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Functional Outcome Of Arthroscopic Management Of Primary Adhesive Capsulitis With 360-Capsular Release

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Abstract
Background: Adhesive capsulitis is prevalent, comprising for 2% to 5% of shoulder discomfort. The highest occurrence occurs between the 40 and 60 years of age, and is uncommon outside of these age groups. It is characterized by progressive pain at the deltoid muscle inserting, reluctance to rest on the injured side, and limitation in active and passive elevations and outward rotation. Prior to being referred for surgery, the majority of patients are initially prescribed various forms of physical therapy as well as injections of corticosteroids. In spite of the fact that nonoperative treatment is effective for the majority of frozen shoulder cases, surgical intervention may be required in situations when conservative treatment has been unsuccessful.
Objective: The current study sought to determine functional outcome of the Arthroscopic management of primary adhesive capsulitis with 360-capsular with Oxford Shoulder Scores (OSS) & VAS Score in our local population.
Method: Descriptive case series was performed in department of orthopedic surgery, Lahore general hospital Lahore, over 30 patients with intense resistive adhesive capsulitis. Patient with shoulder infection, post traumatic and postoperative adhesive capsulitis were excluded. The major outcome measure was OSS at 6 months, with supplementary outcomes including the visual analogue scale, and complications.
Results: Between 1st July 2023 and 31st Dec 2023, thirty patients were Arthroscopically managed for treatment of primary adhesive capsulitis. The average age of 53.1 years. Result showed notable gains in OSS over the initial state with 41.9. The OSS improved significantly following the interference, with 85% refinement observed at 6 weeks after surgical intervention.
Conclusions: At six months, candidates who were treated for ACR had a considerably greater OSS and there was a significant improvement.

Keywords: Adhesive capsulitis; arthroscopy; injection

Abbreviation: GH (glenohumeral), RCT (rotator cuff tear), ACR (arthroscopic release)

Introduction:

Adhesive capsulitis is prevalent, comprising for 2% to 5% of shoulder discomfort.[1] The highest occurrence occurs between the 40 and 60 year of age, and is uncommon outside of these age groups.[2] Codman2 coined the term "adhesive capsulitis" in 1934 to represent a syndrome that, despite having a normal radiologic appearance, is characterized by progressive pain at the deltoid muscle inserting, reluctance to rest on the injured side, and limitation in active and passive elevations and outward rotation.[3] In the past, adhesive capsulitis was believed to be a self-settling illness that would go away on its own. Longitudinal nonoperative investigations have revealed that the condition is less benign than originally believed, nonetheless. 10% of patients had inadequate results after physiotherapy, with a mean follow-up of 22 months, according to research,[4] while 11% of candidates still experienced a mean of seven years' worth of functional impairment.[5]
While a frozen shoulder is commonly believed to be self-limiting, complete recovery of symptoms does not always happen.[6] At present, there is no widely agreed-upon treatment method, and the most efficient approach to regain movement and reduce pain has not been clearly determined.[7] Prior to being referred for surgery, the majority of patients are typically prescribed physical therapy and corticosteroid injections. While the majority of frozen shoulder cases can be successfully treated without surgery, there are instances where surgical intervention may be required if conservative treatment methods have been unsuccessful.
The current study sought to determine functional outcome of the Arthroscopic management of primary adhesive capsulitis with 360-capsular with Oxford Shoulder Scores (OSS) in our local population.

Materials & Methods:

Fifty patients with adhesive capsulitis resistance to conservative who presented to our shoulder services were prospectively enrolled in the study treatment between 1st July 2023 and 31st Dec 2023 in Department of orthopedic surgery, Lahore General

Hospital Lahore after ethical approval (12/22 PGMI). Individuals received diagnoses as adhesive capsulitis by Codman criteria & the accepted definition of the American Shoulder and Elbow Surgeons for the subtle onset of real shoulder pain, which includes nighttime pain, restriction of exterior rotation to a lesser than half of normal and passive front elevation to lower than 100-degree. Thirty patients were selected after taking consent, who were managed conservatively with physiotherapy and oral medication for last six months.

After explaining al procedures and taking consent, Arthroscopic 360 capsular release was performed under anesthesia by the our surgical team using standard techniques. Using a anterior working portal via rotator interval, the anterior release was carried out to the five o'clock position. When the radiofrequency probe was positioned behind the long head of the biceps, the superior and posterosuperior capsules were freed. The inferior release was accomplished by carefully manipulating the device taking care of axillary nerve. A posterior release was carried out if the patient's internal rotation was inadequate. A uniform physiotherapy program was shaped and Codman exercises were taught to every patient.

Outcome measurments: A clinical investigator collected the OSS and visual analogue scale (VAS) on the day of the therapy as well as at 6 weeks, three months and six months later. Prospectively tracked variables included VAS score, passive range of motion of shoulder joint, and occurrence of problems. At six months, OSS served as the main outcome indicator.

Data analysis:

All data was analysed via SPSS 22. Using the Shapiro-Wilk test, the distribution of the baseline primary outcome was evaluated. The independent Student t test was used to evaluate the mean baseline and the primary and secondary outcomes at six months. A significance level of P <.05 was used.

Results:

Between March 2023 to August 2023, 30 patients were studied with 360-ACR. Average age was 53.1 years. Men and female ratio were 1:2.3. Diabetic patients were 80.6%, but all were in controlled level. Three patients were lost from follow-up on 6th month. There is considerable gains in OSS from the baseline; 80% improvement in OSS at 6 weeks following surgery. The ACR cohort's OSS increased from 17.3 to 43.8 at 6 months postintervention, a 26.5 (P <.01) improvement. VAS improved significantly. At the end of the study follow-up, there was no significant difference in OSS and VAS score improvement between diabetes and non-diabetic groups.

Figure 1: outcome scores (mean) at each follow-up

Variable	**6 weeks**		3-month		6-Month		p-value
	OSS mean	VAS mean	OSS mean	VAS mean	OSS mean	VAS mean	
ACR (Mean)	55.3	91.1	49.2	89.3	43.8	85.3	<.01

Figure 2: Arthroscopic release of rotator interval

Discussion:

Despite extensive research on the issue, there is still no widely acknowledged treatment strategy for adhesive capsulitis treatment and pain management. According to Zreik et al., 13.4% of people who are diabetic also have adhesive capsulitis, and individuals with adhesive capsulitis have a 30% incidence of diabetes,[12] which is substantially greater than the 8.3% prevalence observed in the general population.[13] We similarly observed this greater incidence of diabetes in our study, with 24.9% of individuals suffering the disease.

This study found that ACR is excellent therapeutic options for people with adhesive capsulitis. All patients experienced rapid improvements in OSS and external rotation, with 80% improvement attained within 6 weeks. It has previously been documented that the OSS improved quickly following ACR.[11]

In a study of 42 patients, Mehta et al. found that patients with diabetes had considerably worse outcomes after arthroscopic capsulotomy than those without, and there was also a tendency towards chronic limiting of movement in the diabetic cohort.[14] This is contrary to our observation, as we found no association between diabetes and severity of symptoms following ACR.

NSAIDs are frequently used for the management of adhesive capsulitis because they are widely accessible and have been shown to provide good pain relief. However, their effects have only been found to be temporary, and they are only helpful as a symptomatic treatment.[15] Intraarticular steroid injection is widely acknowledged as an effective treatment for adhesive capsulitis. It is superior to NSAIDs for alleviating pain and improving range of motion, according to several studies.[16] Our study also showed the same satisfactory result in term of pain relief and improvement of motion at 6 weeks follow-up.
According to De Carli et al., surgical intervention results in a greater improvement in range of motion and much better function in the near term than intraarticular steroid shot.[17] This is opposed to our study, which shown that, over the long run, the results for the ACR was significant.
At final follow-up the improvement curve was not same as on the 6th week follow-up, hence multiple patients reported residual discomfort, which is consistent with findings published in the worldwide literature. [18,19] The fact that adhesive capsulitis is a progressive disorder with overlapping phases and a spontaneous beginning makes it limited in various ways. Moreover, patient durations may have been erroneous, which would have undermined our findings. After that, the study excluded adhesive capsulitis brought on by diabetes or injuries, which may have contributed significantly to the overall population with adhesive capsulitis.

Conclusion:
At six months, patients treated for ACR had much greater OSS on 6th month follow-up. There was no significant difference in OSS and VAS score improvement between diabetes and non-diabetic groups.

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