

Adhesive capsulitis of shoulder joint: A treatment protocol, our experience

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Abstract

Background: Adhesive capsulitis is a poorly understood musculoskeletal condition that can be disabling. Frozen shoulder is thought to have an incidence of 3%-5% in the general population and up to 20% in those with diabetes.

Objective: To compare the effectiveness of different interventions in patients of adhesive capsulitis in terms of range of movement of shoulder. **Methodology:** Present prospective study was conducted among 60 subjects having adhesive capsulitis and approaching our orthopedic OPD at Kamineni Institute of Medical Sciences, Narketpally between the period of March 2016 and June 2017. Patients were allocated to one of three different groups randomly with blinding. Group 1 received only physiotherapy, group 2 received intra articular steroids and physiotherapy, whereas group 3 received manipulation under general anesthesia followed by intra articular steroids and physiotherapy. Then subjects were followed up. Movements of the shoulder were compared in all three groups and results were analysed using SPSS 19.0 version. **Results:** Majority of the subjects i.e. 40% were from 51 to 60 years of age group followed by 61 to 70 years of age group (33.3%). In both male and female subjects majority were from 51 to 60 years age group. i.e 37% and 66.7% respectively. Mean range of abduction in group 1 was 64±35 degree, in group 2 was 78±13.78 and in group 3 was 78.33±22.66 (p<0.001). Mean range of internal rotation in group 1 was 23±11.96 degree, in group 2 was 27±9.23 and in group 3 was 36±9.23 (p<0.001). Mean range of External rotation in group 1 was 27±7.68 degree, in group 2 was 34±3.08 and in group 3 was 48±9.23 (p<0.001). **Conclusion:** Amongst all three procedures manipulation under general anesthesia followed by intra articular steroids and physiotherapy proved to be more effective in terms of movement range of shoulder joint.

Key Words: Adhesive capsulitis, physiotherapy, manipulation, general anesthesia.

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Received Date: 19/07/2017 Revised Date: 13/08/2017 Accepted Date: 08/09/2017

DOI: <https://doi.org/10.26611/1020336>

Access this article online

Quick Response Code:



Website:
www.medpulse.in

Accessed Date:
20 September 2017

INTRODUCTION

The shoulder is a unique anatomical structure with an extraordinary range of motion (ROM) that allows us to interact with our environment. A loss of mobility of this joint will cause significant morbidity¹. The first recorded

description of a frozen shoulder was reported by Duplay in 1872 in his description of a “periarthrits scapulohumeral”, though the term frozen shoulder was first used in 1934 by Codman, who described the common features of a slow onset of pain felt near the insertion of the deltoid muscle, inability to sleep on the affected side, and restriction in both active and passive abduction, external and internal rotation, yet with a normal radiological appearance². For convenience, the condition is divided into three phases; the painful phase lasting from 3 to 9 months, followed by a freezing phase with progressive stiffness lasting from 4 to 12 months and finally, the recovery phase with gradual return of movement, lasting 5–26 months³. Frozen shoulder is thought to have an incidence of 3%-5% in the general population and up to 20% in those with diabetes mellitus¹. Diabetes is the most common associated

disease with frozen shoulder and a patient with diabetes has a lifetime risk of 10%-20% of developing this condition^{4,5}. The next common finding was trauma. Patients with frozen shoulder have a higher risk of having some form of pre diabetic condition with an abnormal fasting glucose or impaired glucose tolerance test⁵. Commonly used conservative therapies for adhesive capsulitis include non-steroidal anti-inflammatory drugs, intra-articular gluco corticosteroid injections, oral gluco-corticosteroid medication, physical therapy, manipulation under anesthesia and hydrodilatation⁶. With this background the present study has followed the existing practice of treating patients with adhesive capsulitis with physiotherapy, corticosteroid injection and manipulation under general anesthesia and to find out the effectiveness of the various interventions with comparison of range of movements.

MATERIAL AND METHODS

Present prospective study was conducted among 60 subjects having adhesive capsulitis and approaching the orthopedic OPD of Kamineni Institute of Medical Sciences, Narketpally between the period of March 2016, to June 2017. Our study inclusion criteria were both male and female, who came to our outpatient department, with pain, and stiffness of either shoulder, with difficulty in daily activities, lasting a number of months, After ruling out major trauma or fractures, by plain radiographs, of the said shoulder, and also ruling out cardiac causes for left shoulder pain,. we took fully informed, verbal, and written consent, and then divided them randomly into three groups. Group 1 was treated with a full regimen of wheel exercises for 15 days. Group 2 was treated with subacromial injection of Triamcinolone 40 mgs under full aseptic precautions, followed by a full regimen of wheel

exercises for 15 days. Group 3 was investigated thoroughly, with a full work up for fitness for general anesthesia and treated by manipulation by gentle, and firm, full range of abduction, internal, and external rotation, and then a subacromial injection of Triamcinolone given and then after full recovery from general anesthesia a full regimen of wheel exercises was given, for 15 days. The three groups were reviewed, at the end of 30 days, 60 days, and 90 days. Clinical evaluation was done and the movements of the shoulder were compared in all three groups and results were analysed by using SPSS 19.0 version. Results were analysed in terms of proportions, mean and standard deviation. Range of movements in all groups was compared by using one way ANOVA test and post hoc Tukeys HSD test was used to see whether the mean difference in the range of movement was significant or not. A p value less than 0.05 was considered as significant and less than 0.001 was considered as statistically highly significant.

RESULTS

Table 1: Distribution of subjects according to gender and age

		Male		Female		Total
		No	%	No	%	
Age in years	40-50	16	29.6	0	0.0	16
	51-60	20	37.0	4	66.7	24
	61-70	18	33.3	2	33.3	20
	Total	54	100.0	6	100.0	60

We observed that there were 54 (90%) males and 6 (10%) females out of 60 study subjects. Majority of the subjects i.e. 40% were from 51 to 60 years of age group followed by 61 to 70 years of age group (33.3%). In both male and female subjects majority were from 51 to 60 years age group. i.e. 37% and 66.7% respectively.

Table 2: Comparison of movement of abduction between all groups

		N	Mean	Std. Deviation	F	df	p	Inference
Abduction	Physiotherapy (GP 1)	20	64.00	35.00	1.598	2	0.0001 (<0.001)	Highly significant
	Intraarticular steroids + physiotherapy (GP 2)	20	78.00	13.78				
	Manipulation under GA+ steroids+ physiotherapy (GP 3)	20	93.00	19.22				
	Total	60	78.33	22.66				

Mean range of abduction in group 1 was 64±35 degree, in group 2 was 78±13.78 and in group 3 was 78.33±22.66. When the mean range of abduction between all three groups was compared it was observed that difference between all three groups was statistically highly significant (P<0.001). So we applied Tukeys HSD test which stated that difference between group (1 and 2), (1 and 3) and (1 and 3) was statistically significant.

Table 3: Tukeys post Hoc HSD test to see whether the mean difference is significant or not

	Group 1	Group 2	Group 3
Group 1		-14*	-29*
Group 2			-15*

*Mean difference is significant at 0.05 levels.

Table 3: Comparison of movement of internal rotation between all groups

		N	Mean	SD	F	df	p	Inference
internal rotation	Physiotherapy (GP 1)	20	23.00	11.96	1.121	2	0.004 (<0.05)	Significant
	Intraarticular steroids + physiotherapy (GP 2)	20	27.00	9.23				
	Manipulation under GA+ Steroids + physiotherapy (GP 3)	20	36.00	9.23				
	Total	60	28.67	10.14				

Mean range of internal rotation in group 1 was 23±11.96 degree, in group 2 was 27±9.23 and in group 3 was 36±9.23. When the mean range of internal rotation between all three groups was compared it was observed that difference between all three groups was statistically significant (P<0.05). So we applied Tukeys HSD test which stated that difference between group (1 and 3) and (2 and 3) was statistically significant.

Table 4: Tukeys post Hoc HSD test to see whether the mean difference is significant or not

	Group 1	Group 2	Group 3
Group 1		-4	-13*
Group 2			-9*

*Mean difference is significant at 0.05 level

Table 4: Comparison of movement of External rotation between all groups

		N	Mean	SD	F	df	p	Inference
External rotation	Physiotherapy (GP 1)	20	27.00	7.68	1.32	2	0.035 (<0.05)	Significant
	Intraarticular steroids + physiotherapy (GP 2)	20	34.00	3.08				
	Manipulation under GA+ steroids + physiotherapy (GP 3)	20	48.00	9.23				
	Total	60	36.33	6.66				

Mean range of External rotation in group 1 was 27±7.68 degree, in group 2 was 34±3.08 and in group 3 was 48±9.23. When the mean range of External rotation between all three groups was compared it was observed that difference between all three groups was statistically significant (P<0.05). So we applied Tukeys HSD test which stated that difference between group (1 and 3) and (2 and 3) was statistically significant.

Table 5: Tukeys post Hoc HSD test to see whether the mean difference is significant or not

	Group 1	Group 2	Group 3
Group 1		-7	-21*
Group 2			-14*

*Mean difference is significant at 0.05 level.

DISCUSSION

Table 1 depicts distribution according to age and sex and in our study the prevalence of adhesive capsulitis was 90% in males and 10% in females out of 60 study subjects. Mean age of study subjects were 56.87 ± 6.26 years. Majority of the subjects i.e. 40% were from 51 to 60 years of age group. In a study conducted by Ali SA⁷ also observed that affected majority individuals were from 40 to 60 years age group. Table 2,3 and 4 depicts comparison of mean degree of movement which showed that mean range of movement (abduction, internal rotation and external rotation) was significantly improved in group 3 as compared to group 1 and 2 in our study findings which shows that intervention in this group was effective (Manipulation under GA followed by physiotherapy). Maricar *et al*⁸ has suggested that manual therapy in combination with exercise therapy

significantly improved pain and range of movement in adhesive capsulitis. Chen *et al*⁹ supports our study results and found that Maitland passive mobilization therapy is not more effective than advice and exercises alone for the purpose of reducing shoulder pain and stiffness. Our findings are consistent with study findings of Johnson AJ¹⁰ and Vermeulen HM¹¹. Quraishi *et al*¹² compared MUA with hydraulic distension. In their study 94% of patients were more satisfied after hydraulic distension as compared to 81% of those receiving MUA. Sharma *et al*¹³ recommended hydraulic distension a better option than MUA. Buchbinder *et al*¹⁴ have published a randomized, double blind placebo controlled trial which supports the use of hydro dilatation for frozen shoulder.

CONCLUSION

Amongst all three procedures, manipulation under general anesthesia followed by intra articular steroids and physiotherapy was proved to be more effective in terms of movement range of shoulder joint compared to other two procedures and hence we recommend that this intervention may be practiced.

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Source of Support: None Declared
Conflict of Interest: None Declared