Assessing Initial Functional Outcomes Following Arthroscopic Release for Stiff Shoulder in Periarthritis Shoulder

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KEYWORDS

Adhesive capsulitis, Arthroscopic Release, UCLA Score and VAS score.

ABSTRACT

Adhesive capsulitis can manifest as either primary/idiopathic or secondary, often linked to systemic illnesses. Primary adhesive capsulitis is characterized by limited range of motion without underlying systemic or precipitating shoulder conditions and lacks intrinsic pathology. In contrast, secondary frozen shoulder is associated with identifiable intrinsic factors such as diabetes, thyroid disorders, cardiac disease, stroke, prolonged immobilization, trauma, and rotator cuff disease. Our study aims to assess the initial functional outcomes, average recovery duration, and related comorbidities in arthroscopic release for adhesive capsulitis of the shoulder.The study was carried out at the Department of Orthopedics in Saveetha Medical College and Hospital, Thandalam, spanning from June 1, 2022, to June 31, 2023. It comprised 30 patients diagnosed with adhesive capsulitis who met specific criteria. The treatment regimen consisted of Arthroscopic Release followed by intensive physiotherapy and prescribed home exercises. Follow-up appointments were scheduled at regular intervals to track progress, using assessment tools like the UCLA Score and VAS score, and all data were meticulously recorded in a standardized proforma.30 individuals who met specific criteria were diagnosed with adhesive capsulitis. Of these, 12 out of 18 participants were female, and 16 patients experienced more frequent impairments on the left side. The average age of the patients was 65 years, ranging from 57 to 78 years old. Stage 2 was the most common among the approximately 19 patients. Prior to surgery, the UCLA score had a mean of 23, ranging from 18 to 26, while the mean preoperative VAS score was 8, with a range of 7 to 9. Following surgery, significant improvements were observed in the UCLA score, ranging from 26 to 35, and the post-operative VAS score ranged between 2 and 5. In our study, arthroscopic release appears as a safe procedure with favourable postoperative results. This consequently enables early mobilization of the shoulder joint and decreases complication rates.

1. Introduction

Codman was the first to define frozen shoulder. The term is typically used to characterize a patient who exhibits a limited range of motion in the shoulder along with chronic pain [1], which can make it difficult for the patient to work or carry out everyday tasks [2]. Frozen shoulder occurs most frequently in people between the ages of 40 and 60, with a prevalence of 2 to 5% [3]. More prevalent in females with diabetes, thyroid issues, or cardiovascular problems, whether or whether they have any comorbidities [4,5]. Three stages of the disease's manifestation occur sequentially: a freezing stage during which pain gradually increases with nocturnal peaks and stiffness. Shoulder joint stiffness is a symptom that the illness process is still ongoing. The last thawing phase, which can span a few weeks to years, is characterized by a progressive improvement in shoulder function and a reduction in pain severity [6, 7]. The objective of our research is to evaluate the first functional results, typical recovery time, and associated comorbidities in arthroscopic release for adhesive capsulitis of the shoulder.

2. Methodology

June 1, 2022, to June 31, 2023 was the study period, and it was conducted at the Department of Orthopedics at Saveetha Medical College and Hospital in Thandalam. 30 patients who satisfied certain requirements and had been diagnosed with adhesive capsulitis were participated. Following extensive physiotherapy and at-home exercises, the treatment plan included arthroscopic release. Patient data, such as the age at which the condition started, any surgical or post-surgical problems, the range of painless mobility, and follow-up shoulder exams, were recorded for later analysis. Patients who were over the age of eighteen and who did not exhibit joint arthritis or other intra-articular diseases on radiological examination were excluded from consideration. Another set of inclusion criteria was uncomfortable and limited shoulder mobility. The patients who did not meet the eligibility requirements

for adhesive capsulitis included those who were younger than eighteen, had neuromuscular diseases, or had had previous shoulder procedures. Physical therapy mixed with at-home workout regimens forms the basis of management. Medication such as analgesics and anti-inflammatory drugs, steroid injections into the injured joint, and physical therapy are other non-operative treatments. They haven't been demonstrated to hasten the healing process, although they might lessen pain. Among the surgical methods for treating adhesive capsulitis are anaesthesia manipulation, open release, and arthroscopic release. Patients who met the eligibility requirements were evaluated for related medical issues, treated as needed, and admitted to the orthopaedic ward. After that, the patient was transferred to the operating room, where they had to be put in a lateral decubitus posture with padding on all of their bony prominences. In order to align the glenoid with the floor, the patient's body is moved posteriorly by 25 to 30 degrees. This helps to open up the joint and makes it easier for the arthroscope to enter the shoulder joint. The arm is attached to the traction device and positioned inside a foam traction sleeve. It is positioned with 15 degrees of forward flexion and 45 degrees of abduction. Both the subacromial space and the glenohumeral joint can be seen with the arm in this position. Every surgery was carried out in a supine position with general anaesthesia. We employed 1 mL of 1:1000 epinephrine diluted in 3 L of 0.9% normal saline to stop the bleeding, provided there were no cardiovascular contraindications. To loosen contractures and remove synovium, we first made the posterior portal, which was followed by the anterior portal via the rotator interval. We were able to relieve the rotator interval triangle contractures at this point by employing a coblation probe. The posterior inferior capsule, the inferior capsule pouch, the superior, anterior, and anterior-inferior capsule glenohumeral ligaments, the anterior capsule, and the coracohumeral ligament were all released. Opening the rotator interval and exposing the lateral surface of the coracoid process allows for the exploration and release of the thicker portion of the coracohumeral ligament. Following release, we gently move the shoulder in every direction. Following the procedure, 10 mL of 40 mg of Kenokart, 4 mL of lignocaine, and 1 mL of distilled water were injected into the joint. Vital signs of the patient were checked after surgery. The day of surgery, the arm is kept elevated. Three days were spent administering intravenous antibiotics (Inj.Cefglobe Forte 1.5g IV BD), and then five days were spent administering oral antibiotics (Tab.Taxim O 200mg BD). On day twelve, the suture was removed. On the first POD, the patient was forced to sit in the bed. With the assistance of a post-operative interscalenaus nerve block, passive shoulder mobility exercises were initiated right away. Following seven days, the patients were allowed to go home with enough mobility and wound healing. They were also instructed to keep up their shoulder ROM exercises, shoulder pendular exercises, and wall climbing exercises. In order to evaluate progress, follow-up sessions were planned.

Page – 5 on a regular basis. Data was collected in a proforma and scored using various systems, including the UCLA Score and VAS score

3. Result and Discussion

The following observations were made using the data from this study, which was carried out in the orthopedics department of Saveetha Medical College and Hospital between June 1, 2022, and June 31, 2023. Thirty people who met the parameters were diagnosed with adhesive capsulitis. After a course of intensive physical therapy and exercises performed at home, arthroscopic release was part of the treatment plan. Of the thirty participants in our study, twelve were female and eighteen were male [Table-2][Fig-1]. Of the patients, sixteen had more common deficits on the left side [Table-4][Fig-2]. The patient's age ranged from 57 to 78 years old, with an average age of 65 [Table 1]. Stage 2 is the most prevalent among the about 19 cases [Table 3]. The UCLA score ranged from 18 to 26 with a mean of 23 before surgery. Furthermore, within a range of 7 to 9, the preoperative VAS score had a mean of 8. These are the pre-operational ranges for external rotation, abduction, and flexion: 10 to 50o for external rotation, 60 to 110o for abduction, and 60 to 100o for flexion. The post-operative UCLA score displayed notable enhancements, varying from 26 to 35. plus a post-operative VAS score in the range of two to five. Range of motion for flexion, abduction, and external rotation after shoulder surgery is [30 to 50o for external rotation, 100 to 160o for flexion]. [Table-5]. The usual recovery

period is four weeks, although it can take anything from three weeks to two months. In five of the patients, there was indications of a superficial skin infection, and these patients reacted better to antibiotic therapy. We were unable to follow up with any of the patients in our trial.

DISCUSSION

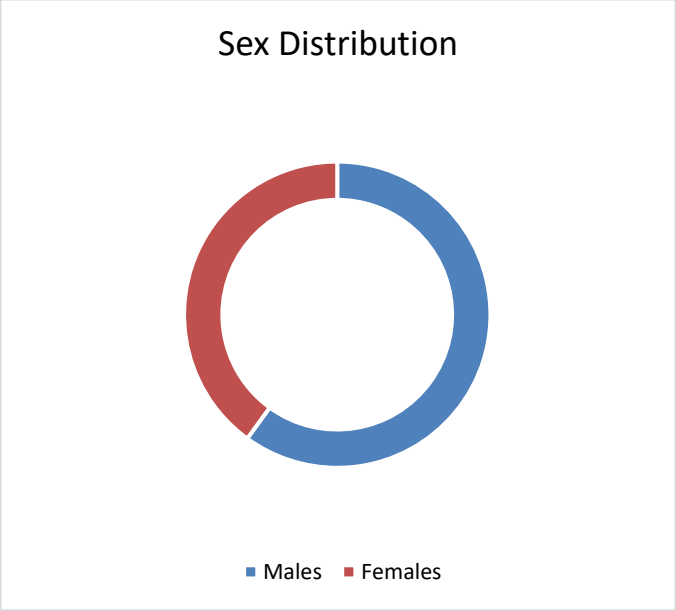

Figure 1 – Thereby compares the Sex distribution with Males being most commonly affected

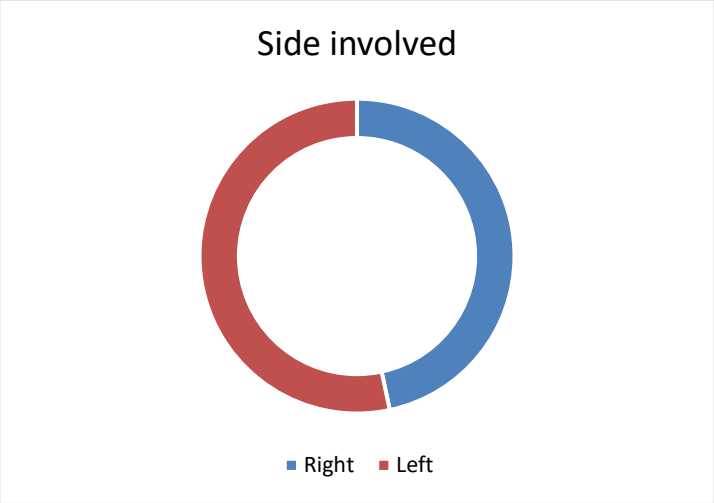

Figure 2 – Thereby compares the side distribution with Left side being most commonly affected

Any condition where shoulder motion, including passive and active, is restricted in all directions without apparent cause is referred to as frozen shoulder. Although the illness is thought to eventually resolve on its own, some patients were unable to return to their regular range of motion. Secondary frozen shoulder can have a recognized cause, such as ischemic heart disease, diabetes, cervical illness,

hyperthyroidism, or traumatic injury (8). Other than surgery, which includes manipulation under anesthesia and open or arthroscopic soft tissue release operations, treatments include physical therapy, intra-articular steroid injection, and non-steroidal anti-inflammatory medicines. Success stories have emerged from a number of modern arthroscopic procedures.The arthroscopic method makes it possible to interact with other intra-articular pathologies that may be present in addition to diagnosing and treating conditions with low morbidity (9). The patient in our study ranged in age from 57 to 78 years old, with an average age of 65. Robinson, C.M. et al. [10] found that the highest incidence occurred in patients between the ages of 40 and 60, and that it was uncommon in patients less than 40 and exceptional in those older than 70. The mean age of 56 +/- 8 years, with a range of 32-80 years, was reported by Callum P. Barnes et al. [11]. In our study, 12 of the 30 patients were female and 18 were male. In contrast to prior research, Franceschi and Franceschetti et al. (12) 38.9% of the population was male and 61.1% was female. Additionally, Di Giacomo et al. (13) discovered that, in contrast to our study, where the male to female ratio was 3:2, the male to female ratio was 3:1. Before surgery, the UCLA score ranged from 18 to 26 with a mean of 23. In addition, the preoperative VAS score ranges from 7 to 9, with an average of 8. The following are the pre-operational ranges for flexion, abduction, and external rotation: flexion: 60 to 100o, abduction: 60 to 110o, and external rotation: 10 to 50o. The post-operative UCLA score, which varied from 26 to 35, showed notable improvements. a post-operative VAS score ranging from two to five is also included.

After shoulder surgery, one's range of motion is as follows: flexion: 100 to 160 o, abduction: 100 to 160 o, external rotation: 30 to 50 o. In our study, the average recovery period was four weeks, although other studies, such as Watson et al. (14) revealed that the average recovery period was 2.24 weeks (range: 4 days–8 weeks), indicating that the usual recovery period is between three weeks and two months. Two months was the average time (range: 1.6–5.8 months) according to Di Giacomo and Costantini et al. (2013). Harryman et al. (15) found that 73% of patients had excellent function return three months following surgery. In five of the patients, there was indications of a superficial skin infection, and these patients reacted better to antibiotic therapy. We were able to follow up with all of the patients in our trial. No patients were lost to follow up.

Table – 1 showing patients age distribution and percentage

S.No	Patients age (years)	Number of patients	Total percentage (%)
1.	55-60	9	30
2.	60-65	9	30
3.	65-70	7	23

4.	70-75	3	10
5.	75-80	2	6

Table – 2 showing patients sex distribution and percentage

S. no	Patients sex	Number of patients	Total percentage (%)
1.	males	18	60
2.	females	12	40

Table – 3 comparison of stage and disease and percentage

S.no	Stage of disease	Number of patients	Total percentage (%)
1.	1	7	23
2.	2	19	63
3.	3	4	13

Table – 4 showing side affected in adhesive capsulitis

S.no	Side	Total patients	Percentage %
1.	right	14	47
2.	left	16	53

Table – 5 Comparing the shoulder range of movements before and after surgery

S.no	Range of motion (rom) degrees	Rom before surgery (avg) degrees	Rom after surgery (avg) degrees
1.	abduction	88	122
2.	flexion	79	128
3.	extension	28	40

4. Conclusion and future scope

According to our research, arthroscopic release seems to be a safe method with good outcomes after surgery. As a result, this reduces the incidence of complications and permits early mobilization of the shoulder joint.

DECLARATIONS

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Conflict of Interest: None declared

Ethical Approval: Not required

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