



A PROSPECTIVE STUDY OF EVALUATION OF TREATMENT OF FROZEN SHOULDER BY DIFFERENT MODALITIES

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ABSTRACT **Introduction:** The prevalence of frozen shoulder is 2%–5% in the general population, with a peak in the fifth and sixth decades of life. A frozen shoulder is uncommon in patients under the age of 40 years. Many treatment regimens are described in the literature. The overall functional outcomes of the various modalities of treatment are seldom present. Hence this study was taken up to study the functional outcome of frozen shoulder by different methods and to compare the outcome among with published literature. **Methods:** The present study was carried out in the Government Medical College, Suryapet from September 2020 to November 2021. This study consists of total 100 patients of primary adhesive capsulitis satisfying the inclusion criteria, who are treated with five different modalities that include Physiotherapy alone, Corticosteroid injections, Capsular distention(HD), Manipulation under Anaesthesia, and Arthroscopic capsular release. And later results were analysed each in the individual mode of treatment and overall on the basis of Visual Analog Scale and Constant Shoulder Score at 1,6 and 12 months period. **Results:** All of the patients recovered from pain and achieved their significant improvement in range of motion at 1 year follow up. Outcome at 1 year follow up shows a significant decrease in pain and improvement of shoulder function for all treatment modalities with mean pre-treatment VAS and CSS improving from 7 ± 2 to 41 ± 7 to post treatment 3 ± 1 to 10 ± 4 respectively. **Conclusions:** The present study concluded that at the end of the study period, all of them were able to achieve the significant improvement in all the modalities. And there was no much difference in the baseline values at the final follow up in all the modalities.

KEYWORDS : Frozen shoulder, Adhesive capsulitis

INTRODUCTION

Adhesive capsulitis (AC) and frozen shoulder syndrome (FSS) are two terms that have been used to describe a painful and stiff shoulder. The definition of a frozen shoulder by the American Shoulder and Elbow Surgeons is "a condition of uncertain etiology characterized by significant restriction of both active and passive shoulder motion that occurs in the absence of a known intrinsic shoulder disorder¹."

The American Academy of Orthopaedic Surgeons defines this condition as: "A condition of varying severity characterized by the gradual development of global limitation of active and passive shoulder motion where radiographic findings other than osteopenia are absent."

Frozen shoulder, also known as adhesive capsulitis, is a disabling disease. It is characterized by shoulder pain and limitations of range of movements. Restriction of glenohumeral movement is due to decreased intra-articular volume. It is the result of fibrosis and thickening of the joint capsule and adherence to the humeral head. Frozen shoulder is self-limiting in most of the cases. The natural course takes 12–42 months before resolution.

Fifteen percent of the patients experience long-term disability as a result of chronic loss of shoulder mobility.^{2,3} Pain is less prominent in this group of patients.

PATIENTS AND METHODS: A total of 100 patients who were satisfying the inclusion criteria were enrolled into study.

Inclusion criteria:

Diagnosed patients with primary adhesive capsulitis with limited range of movements.

Duration of pain and limitation of ROM is 2-3 months.

Exclusion criteria:

Age <40 years.

History of trauma or stroke.

Rotator cuff pathology, calcification of shoulder joint

Patients with auto immune inflammatory arthritis or radiculopathy.

Patients were divided into groups according to the modality of treatment.

Physiotherapy only-30 patients, Corticosteroid injection -30 patients, Capsular distention-15 patients, Manipulation under anaesthesia-15 patients, Arthroscopic release-10 patients.

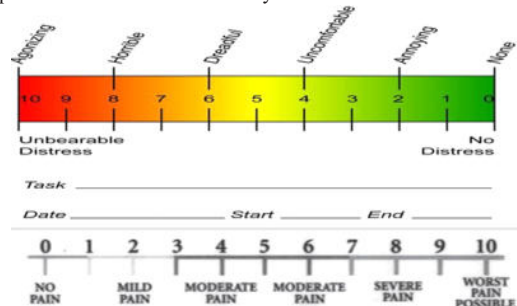
Patients were followed till 12 months for functional assessment at 1,6 and 12 months period.

The functional assessment is checked based on the VAS score, Constant Shoulder Score(CSS).

VAS score

The pain VAS is a uni-dimensional measure of pain intensity, which has been widely used in diverse adult populations.

Using a ruler, the score is determined by measuring the distance (mm) on the 10-cm line between the "no pain" anchor and the patient's mark, providing a range of scores from 0–100. A higher score indicates greater pain intensity. Based on the distribution of pain VAS scores in post-surgical patients (knee replacement, hysterectomy, or laparoscopic myomectomy) who described their postoperative pain intensity as none, mild, moderate, or severe, the following cut points on the pain VAS have been recommended: no pain (0–4 mm), mild pain(5–44 mm), moderate pain (45–74 mm), and severe pain (75–100 mm). Normative values are not available. The scale has to be shown to the patient otherwise it is an auditory scale not a visual one.



Constant Shoulder Score:

It includes the following parameters:

Pain, Activity, Arm positioning, Strength of abduction, Range of movements.

During the follow up period at 1 month, 6 months and 12 months, patient is assessed based on the difference in the constant shoulder score between the normal and affected side and is graded into excellent, good, fair and poor.

- >31- poor
- 21-30- fair
- 11-20- good
- <11- excellent

OBSERVATION AND RESULTS

The mean pre treatment VAS score was 7 with standard deviation of 2. The mean pre treatment CSS score was 41 with standard deviation of 7. The mean post treatment VAS score was 3 with standard deviation of 1. The mean post treatment CSS score was 10 with standard deviation of 4. The association between the mean pretreatment VAS and CSS score was statistically significant with P value of <0.0000001.

Parameter	Pre treatment	Post treatment at the end of 1 year	P value
VAS	7±2	3±1	<0.0000001
CSS	41±7	10±4	<0.0000001

CSS score at follow up:

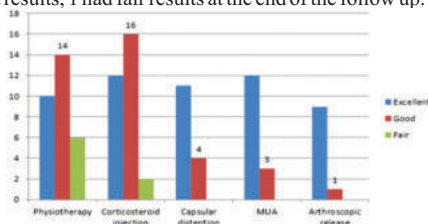
Mode of treatment	At one Month	At six months	At 12 months	ANOVA P value
Physiotherapy	39±6	30±7	17±6	<0.00001
Corticosteroid Injection	40±5	29±6	16±5	<0.00001
Capsular distention	28±4	22±4	12±4	<0.00001
MUA	26±3	23±4	10±4	<0.00001
Arthroscopic Release	22±4	18±5	10±3	<0.00001

The association between the mean scores at various durations of follow up were statistically significant with P value of <0.05.

At the end of the study period, all of them were able to achieve the expected outcome in all the modalities. But there was no much difference in the baseline values. There was a drastic improvement in capsular distention, MUA and Arthroscopic release at 6 months. Physiotherapy and steroid group were lagging behind. However at the end of 12 months, all the groups were able to achieve the score of 17 and 16 respectively and were free of pain, could able to perform their daily tasks without help and their range of movements increased.

An overall result as per CSS was excellent among 54% cases. 38% had good results and 8% had Fair results.

Among total physiotherapy patients, 10 had excellent results, 14 had good results and 6 had fair results at the end of the follow up. Among total corticosteroid group, 12 had excellent results, 16 had good results and 2 had fair results at the end of the follow up. Among total capsular distention group, 11 had excellent results at the end of the follow up and 4 had good results. Among total Manipulation under General anesthesia group, 12 had excellent results and 3 had good results at the end of the follow up. Among total Arthroscopic release group, 9 had excellent results, 1 had fair results at the end of the follow up.



CONCLUSION:

The present study concluded that at the end of the study period, all of them were able to achieve the expected outcome in all the modalities. There was a drastic improvement in distension arthroscopy, MUA and

Arthroscopic release at 6 months. Physiotherapy and steroid group were lagging behind. However at the end of 12 months, all the groups were able to achieve the score of 17 and 16 respectively and were free of pain, could able to perform their daily tasks without help and their range of movements increased.

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