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ANALYSIS OF FUNCTIONAL OUTCOME OF ARTHROSCOPIC MANAGEMENT OF ROTATOR CUFF INJURIES

Orthopaedics

Dr. Nadar Raja Chidambaram M.S. (Ortho) Post Graduate, Dept. of Orthopaedics, Sree Balaji Medical College and Hospital BIHER, No.7, CLC Works Road, Chromepet, Chennai 600044

Dr. Sumesh Subramanian* Unit III Assistant professor, Dept. of Orthopaedics, Sree Balaji Medical College and Hospital BIHER, NO.7, CLC Works Road, Chromepet, Chennai 600044 *Corresponding Author

ABSTRACT

Rotator cuff disease encompasses a wide range of pathology from minimal bursal or articular side irritation and tendonitis to severe degenerative rotator cuff arthtropathy. Rotator cuff pathology affects adults of all ages and other shoulder afflict ions must be ruled out by careful history and physical examination.

In recent past small tears were treated arthroscopically while larger tears would require an open procedure. Arthroscopic procedures should serve as adjuncts to and not as replacements for thorough clinical evaluation; arthroscopy is not a substitute for clinical skills. Progressive improvements in the lens systems of arthroscopies and fibre optic systems, in miniaturization,and in the accessory operative instruments have made possible advanced operative arthroscopic techniques for virtually every joint in the body, including the knee, shoulder, hip, ankle and elbow

The purpose of this study is to determine functional outcome of arthroscopically treated rotator cuff tears using UCLA shoulder scoring system and ASES shoulder score.

In our study we have results showing pre operative and post operative UCLA and ASES scores of 56 patients treated arthroscopically in our institute for partial as well as full thickness tears. We noted that there was no difference in functional outcome in both partial and full thickness tears proven statistically. There are less chances of post operative stiffness and early mobilization possible with strict post operative physiotherapy protocol.

KEYWORDS

Arthroscopic rotator cuff repair, UCLA scoring, ASES shoulder score index.

1. INTRODUCTION

1.1 Rotator cuff disease encompasses a wide range of pathology from minimal bursal or articular side irritation and tendonitis to severe degenerative rotator cuff arthtropathy. Rotator cuff pathology affects adults of all ages and other shoulder afflict ions must be ruled out by careful history and physical examination[1].

1.2 During the past 3 decades, arthroscopy has dramatically changed the orthopaedic surgeon's approach to the diagnosis and treatment of a variety of joint ailments. A high degree of clinical accuracy, combined with low morbidity, has encouraged the use of arthroscopy to assist in diagnosis, to determine prognosis, and often to provide treatment. Arthroscopic procedures should serve as adjuncts to and not as replacements for thorough clinical evaluation; arthroscopy is not a substitute for clinical skills.

1.3 Progressive improvements in the lens systems of arthroscopies and fiber optic systems, in miniaturization,and in the accessory operative instruments have made possible advanced operative arthroscopic techniques for virtually every joint in the body, including the knee, shoulder, hip, ankle and elbow[2].

1.4 Recently, Denard et al. retrospectively reviewed the results of arthroscopic repair of massive rotator cuff tears using single-row and double-row techniques at a minimum of five years, and better long-term functional outcome and an improved subjective result were noted when a double- row repair was performed [3]

2. AIM AND OBJECTIVES

The aim of the study is to analyse the functional outcome of arthroscopic management of rotator cuff injuries at the department of orthopaedics, Sree Balaji Medical College, Chennai between January 2018 and April 2019.

3. MATERIALS AND METHODS

3.1 INCLUSION CRITERIA

1) Patients who have at least 6 weeks of conservative management from onset of symptoms and at least 6 months follow up after operation.
2) Also patients who were diagnosed to have cuff tears on MRI and suspected to have cuff tears on clinical evaluation irrespective of age, sex and gender.

3.2 EXCLUSION CRITERIA

1) Patients who had less than 6 months follow up and those who had associated fractures with rotator cuff tears.

The protocol included evaluation of patients according to the symptoms and the functional ability to do the activities of daily living. A Performa was designed which is to be filled by the patient himself/herself pre operatively and on his subsequent visits post operatively at 3 weeks ,6 weeks ,12 weeks and 6 months. The patient would fill the subjective data by themselves while the muscle strength and range of motion are assessed by the surgeon and documented. The functional outcome was assessed by two scoring systems. For this study purpose we have employed UCLA (University of California Los Angeles) shoulder scoring and ASES (American Shoulder and Elbow Surgeons) shoulder score index for evaluating the functional outcome. Pre-operative and post operative UCLA and ASES scores were taken and statistically analysed if there was significant compared with other studies.

3.3 Assessment of results

The results were finally evaluated using 2 shoulder scoring systems.

1. UCLA (University of California Los Angeles)
2. ASES (American Shoulder and Elbow surgeons)

Statistical software:

The Statistical software namely SAS9.2, SPSS 15.0, Stata 10.1, MedCalc 9.0.1 ,Systat 12.0 and R environment ver.2.11.1 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

4.RESULTS

Table 1: Distribution Of Technique

TECHNIQUE	NO. PATIENTS	PERCENTAGE %
SINGLE ROW	4	7.1
DOUBLE	52	92.9
TOTAL	56	100

We in our institute usually use double row technique forming major part of our study.

Table 2: Distribution Of Etiology

ETIOLOGY	NO. PATIENTS	PERCENTAGE %
DEGENERATIVE	8	14.3
TRAUMA	48	85.7
TOTAL	56	100

Table 3: Distribution Of Intra Articular Steroid

INTRA ARTICULAR STEROID	NO. PATIENTS	PERCENTAGE %
NO	54	96.3
YES	2	3.6
TOTAL	56	100

Table 4: Distribution Of Symptoms

SYMPTOMS	NO. PATIENTS	PERCENTAGE %
INABILITY TO LIFT SHOULDER	40	71.4
PAIN IN SHOULDER	16	28.6
TOTAL	56	100

Table 5 : Distribution Of Jobes Empty Can Test

JOBES EMPTY CAN TEST	NO. PATIENTS	PERCENTAGE %
NEGATIVE	0	0
POSTIVE	56	100
TOTAL	56	100

Table 6: Distribution Of Restriction Of Ext Rotation

RESTRUCTION OF EXT ROTATION	NO. PATIENTS	PERCENTAGE %
NEGATIVE	10	17.9
POSITIVE	46	82.1
TOTAL	56	100

Table 7: Distribution Of Arm Lift Off

ARM LIFT OFF	NO. PATIENTS	PERCENTAGE %
NEGATIVE	50	89.3
POSTIVE	6	10.7
TOTAL	56	100

Table 8: Distribution Of Belly Press Test

BELLY PRESS TEST	NO. PATIENTS	PERCENTAGE %
NEGATIVE	34	60.7
POSTIVE	22	39.3
TOTAL	56	100

Table 9: Distribution Of Speed Test

SPEED TEST	NO. PATIENTS	PERCENTAGE %
NEGATIVE	56	100
POSTIVE	0	0
TOTAL	56	100

Table 10: Evaluation Of Ucla Score

	UCLA					
	AT Presentation	3 Wks	6 Wks	12 Wks	6 Mon	1 Year
Min - Max	6 .00 – 19.00	8.00 – 17.00	8.00 – 18.00	14.00 – 29.00	17.00 – 32.00	30.00 – 35.00
Mean + Sd	9.93±3.50	12.07±2.41	15.19±2.48	19.54±3.74	27.35±3.65	32.65±1.41
95 % CI	8.54-11.31	11.12-13.03	14.19-16.19	18.03-21.05	25.87-28.82	32.08-33.22

Table 11: Difference Of Ucla And Pair Wise Significance

Difference	3 WKS	6 WKS	12 WKS	6 MON	1 YEAR
MEAN ±SD	-2.14±2.34	-5.38±0.96	9.73±4.88	-17.53±4.95	22.84±3.82
P VALUE	<0.001**	<0.001**	<0.001**	<0.001**	<0.001**

Table 12: Evaluation Of Ases Score

	ASES		
	AT PRESENTATION	6 MONTHS	1 YEAR
MIN - MAX	7.00-38.00	60.00 -90.00	76.00 - 100.00
MIN + SD	20.78± 10.14	77.13± 6.91	92.94± 7.16
95 % CI	16.76 -24.79	74.34 -79.92	89.68 -96.20

Table 13: Difference Of Ases Score And Pairwise Significance

DIFFERENCE	6 MONTHS	1 YEAR	6 MON-1 YEAR
MIN + SD	-56.96± 11.89	-74.80± 12.12	-16.54± 7.16
P VALUE	<0.001**	<0.001**	<0.001**

Table 14: Comparison Of Ucla Score According To Type Of Tear

UCLA	TYPE OF TEAR		P VALUE
	FULL THICKNESS	PARTIAL	
At Presentation	10.00± 4.24	9.88±3.05	0.930
AT 3 WEEKS	11.91± 2.39	12.19± 2.51	0.775
AT 6 WEEKS	15.40± 3.13	15.06± 2.08	0.743
AT 12 WEEKS	18.90± 3.28	19.94± 4.06	0.503
AT 6 MONTHS	27.00± 3.94	27.56± 3.58	0.711
AT 1 YEAR	33.10± 1.66	32.38± 1.20	0.209

Table 15: Comparison Of Ases Score According To Type Of Tear

ASES	TYPE OF TEAR		P VALUE
	FULL THICKNESS	PARTIAL	
AT PRESENTATION	20.38± 10.51	21.05± 10.23	0.871
AT 6 MONTHS	75.85± 6.63	77.93± 7.18	0.467
AT 1 YEAR	91.65± 8.68	94.12± 5.62	0.445

6. CASE ILLUSTRATIONS

CASE. 1

Fig. 1 Follow up X ray and ROM at 1 year with B/L rotator cuff tear

Case 2.

(FIG 2: Follow up at 1year)

Fig.3 Arthroscopic view of a completed repair of a crescent shaped rotator cuff tear.

6. DISCUSSION

6.1 Rotator cuff disease encompasses a wide range of pathology from minimal bursal or articular side irritation and tendonitis to severe degenerative rotator cuff arthropathy. Rotator cuff pathology affects adults of all ages and other shoulder afflictions must be ruled out by careful history and physical examination [1]. In the midrange, the supraspinatus and the subscapularis provided more stability than the other muscles did. In the end range, the subscapularis, infraspinatus, and teres minor provided more stability than the supraspinatus[4]. Epidemiological studies strongly support a relationship between age and cuff tears prevalence. In a recent study the frequency of such tears increased from 13% in youngest group (aged 50 - 59yrs) to 20%(aged 60 -69yrs) 31% (aged 70 -79yrs) and 51% in oldest group (aged 80 - 89yrs) [2].

6.2 Arthroscopic surgery allows for a shorter recovery time and predictably less pain in first few days following procedure than does any open surgery[2].

6.3 The study was taken up to evaluate the functional outcome of patients treated arthroscopically for rotator cuff tears. The functional outcome was assessed by using UCLA and ASES shoulder scoring system. The pre operative and post operative values were obtained and were compared to those of previous similar studies. Further, arthroscopy has the advantages of preservation of the deltoid origin, improved visualization, ability to treat multiple disorders simultaneously, and minimization of the complications of open surgery[5]

7. CONCLUSION

- In comparision to other studies our study shows the mean age of incidence of rotator cuff tears is between the age group 51 -60 years.
- In comparison to other studies our study shows that there is no difference in functional outcome between partial and full thickness tear treated arthroscopically
- In comparison to other studies the outcome following a single row or a double row technique is cannot be determined due to inadequate comparison group.
- As seen with other studies the first symptom to recover following arthroscopic repair is pain and significant improvement is seen at 6 weeks follow up.
- Full range of shoulder function is observed at end of 1 year which in comparison to pre operative values were statistically significant.
- It has been observed from our study patient's ability to carry his daily activities like sweeping and washing face by 6 weeks and activities reaching out for shelf and washing the back himself would require 1 year.
- It has been observed adherence to strict post operative physiotherapy is key for achieving full range of movement and pain free activities of daily living.

The study requires longer follow up for coming to specific guide lines and a similar comparison groups.

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