



The effectiveness of acromioplasty in the treatment of subacromial impingement syndrome of the shoulder

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ARTICLE INFO

Article History

Received 18 / 12 / 2011
Accepted 26 / 12 / 2011

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Keywords:

Acromioplasty
Shoulder impingement
Constant score
Visual Analogue Scale
Shoulder pain
Open surgery

ABSTRACT

The aim of this study is to evaluate the effectiveness of anterior open acromioplasty in patients with subacromial impingement syndrome of the shoulder in which there is no response to conservative treatment. Anterior open acromioplasty was performed on 56 patients diagnosed with subacromial impingement syndrome. We have called patients for the control. We evaluated the patients according to the Constant shoulder scoring system and VAS (Visual Analogue Scale), at rest, at night and during activity. We also evaluated and recorded range of motion of the shoulder and muscle strength. In two patients (3.6%) the result was moderate; in five patients (8.9%) the result was good and in 49 patients (87.5%) the result was perfect. The mean Constant score was 87 (51-100). In two patients (3.5%) there was light pain at rest and at night, and moderate pain during motion. In three patients (5.3%) we detected moderate pain only during motion. In 51 patients (91.2%) there was no pain at all. Acromioplasty has a positive effect on the treatment of pain, active range of motion and muscle strength in daily living activities in the treatment of subacromial impingement syndrome.

J. Exp. Clin. Med., 2012; 29:20-22

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1. Introduction

The shoulder joint has the largest capacity in the mean of mobility in the body. One of the most common causes of shoulder pain is rotator cuff lesions. Prevalence increases with age (Insell et al., 2006). Subacromial impingement syndrome is the cause of rotator cuff lesions in 95% of cases (Neer, 1972). Impingement syndrome is characterized by pain especially during flexion, abduction and external rotation due to the compression effect of the coracoacromial arc on the rotator cuff (Ekin, 1993).

Treatment options for subacromial impingement syndrome are conservative treatment or surgical treatment. In the early stages of the disease we treat the patient conservatively with subacromial steroid injections, nonsteroidal anti-inflammatory drugs, warm applications, ultrasound, electrotherapy and also physical therapy leading to depression of the humeral head and prevention of rotation of the scapula.

When conservative treatment has failed and/or in patients with advanced stages of impingement syndrome, we use surgical treatment in which we eliminate the mechanical pres-

sure of the acromion on the rotator cuff. In surgery, we use open surgical or arthroscopic techniques.

The aim of this study is to evaluate the effectiveness of anterior open acromioplasty in patients with subacromial impingement syndrome of the shoulder in which there is no response to conservative treatment.

2. Material and methods

We studied 56 patients with a diagnosis of subacromial impingement syndrome who had undergone subacromial decompression between 1997 and 2011 in Ondokuz Mayıs University, Medical Faculty, Clinic of Orthopedics and Traumatology.

The same resident in orthopedic surgery did all the tests and recorded evaluational findings for standardization of the results. In all of the cases, shoulder abduction, flexion, internal rotation and external rotation were evaluated with a goniometer.

Following the examination and clinical evaluation of the shoulder of the patient, we used the constant Murley score,

the Visual Analogue Scale (VAS) during movement, at rest and at night, and the findings were recorded on forms to evaluate the effect of the pathology on daily living activities.

All of the patients were operated on under general anesthesia. No early postoperative complications were observed. For the prophylaxis, 1g of cephalosporin was applied in all cases.

Before they left the hospital, we gave each patient a simple shoulder sling, an exercise programme and prescribed NSAIDs, and we asked them to come to the outpatient clinic for regular controls.

3. Results

Of the 56 patients in our study 39 (69.6%) were women and 17 (30.4%) were male. The mean age was 54.87 ± 9.09 (37-80). In 47 cases (83.9%) the right upper limb was dominant and in nine cases (16.1%) left upper extremity was dominant. In 44 patients (78.6%) the pathology was on the right shoulder and in 12 patients (21.4%) the pathology was on the left shoulder. In 49 patients (87.5%) we observed dominant side involvement; in seven (12.5%) there was non-dominant side involvement. The mean follow-up period was 52 (7-156) months.

In the early stages of subacromial impingement syndrome, the patients complained about pain only during movement but, in the advanced period of the disease, the patients started to complain about pain, particularly at night during sleep. Therefore, we asked patients to score their pain at rest, during movement and during sleep time to get their VAS scores.

In two patients (3.5%), there was light pain at rest and at night, and moderate pain during motion. In three patients (5.3%) we detected moderate pain only during motion. In 51 patients (91.2%), there was no pain at all. Thus, the major complaints of the patients disappeared or decreased significantly.

We applied constant scoring to all of the patients. The Constant scores were moderate in two cases (3.6%), good in five patients (8.9%) and perfect in 49 cases (87.5%). The mean Constant score was 87 (51-100).

Limited motion capacity was one of the main complaints, and this was also treated by the surgery. In our patients, the mean degree of abduction 159.2 (70-180) and the mean degree of flexion 159.8 (70-180) were measured.

4. Discussion

The cause of the shoulder pain in the majority of patients was subacromial impingement syndrome. According to Matsen and Arntz (1990), subacromial impingement and rotator cuff lesions are the most common cause of shoulder pain.

The coracoacromial ligament and the lower surface of acromion prevent upward migration of the humeral head. Thus, these anatomical structures should not be sacrificed in the absence of pathological changes. Therefore, in the presence of muscle imbalance, unnecessary acromioplasty will not be a solution, or even create a new pathology. Budoff et al. (1998) have showed that only soft tissue debridement and subacromial osteophyte excision can give very successful results.

The average age of the patients in our study was found to be 54.87 ± 9.09 , which is consistent with Turkish as well as international literature on subacromial impingement syndrome.

Karabulut, (1999) studied 50 patients with subacromial impingement syndrome and found that the average age was 48.8 years.

Of the patients, 39 (69.6%) were women and 17 (30.4%) were male. Thus, in our study the female sex ratio was higher than male sex ratio. This female gender dominance was consistent with the literature (Neer, 1972; Conroy and Hayes, 1998).

The results of open surgical decompression are fairly good. Neer (1972) operated on 15 patients and achieved satisfactory results. None of these patients complained about the pain or limitation of extension of no more than 20 degrees, and an average of 75% of the normal power level was reached (Neer, 1972). Thorling et al. (1985) have given results for 51 patients with acromioplasty and 39 of them (75%) achieved excellent results.

Hawkins et al. (2001) did a retrospective study of 108 patients with anterior acromioplasty and satisfactory results were achieved in 87% of the cases. Post et al. (1986) performed acromioplasty on the impingement syndrome of 52 patients; in 40 of them (77%) the results were excellent and in 12 of them (11%) the results were poor. Rockwood, (1990) performed modified acromioplasty on 37 patients and achieved excellent results in 85% of the patients. Bolukbasi et al. (1994) achieved satisfactory results in 14 out of 15 patients. In our study, we observed excellent results in 87.5% of the patients, which is consistent with results given in the literature.

A 3-25% failure rate has been reported after open acromioplasty. Post and Cohen (1986) found resistant pain in 11% of their cases after surgery and also found 29% of limited range of motion. Tibone et al. (1985) observed resistant moderate to severe pain in 20% of cases in 35 athletes after acromioplasty.

In five of our patients (8.9%) we found complaint of postoperative pain. In two patients (3.5%) the pain was light at rest and at night and moderate during motion. Three patients (5.3%) experienced mild pain during activity. This failure rate in our study is consistent with the literature.

Matsen and Arntz (1990) found the causes of failure, according to their priority, to be wrong diagnosis, incomplete decompression, inadequate repair of the deltoid, excessive excision of the acromion and inadequate rehabilitation. In the same study, they found that the factors affecting the prognosis are: age under 40 years of age, the development of postoperative posterior capsular stiffness, and glenohumeral instability and muscle weakness around the cuff.

We found mild and moderate pain only during activity in three patients. In these patients there was limited motion in addition to the pain. In these patients we observed inadequate rehabilitation following the operation. In two patients we observed only limited motion without pain. We have referred these patients to the physical therapy section.

Achieving a painless glenohumeral joint is much more important than achieving full range of motion (Sauers, 2005). If there are poor prognostic factors, more aggressive treatment options may be considered (Taheriazam, 2005).

In recent years, the concept of subacromial decompression is changing, so instead of acromioplasty, subacromial decompression and debridement are starting to be done. Ellman (1987) has described arthroscopic subacromial decom-

pression as an alternative to open acromioplasty. The first large series of arthroscopic subacromial decompression belongs to Elman (1987). The results were similar with open acromioplasty (Elman, (1987).

This study suggests that open acromioplasty has beneficial effects on pain, daily living activities and active range of motion. Therefore, it is a good treatment option for subacromial impingement syndrome that has not responded to conservative treatment.

However, with the spread of arthroscopic treatment as the treatment of choice, comparative studies have been con-

ducted in recent years. But arthroscopic treatment is a surgical procedure that involves a long learning curve so we can see inadequate or complicated treatment of impingement syndrome.

Thus we have decided that the primary treatment of subacromial impingement syndrome should be conservative. However, if there is no response despite the conservative treatment for at least six months, open acromioplasty is a useful treatment method when arthroscopic acromioplasty is not suitable.

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