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Effect of nonoperative concomitant intraarticular pathologies on the outcome of arthroscopic capsular release for adhesive capsulitis of the shoulder

Fatih Yildiz [a, *], Abdulkadir Sari [b], Anil Pulatkan [a], Vahdet Ucan [a], Alauddin Kochai [c], Kerem Bilsel [a]

[a] Department of Orthopedics and Traumatology, Bezmialem Vakif University School of Medicine, Istanbul, Turkey
[b] Department of Orthopedics and Traumatology, Namık Kemal University School of Medicine, Tekirdag, Turkey
[c] Department of Orthopedics and Traumatology, Sakarya University School of Medicine, Sakarya, Turkey

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ABSTRACT

Objective: The aim of this study was to investigate whether coexistent intraarticular lesions are negative prognostic factors for the results of arthroscopic capsular release in frozen shoulder patients.
Methods: Seventy-two patients who met inclusion criteria and underwent arthroscopic capsular release between March 2011 and August 2015 for the frozen shoulder were retrospectively evaluated. The patients were divided into two groups according to existence of concomitant intraarticular pathologies detected during arthroscopy. Preoperative and postoperative functional results were assessed with Constant score and shoulder ranges of motion; and the amount of pain was evaluated using visual analog scale (VAS).
Results: Group I consisted of 46 patients (mean age 47.2 years and mean follow-up 26 months) without concomitant shoulder pathologies and group II consisted of 26 patients (mean age 48.6 years and mean follow-up 15 months) with coexistent lesions (SLAP lesions, n = 8; SLAP and partial rupture of the RC, n = 4; SLAP, partial rupture of RC and impingement, n = 10; SLAP and impingement, n = 2; and AC arthritis and impingement, n = 2). Preoperatively, the mean ranges of forward flexion (p = 0.221), abduction (p = 0.065), internal rotation (p = 0.564), Constant (p = 0.148) and VAS (p = 0.365) scores were similar between the groups. After a minimum 12 months of follow-up, all patients significantly improved but no statistically significant difference was detected in the mean ranges of forward flexion (152 vs 150; p = 0.902), abduction (137 vs 129; p = 0.095), external rotation (45 vs 40; p = 0.866), internal rotation (5 vs 5 point; p = 0.474), Constant (82 vs 82.3; p = 0.685) and VAS (1.2 vs 1.2; p = 0.634) scores between the groups.
Conclusion: The presence of concomitant shoulder pathologies does not appear to affect the clinical outcomes in patients undergoing arthroscopic capsular release for frozen shoulder.
Level of evidence: Level III, study. Therapeutic study.

Introduction

Frozen shoulder, also called as adhesive capsulitis, is a common disorder, which causes active and passive movement restriction at the shoulder joint and severe morbidity. Histologically, transformation of fibroblasts of the joint capsule into myofibroblasts causes a decrease in the volume of the joint and contracture occurs.[1–3] The disease is divided into two groups according to the etiology: primary without a known reason and secondary, which can be caused by a surgery or a trauma. Currently, secondary cases classified into three main groups by Zuckerman: intrinsic, extrinsic

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* Corresponding author. Bezmialem Vakif University, Dept. of Orthopedics and Traumatology, Vatan Cd. Fatih, 34093 İstanbul, Turkey. Tel.: +90 212 4531700 2505.
E-mail address: yildizfatih@hotmail.com (F. Yildiz).

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and systemic.[4] Although its pathology is still unclear, several conservative and surgical treatment options as well as manipulation under anesthesia have been described.[5–9] It is a self-limited disease and most of the times conservative treatment methods provide remission. However about 20%–40% of the patients with adhesive capsulitis do not improve, which is called as resistant, and surgical treatment is needed.[10] Arthroscopic capsular release has been increasingly preferred for this reason.[11,12]

In the treatment of frozen shoulder, arthroscopic capsular release has been reported as a successful method.[13–15] One of the advantages of the arthroscopic capsular release is detection and simultaneous treatment of coexistent intraarticular pathologies such as superior labrum anterior to posterior lesion (SLAP), partial or total tear of the rotatory cuff (RC) and cartilage lesions. In the literature, it is not clear whether additional intraarticular shoulder pathologies are predictors of fair results of the arthroscopic capsular release. Hypothesis of the study was that the results of arthroscopic treatment of the frozen shoulder could be adversely affected by concomitant intraarticular pathologies. The purpose of this study was to compare the results of arthroscopic treatment of the frozen shoulder with or without coexistent shoulder pathologies.

Materials and methods

This study was performed according to the Declaration of Helsinki. One-hundred-ten patients who were diagnosed with frozen shoulder according to the criteria of Codman and Zuckerman, between March 2011 and August 2015, and did not improve after a minimum of six months of conservative treatment period (intraarticular steroid injection and physiotherapy) were included in this retrospective study. The patients with the diseases that neurologically affect the shoulder mobility such as Parkinson disease (n = 2), stroke (n = 2), radicular neuropathy due to cervical lesions (n = 4), thoracic outlet syndrome (n = 2), rheumatoid arthritis (n = 4), undergoing fracture (n = 4) and tumor (n = 2) in the same shoulder were not included in the study. Repaired coexistent full-thickness rotatory cuff (RC) ruptures (n = 8), repaired SLAP (n = 6) and labral tear lesions (n = 4) were excluded from the study because their postoperative rehabilitation protocols were different. However, partial thickness RC tears and SLAP lesions which were not repaired included in the study. The remaining 72 patients who underwent arthroscopic capsular release only were included in the study.

Preoperative and postoperative physical examinations of the shoulders including active and passive ranges of motions (ROMs) were evaluated by a specific shoulder surgeon. The ranges of motions were measured as forward flexion (FF) in scapular plane, abduction (ABD) in coronal plane, external rotation (ER) when elbow in 90° flexion and in arm close to the body, and internal rotation of patient's thumb reaching to spinal column. The ranges were measured using a goniometer, except the range of IR, which was given a score from 0 to 6 according to the level of the thumb (Greater Trochanter: 0 points; Glutea: 2 points; L5-S1: 4 points; L3: 6 points). All patients' shoulder pathologies were evaluated with direct radiographs of the affected shoulders and Magnetic Resonance Imaging (MRI) before surgery. Interventional shoulder arthroscopy was applied to all patients by one specific shoulder surgeon.

Surgical technique

Scalene block anesthesia, which was supported with general anesthesia, was applied to all patients. Patients were prepared in beach chair position and ROMs were evaluated without manipulation under anesthesia (MUA). Standard posterior viewing portal and anterior working portal were used during the release. Postero-inferior portal was also used to reach axillary pouch. Diagnostic arthroscopy was completed for all patients. Existence and the degree of synovitis, capsular and ligamentous thickness, existence of additional shoulder pathologies (SLAP, cuff tear, impingement) in addition to rotator interval width were evaluated. For the additional SLAP lesions, biceps tenotomy; for partial RC tears, debridement; for impingement, subacromial decompression and acromioplasty were performed with standard arthroscopic pancapsular release. The rotator interval was opened, thickened capsular structure, middle glenohumeral ligament (MGHL), coracohumeral ligament and inferior glenohumeral ligament (IGHL) were released. Through postero-inferior accessory portal inferior axillary pouch was reached and released. After the posterior capsular release, a total of 360-degree relaxation was achieved and, shoulder movement was re-evaluated and if satisfactory, the arthroscopy was finalized.

Postoperative care and rehabilitation

Standard rehabilitation protocol was applied to all patients. In order to control pain during the early postoperative rehabilitation period in the hospital, interscalen blockage was continued through a cathater. On the day of surgery, passive forward flexion, abduction and external and internal rotation had been started by a physiotherapist. Active ROMs were allowed as well as the patient tolerated. The patients were discharged at the fifth day postoperatively and daily physiotherapy had been continued under control of a physiotherapist at least for one month.

Seventy-two patients were divided into two groups according to detection of additional lesions in arthroscopy and the groups were compared according to the clinical outcomes including preoperative and postoperative ROMs of the shoulders (FF, ABD, ER and IR), Constant and Visual Analog Scale (VAS) scores. Group I included patients without coexistent shoulder pathologies and group II included patients with additional shoulder lesions, such as partial thickness RC tear, SLAP lesion and subacromial impingement according to MRI and/or arthroscopy, which did not require repair. Age, gender, affected and dominant limbs, conservative treatment periods, postoperative follow-up periods, secondary systemic causes of the frozen shoulder and duration of postoperative interscalen blockage were also recorded from the files of the patients. The lesions were staged clinically according to Reeves and classified arthroscopically according to Nevasier.[16,17] Intraoperative and postoperative complications were also recorded.

Statistical analyses

Categorical data were compared between the groups using Pearson Chi-Square and Fisher's exact tests. The differences between the groups were evaluated by the Mann–Whitney U test. Assessment of the groups individually was made with Wilcoxon signed rank test. The correlation between variables was evaluated using Spearman's rank correlation coefficient of r. $P < 0.05$ was defined as statistical significance.

Results

Group I consisted of 46 patients without additional shoulder pathologies and group II consisted of 26 patients with accompanying lesions, which were detected during shoulder arthroscopy (Table 1). All patients were staged clinically and classified arthroscopically according to Reeves and Nevasier (Table 2). In the second group, eight patients had concomitant SLAP lesions, four patients had SLAP and partial rupture of the RC, ten patients had SLAP + partial rupture of RC + impingement, two patients had SLAP + impingement and two patients had AC arthritis and impingement.

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