Orthopaedics & Traumatology: Surgery & Research 102 (2016) 311–318

Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en

Original article

Limited distal clavicle excision of acromioclavicular joint osteoarthritis

K. Gokkus[a,*], M. Saylik[b], H. Atmaca[c], E. Sagtas[d], A.T. Aydin[e]

[a] Orthopaedics and Trauma, Ozel Antalya Memorial Hospital, zafer mah .yildirim beyazit cad no 91, Kepez Antalya, 07025, Turkey
[b] Orthopaedics and Trauma department, Ozel Bursa Bahar Hospita, Bursa, Turkey
[c] Orthopaedics and Trauma Department, Akdeniz University School of Medicine, Turkey
[d] Radiology Department, Antalya Memorial Hospital, Antalya, Turkey
[e] Orthopaedics and Trauma Department, Antalya Memorial Hospital, Antalya, Turkey

ARTICLE INFO

Article history:
Received 24 April 2015
Accepted 12 January 2016

Keywords:
AC Joint
Shoulder impingement syndrome
Distal clavicle excision
Osteoarthritis

ABSTRACT

Introduction: Resection of the distal aspect of clavicle has a well-documented treatment modality in case of acromioclavicular joint osteoarthritis resistant to conservative treatment.
Hypothesis: Limited (mean ~0.5 cm distal end of clavicle resection) distal clavicle excision of A-C joint arthritis in cases resistant to conservative treatment may reduce the pain and improve the shoulder function.
Material and methods: In this study, we retrospectively evaluated the results of limited distal clavicle excision of acromioclavicular joint osteoarthritis resistant to conservative treatment.
All patients were evaluated by using the Visual Analogue Scale (VAS) and UCLA shoulder rating scale (University of California Los Angeles), either before surgery or final follow-up period for pain and functional results, respectively.
Results: A total of 110 patients (48 male, 62 female) with AC joint arthritis, treated between the years of 2008–2012, were retrospectively analyzed. A total of 30 patients (12 male, 18 female) who failed to show improvement with conservative treatment underwent limited surgical open excision of distal clavicle. The mean age of the study population was 52.5 ± 1.2 years. The mean follow-up period was 27 ± 1.3 months. The mean preoperative VAS score was 83.6 ± 5.58 (range, 70–90) while mean VAS was 26.6 ± 9.3 (range, 10–50) at the final follow-up. There was a statistically significant difference between pre- and postoperative VAS scores in patients who had treated by surgical approach ($P < 0.001$). The mean UCLA score of the patients increased postoperatively from 11.5 (range, 9–14) to 29.2 (range, 27–32) at the final follow-up. There was a statistically significant difference between the two time periods with respect to UCLA scores ($P < 0.001$).
Discussion and conclusion: In patients with AC osteoarthritis resistant to conservative therapy, the hypothesized limited clavicle excision (mean ~0.5 cm distal end of clavicle resection with preserving coracoclavicular ligaments and inferior capsule) reduced the pain and improved the shoulder function.
Conclusion: Our midterm follow-up (mean 27 months) results showed that limited distal clavicle excision of patients with AC joint osteoarthritis resistant to conservative treatment (0.5 cm distal end of clavicle resection with preserving inferior capsule, and coracoclavicular ligaments) reduced the pain and improved the shoulder function.
Level of evidence: IV (Retrospective study).

1. Introduction

Osteoarthritis of the AC joint is a common source of shoulder pain that is often neglected by clinicians [1]. Subacromial impingement as reported by Neer and Poppen, includes both hereditary and acquired variations in the morphology of supraspinatus outlet, which is formed by acromion, coracoacromial ligament and the acromioclavicular joint (AC) [2]. Inferiorly aimed osteophytes from the degenerated AC joints have been correlated with subacromial impingement and development of rotator cuff pathology [3,4]. Kessel and Watson [3,4], Petersson et al. [5], and Jeroch et al. [6] have found 26% – 1/3, 54%, 62.5% of association between the rotator cuff lesion and AC-joint degenerative arthritis, respectively.

* Corresponding author. Tel.: +902423146666/905324918565 (mobile); fax: +902423146648.
E-mail addresses: kgokkus@gmail.com, kgokkus@yahoo.com (K. Gokkus).

http://dx.doi.org/10.1016/j.otsr.2016.01.008
1877-0568/

Except for patients with a documented rotator cuff tear, a recent history of trauma, or sudden loss of strength, the initial treatment of AC joint osteoarthritis that causes outlet impingement syndrome is nonoperative [7]. Nevertheless, patients who had persistent to conservative treatment do require operative intervention [8]. Resection of the distal clavicle as described independently by Mumford [9] has been a reliable surgical method of treatment in patients with post-traumatic degenerative disease of AC joint osteoarthritis [10–12].

In the literature there are many studies concerning the treatment of AC joint arthritis that support conservative and surgical excision of the distal end of clavicle (arthroscopic or open).

The objective of this study is to assess the clinical and radiological mid-term results of open limited distal clavicle excision of A-C joint arthritis on the cases resistant to conservative treatment.

2. Patients and methods

In this study, we retrospectively evaluated the results of limited distal clavicle excision of AC joint osteoarthritis resistant to conservative treatment.

A total of 110 (48 men, 62 women) patients with AC joint arthritis were admitted to the orthopaedic department between the years of 2008–2012. A total of 30 patients were included in the study. The mean age of the study population was 52.5 ± 1.2 years and 40% of the study population was male.

Patients who had undergone previous shoulder surgery, subacromial spur or rotator cuff tear, concomitant diseases such as cervical disc disease and glenohumeral osteoarthritis were excluded from this study. Also the patients who had the traumatic history (i.e. AC joint dislocation or with concomitant injury with tuberculum majus fracture, shoulder dislocation, distal clavicle fracture) were excluded to avoid bias which can influence the results originating from comorbidities.

Additionally, we have graded the AC joint degenerative disease according to the Kellgren and Lawrence [13] system. In this classification system, the patients who had Grade I and IV osteoarthritis of AC joint were excluded from the study.

Moreover, patients with less than 12 months follow-up and the patients that we lost to follow-up and patients who had good respond to conservative treatment (80 patients) were excluded from the study. Patients in the conservative treatment group were treated with activity modification, paracetamol and/or nonsteroidal anti-inflammatory drugs (NSAID in the first step [3 months]). The second step was a 15 days regimen requiring regular hospital visits. This regimen included superficial and deep tissue heating with USG, electrotherapy (low frequency currents) and manual therapy and shoulder muscles strengthening exercises. If the pain persisted, steroid (methylprednisolone) with lidocaine injection was performed. All the patients were evaluated clinically and radiologically before the treatment.

Radiologic evaluation performed with standard shoulder anteroposterior view (Fig. 1a–c), Zanca view and magnetic resonance imaging (MRI) (Fig. 1b). The evaluation of the AC joint osteoarthritis was performed according to joint space narrowing; subchondral cysts and presence of osteophytes under AC joint (Fig. 1a–b, Fig. 2). The Zanca view was performed to ease the evaluation of impingement that was generated by the inferior part of AC joint.

Kellgren and Lawrence principals [13] were used to grade the degenerative changes of the AC joint (the Kellgren and Lawrence system for grading osteoarthritis is based on X-rays and consists of Normal, Grade I, Grade II, Grade II and Grade IV). According to definition of the Grade-I lesions that we commented, these lesions were considered mostly susceptible/or undetectable both clinically and radiologically and if these were diagnosed, these patients were prone response conservative treatment. Thus, we excluded these groups of patients from our study. Parallel with this decision Grade IV lesions also were excluded, those patients were considered to have large osteophytes and definite deformity of bone contour. So these groups of patients frequently tied up rotator cuff tears and possible negative factors that reversely contribute to results and creates bias.

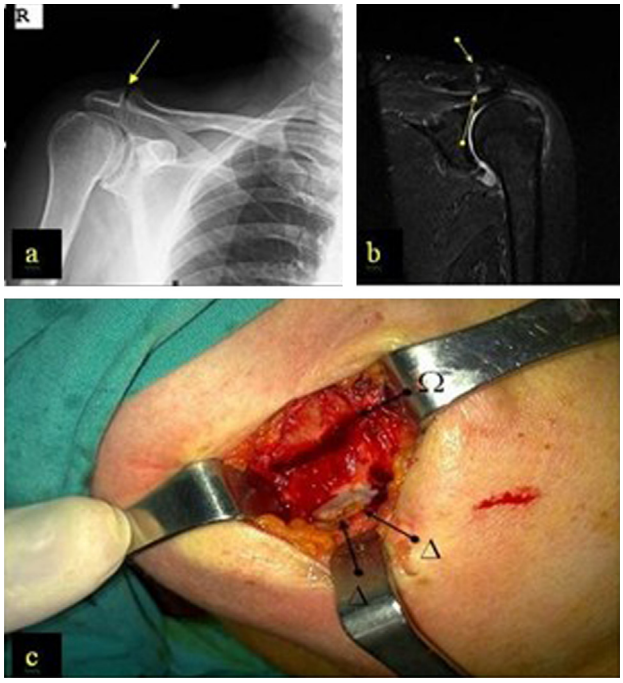

Fig. 1. a: radiologic appearance, note that yellow arrows shows irregular surface of joint that is the evidence of joint osteoarthritis; b: preoperative MRI appearance, Note that yellow arrows shows irregularity and joint space narrowing; c: intraoperative appearance of distal clavicle resection, Omega arrow shows cutted edge of clavicle, delta arrows show intact acromial cartilage surface of the AC joint.

The pain radiating to the trapezius muscle, base of the neck, the deltoid and the upper arm in addition to being directly over the AC joint frequently found with patient who has isolated AC joint pathology [14]. Patients can frequently place their finger directly onto the superior aspect of the shoulder directly onto the AC joint when asked to indicate the location of the pain [15].

Patients will report that symptoms are aggravated by either compression or rotation of the AC joint; most activities of daily living are a combination of theses two vectors. Pure AC joint compression can be caused by lying directly on the shoulder or by active adduction maneuvers across the body. Household activities, such as polishing a car, require repetitive compression and rotational maneuvers in an adducted position which may precipitate symptoms by compressing and rotating the AC joint [15].

All the patients had symptoms of AC joint tenderness and pain; the cross-body adduction test was positive in 68 patients (80.9%) (cross-body adduction test in which the arm on the affected side is elevated 90 degrees and the examiner then grasps the elbow and adducts the arm across the body (Fig. 3). Reproduction of pain over the AC joint is suggestive of, although not specific to, an AC joint lesion. Regarding to the remaining 20% the diagnoses were based on anemnesis and the physical examination (in particular, AC joint tenderness) and radiologic evidences and lidocaine test injection test were positive in all patients.

Primarily the assessment of pain and satisfaction were the mainstays of our evaluations before and after the surgery. Secondarily, we focused on shoulder function. Visual analogue scales (VAS) are