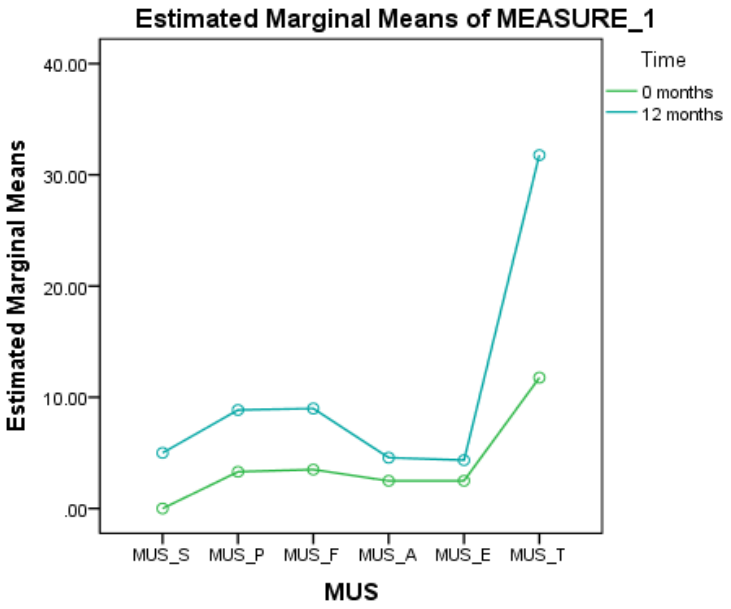


Figure 3: Individual ucla parameters comparison preoperatively and 12 months post operative

From the above plots its seen that first three variables, that is patient satisfaction, pain and function shows good variation preoperatively and postoperatively. Anterior flexion and movement against resistance shows a less difference than the other three postoperatively. Power is the parameter that show least increase after surgery. But all the parameters also show a statistically significant difference.

AGE Distribution

	Age Group	N	Mean	Std. Deviation	Minimum	Maximum
MUS6T	30-40	4	28.7500	.50000	28.00	29.00
	40-50	38	28.6053	1.49846	25.00	33.00
	50-60	40	27.7000	1.78599	23.00	30.00
	60-70	23	26.5217	2.01967	24.00	31.00
	>70	2	20.0000	7.07107	15.00	25.00
	Total	107	27.6636	2.24425	15.00	33.00
MUS12T	30-40	4	33.5000	1.00000	33.00	35.00
	40-50	38	33.1053	1.41018	29.00	35.00
	50-60	40	31.4500	2.15965	27.00	35.00
	60-70	23	30.3478	2.36660	27.00	35.00
	>70	2	26.0000	1.41421	25.00	27.00
	Total	107	31.7757	2.34041	25.00	35.00

Table 6: Age distribution

From the above table it can be observed that mean score at 6 months (MUS6T) and 12 months(MUS12T) postoperatively is highest in the age group 30-40. The maximum at 6 months is 33 and the maximum at 12 months is 35. **As age increases mean UCLA score at 6 months and 12 months decreases.**

		Sum of Squares	df	Mean Square	F	Sig.
MUS6T	Between Groups	185.920	4	46.480	13.625	.000
	Within Groups	347.968	102	3.411		
	Total	533.888	106			
MUS12T	Between Groups	196.920	4	49.230	13.087	.000
	Within Groups	383.696	102	3.762		
	Total	580.617	106			

Table 7: One-Way ANOVA on age distribution

From the above table it can be observed that there is statistically significant difference in mean MUS6T (F (4, 102) = 13.625, p-value = .000) and mean MUS12T (F (4, 102) = 13.087, p-value = .000) among different age groups. The means plots are also given below.

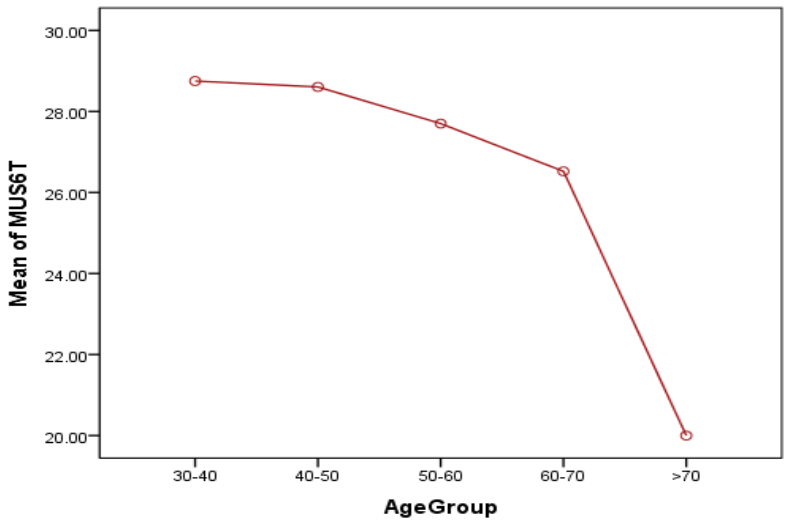


Figure 4: Means Plot of ucla score at 6 months

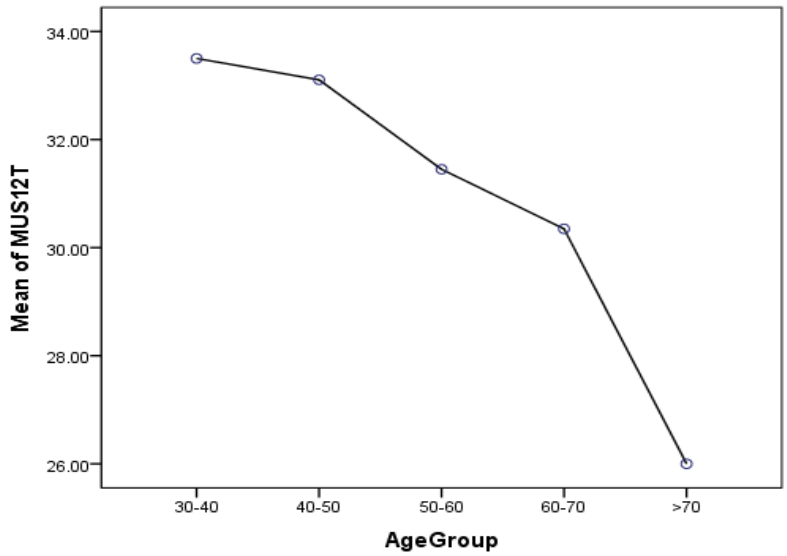


Figure 5: Means Plot of ucla score at 12 months

	Age Group (I)	Age Group (J)	Mean Difference (I-J)	Std. Error	Sig.
MUS6T	30-40	40-50	0.145	0.971	1.000
		50-60	1.050	0.969	0.814
		60-70	2.228	1.001	0.178
		>70	8.750	1.600	0.000
	40-50	30-40	-0.145	0.971	1.000
		50-60	0.905	0.418	0.202
		60-70	2.084	0.488	0.000
		>70	8.605	1.340	0.000
	50-60	30-40	-1.050	0.969	0.814
		40-50	-0.905	0.418	0.202
		60-70	1.178	0.483	0.114
		>70	7.700	1.338	0.000
	60-70	30-40	-2.228	1.001	0.178
		40-50	-2.084	0.488	0.000
		50-60	-1.178	0.483	0.114
		>70	6.522	1.362	0.000
	>70	30-40	-8.750	1.600	0.000

		40-50	-8.605	1.340	0.000
		50-60	-7.700	1.338	0.000
		60-70	-6.522	1.362	0.000
MUS12T	30-40	40-50	0.395	1.020	0.995
		50-60	2.050	1.017	0.266
		60-70	3.152	1.051	0.027
		>70	7.500	1.680	0.000
	40-50	30-40	-0.395	1.020	0.995
		50-60	1.655	0.439	0.003
		60-70	2.757	0.512	0.000
		>70	7.105	1.407	0.000
	50-60	30-40	-2.050	1.017	0.266
		40-50	-1.655	0.439	0.003
		60-70	1.102	0.508	0.199
		>70	5.450	1.405	0.002
	60-70	30-40	-3.152	1.051	0.027
		40-50	-2.757	0.512	0.000
		50-60	-1.102	0.508	0.199
		>70	4.348	1.430	0.024
	>70	30-40	-7.500	1.680	0.000
		40-50	-7.105	1.407	0.000
		50-60	-5.450	1.405	0.002
		60-70	-4.348	1.430	0.024

Table 8: Turkey's post-hoc test of age distribution

As there is significant difference, Turkey's post-hoc test is conducted to test which two age groups have significant difference in mean MUS6T and MUS12T. From the above table it can be observed that there is significant difference in mean MUS6T among age groups 30-40 and >70, 40-50 and 60-70, 40-50 and >70, 50-60 and > 70, 60-70 and >70. Also there is significant difference in mean MUS12T among age groups 30-40 and >70, 60 – 70 and >70, 40-50 and 50-60, 40-50 and 60-70, 40-50 and >70, 50-60 and > 70.

Relation of postoperative score with timing of surgery

The timing of surgery is divided into three groups - <3 months, 3-6 months and >6 months.

	Timing of Surgery	N	Mean	Std. Deviation	Minimum	Maximum
MUS6T	<3 months	41	28.3902	1.73029	24.00	33.00
	3-6 months	36	27.2778	1.78263	23.00	30.00
	>6months	30	27.1333	3.03694	15.00	31.00
	Total	107	27.6636	2.24425	15.00	33.00
MUS12T	<3 months	41	32.7561	1.86789	27.00	35.00
	3-6 months	36	31.3056	2.13568	27.00	35.00
	>6 months	30	31.0000	2.72915	25.00	35.00
	Total	107	31.7757	2.34041	25.00	35.00

Table 9: Descriptive Statistics of Surgery Time in months

From the above table it can be observed that mean MUS6T and mean MUS12T is **highest in less than 3 month of surgery timing**.

		Sum of Squares	df	Mean Square	F	Sig.
MUS6T	Between Groups	35.443	2	17.721	3.698	.028
	Within Groups	498.445	104	4.793		
	Total	533.888	106			
MUS12T	Between Groups	65.417	2	32.708	6.603	.002
	Within Groups	515.200	104	4.954		
	Total	580.617	106			

Table 10: One Way ANOVA of Surgery Time in months

From the above table it can be observed that there is statistically significant difference in mean MUS6T (F (2, 104) = 3.698, p-value = .028) and mean MUS12T (F (2, 104) = 6.603, p-value = .002) among the three different timings. As there is significant difference, Turkey's post-hoc test is conducted to test which surgery timings have significant difference in mean MUS6T and mean MUS12T. From the table below it can be observed that there is statistically significant difference in mean MUS6T among <3 months and >6 months.
Also there is significant difference in mean MUS12T among <3 months and 3-6 months, <3 months and >6 months.

	Surgery Timing (I)	Surgery Timing (J)	Mean Difference (I-J)	Std. Error	Sig.
MUS6T	<3 months	3-6 months	1.112	0.500	0.072
		>6 months	1.257	0.526	0.049
	3-6 months	<3 months	-1.112	0.500	0.072
		>6 months	0.144	0.541	0.962
	>6 months	<3 months	-1.257	0.526	0.049
		3-6 months	-0.144	0.541	0.962
MUS12T	<3 months	3-6 months	1.451	0.508	0.014
		>6 months	1.756	0.535	0.004
	3-6 months	<3 months	-1.451	0.508	0.014
		>6 months	0.306	0.550	0.844
	>6 months	<3 months	-1.756	0.535	0.004
		3-6 months	-0.306	0.550	0.844

Table 11: Turkey's Post-Hoc Test of Surgery Time in months
The error bar is also given below.

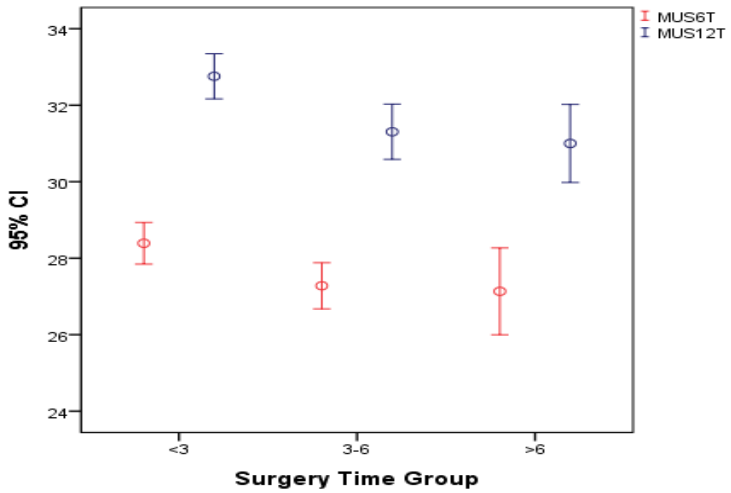


Figure 6: Error bar of Surgery Time in months Relation of UCLA score with mechanism of injury chronic tear or traumatic rupture

	MOI	N	Mean	Std. Deviation	Std. Error Mean
MUS6T	CT	53	27.0755	2.65192	.36427
	T	54	28.2407	1.57738	.21465
MUS12T	CT	53	30.8868	2.56200	.35192
	T	54	32.6481	1.71736	.23370

Table 12: Descriptive Statistics mechanism of injury

From the above table it can be observed that **mean MUS6T and mean MUS12T is higher when the mechanism of injury is traumatic**
The error bar is given below.

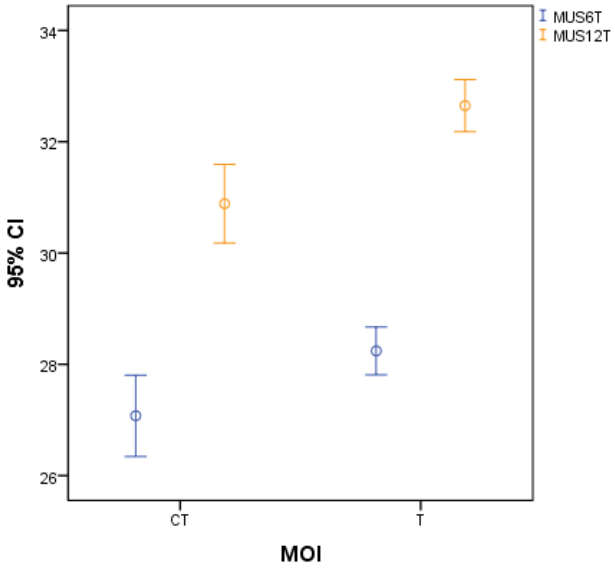


Figure 7: Error bar of Mechanism of Injury

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
MUS6T	-2.768	105	.007	-1.16527	.42091
MUS12T	-4.184	105	.000	-1.76136	.42094

Table 2: Independent sample t-test mechanism of injury

From the above table it can be observed that there is **statistically difference in mean MUS6T (t (105) = -2.768, p-value = .007) and mean MUS12T (t (105) = -4.184, p-value = .000) among mechanism of injury**.
SEX distribution

Among 107 patients 55 were femaies and 52 were males.

	Sex	N	Mean	Std. Deviation	Std. Error Mean
MUS6T	Male	52	27.6731	2.29852	.31875
	Female	55	27.6545	2.21291	.29839
MUS12T	Male	52	31.9423	2.17304	.30135
	Female	55	31.6182	2.49808	.33684

Table 14: Descriptive Statistics sex distribution

From the above table it can be observed than mean MUS6T and MUS12T is higher in males.

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
MUS6T	.042	105	.966	.01853	.43615
MUS12T	.714	105	.477	.32413	.45374

Table 15: Independent sample t-test sex distribution

From the above table it can be observed that there is **no statistically significant difference** in mean MUS6T (t (105) = .042, p-value = .966) and MUS12T (t (105) = .714, p-value = .477) among different sexes. An error bar is drawn to compare the mean MUS6T and MUS12T for each sex visually.

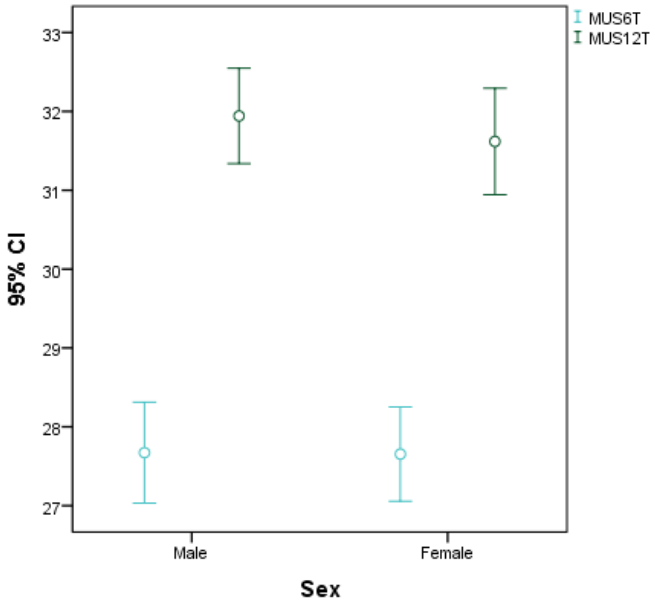


Figure 8: Error bar for different sex

As the error bars are overlapping, it can be concluded that there is **no significant difference** in mean MUS6T and MUS12T among males and females.

UCLA score relation with double row and single row

	S/D	N	Mean	Std. Deviation	Std. Error Mean
MUS6T	S	43	28.0000	1.46385	.22324
	D	64	27.4375	2.62996	.32874
MUS12T	S	43	32.3256	2.03213	.30990
	D	64	31.4063	2.47347	.30918

Table 16: Descriptive Statistics double row and single row

From the above table it can be observed than mean MUS6T and MUS12T is higher in group S than group D.

	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
MUS6T	1.275	105	.205	.56250	.44123
MUS12T	2.021	105	.046	.91933	.45492

Table 17: Independent sample t-test double row and single row

From the above table it can be observed that there is **no statistically significant difference** in mean MUS6T (t (105) = 1.275, p-value = .205) and mean MUS12T (t (105) = .2.021, p-value = .05) among different sexes. The error bar is also given below.

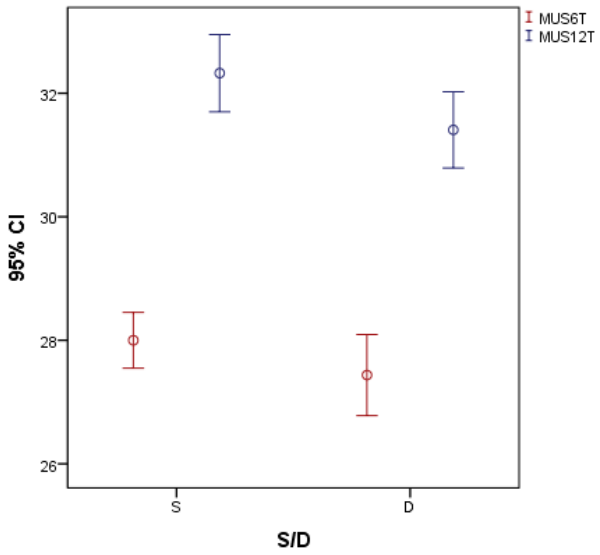


Figure 9: Error bar of single row and double row

As the error bars are overlapping, it can be concluded that there is **no significant difference** in mean MUS6T and MUS12T among single row and double row

Complications

Two patients had superficial wound infection which was treated with oral antibiotics. Three patients developed reflex sympathetic dystrophy and improved after physiotherapy at 6 months. No cases of rerupture was recorded.

V. Discussion

The treatment of rotator cuff pathology has evolved with an improved understanding of rotator cuff anatomy, more sophisticated instrumentation, and advances in surgical technique. The most effective method of surgical repair is controversial given that both arthroscopic and mini-open rotator cuff repairs have been shown to produce satisfactory clinical results. There has been growing interest in arthroscopic rotator cuff repair, and it is believed to be at least as effective as mini-open rotator cuff repair with the added advantages of reduced surgical morbidity, reduced postoperative stiffness, and, potentially, a more rapid return to baseline shoulder function once rotator cuff healing has occurred. Arthroscopic repairs are thought to be better able to reproduce rotator cuff anatomy because the three-dimensional evaluation allows for the recognition of tear configuration, thereby allowing the surgeon to formulate a strategy that is most appropriate for that particular pattern.

In our prospective study we have found out that postoperative score has increased significantly from preoperative score and also that as time period after surgery increases the scores are getting better. We got a mean UCLA score of 31.77 at twelve months which is comparable with most of the studies of arthroscopic rotator cuff tears.

Present study	31.7
Erik L. Severud et al 1 [35]	32.6/31.4
Hiroyuki Sugaya et al 2[36]	32.4 / 33.1
Theodore J. Shinners 3[37]	32.3
Eugene M Wolf 4[38]	32

Table 18: Mean ucla score different studies comparison

In the present study we have 93.5 % good/excellent score

Present study	93.5%
Theodore J. Shinners 3[37]	93%
Thomas Youm et al[39]	96.4%
M.D. Stephen H et al[40]	86%
Stephen S et al [41]	95%

Table 19: Percentage of good and excellent scores various studies comparison

Patient satisfaction was 100 % in our study. Which was 92-98.5 in various studies. On considering other parameters of UCLA scores, it was found that power of active external rotation is the least improved

feature in the whole analysis. Pain, function and range of motion has shown significantly good improvement in our study which had lead to significant patient satisfaction. Patient was able to do all daily routine activities like combing hair, dressing, after getting full range of motion. Pain during activity and night pain is the most disabling thing that most of the patients preoperative complaints which was drastically reduced after rotator cuff repair. No significant difference was noted in single row and double row repair.

	Single row	Double row
Present study	32.3	31.4
Hiroyuki Sugaya et al[36]	32.4	33.1
Peter J. Millett et al[42]	No significant difference	
Ming Chen et al[43]	No significant difference	

Table 20: Difference in ucla score single row vs double row various studies comparison

In our study among 53 males and 55 females no differences were noted in mean postoperative ucla scores. Both groups have shown equal results. On comparing age groups it was found that as age advances our ucla scores are getting lower. We have also found that traumatic tears are having better results than chronic tears. It was also found that as age advances number of chronic tears increases. That also correlates that as age advances results are getting low. Our mean ucla score at 12 months in age goup 60-70 is 30 which was found to be similar to study by Rebuzzi et al[44] 30.5 . Above 70 years our mean ucla score is 26 in our study. We noted that as time of repair after the begening of symptoms increases, ucla scores show significant decrease. Best results were obtained when repair is done within 3 months. It is seen in our study that there is no statistically significance between the size of tear and post operative ucla score.

VI. Conclusion

Arthroscopic rotator cuff repair can be recommended as the procedure fully comparable with the open technique. It gives the possibility to diagnose and treat all shoulder pathologies at one stage. Arthroscopic rotator cuff repair can achieve good and excellent results in a large percentage of patients. Results of arthroscopic rotator cuff repair are independent of tear size. Early repairs and post traumatic repairs are having good results than late and chronic tears. Functional outcomes doesn't show significant difference between single and dual-row fixation techniques and also doesn't depend on size of tear.

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Abbrevations

[45]. Mus - Mean Ucla Score
[46]. Mus 0t- Mean Ucla Score Preoperatively
[47]. Mus 6t- Mean Ucla Score At 6 Months
[48]. Mus 12t- Mean Ucla Score At 12 Months
[49]. Mus S- Mean Ucla Score For Patient Satisfaction
[50]. Mus P- Mean Ucla Score For Pain
[51]. Mus F- Mean Ucla Score For Function
[52]. Mus A- Mean Ucla Score For Active Forward Flexion
[53]. Mus E- Mean Ucla Score For Resistence To Anterior Flexion
[54]. Ct- Chronic Tear
[55]. T- Traumatic Tear
[56]. Moi- Mechanism Of Injury
[57]. S- Single Row
[58]. D- Double Row
[59]. Moi – Mechanism Of Injury

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