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Original Article

Short-term evaluation of arthroscopic management of tennis elbow; including resection of radio-capitellar capsular complex



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ARTICLE INFO

Article history:

Received 25 January 2014

Accepted 15 April 2014

Available online 11 May 2014

Keywords:

Lateral epicondylitis

Tennis elbow

Elbow arthroscopy

Radio-capitellar capsule complex

ABSTRACT

Background: There has been controversy regarding the pathogenesis and treatment of lateral epicondylitis. Different surgical techniques for the treatment of lateral epicondylitis prescribed. The purpose of this study was to evaluate the short-term outcomes of arthroscopic management including resection of the radio-capitellar capsular complex, using different validated scores.

Methods: In this study, arthroscopic resection of a capsular fringe complex was done beside debridement of the undersurface of Extensor Carpi Radialis Brevis (ECRB). Thirty-one patients with recalcitrant lateral epicondylitis for a minimum of 6 months had surgery. In all patients, a collar-like band of radio-capitellar capsular complex was found to impinge on the radial head and subluxate into the radio-capitellar joint with manipulation under direct vision. Outcomes were assessed using Mayo Elbow Performance Index (MEPI), the Patient-Rated Tennis Elbow Evaluation (PRTEE), and the Disability of the Arm, Shoulder, and Hand (DASH), beside visual analog scale (VAS) for pain and satisfaction criteria.

Results: After arthroscopic surgery, overall satisfaction was extremely positive, over the 31 patients, 93.5% of the patients are satisfied. The mean score for pain improved from 8.64 to 1.48 points. The total PRTEE improved from 55.53 to 10.39 points. The mean MEPI score was improved from 61.82 to 94.10 points. DASH score also improved from 24.46 to 4.81 points. All improvements are statistically significant ($P < 0.05$).

Conclusion: Arthroscopic release of ECRB in patients with chronic lateral epicondylitis is a reproducible method with a marked improvement in function within a short period, with special consideration for resection of radio-capitellar capsular complex.

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<http://dx.doi.org/10.1016/j.jor.2014.04.003>

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1. Introduction

Lateral epicondylitis is a painful disease of the extensor tendons of hand and finger which was first reported by Runge in 1873.¹ The symptoms were previously described as lawn-tennis elbow because its association to the tennis sport.¹

Since the early description of lateral epicondylitis, there has been controversy regarding the pathogenesis and treatment of lateral epicondylitis.² The term tennis elbow is actually a misnomer because the condition is commonly seen in non-tennis players. Non-operative measures usually are successful, such as physiotherapy or steroid injection, although the recovery period may be prolonged.³ In some studies, the percentage of failed conservative management is up to 25%.³

In the literature, there are more than 15 different surgical techniques for the treatment of lateral epicondylitis. These surgical techniques include simple release,⁴ reconstruction of the common extensor tendons,⁵ a separation of the deep fascia that covers the common extensor tendon, distal tenotomy of the ECRB tendon at the musculo-tendinous border near to the wrist,⁶ extra-articular approach for arthroscopic lateral elbow release,⁷ as well as specific incision and reconstruction of the sufficiently exposed ECRP lesion. Recent studies have reported good results of arthroscopic release used in the treatment of lateral epicondylitis.^{7,8}

A degenerative capsulosynovial fringe of the leading edge of the annular ligament was observed. Presuming there was impingement of this tissue on or in the radio-capitellar joint, we divided and debrided this tissue in addition to the ECRB, extensor carpi radialis, sheath. The common extensor origin was normal and left undisturbed.

Mullett et al⁹ performed a cadaveric study, where they found a degenerative capsular fold impinging on the radial head was seen in 15 elbows. A classification system, based on the relationship of the capsular fold to the radial head was described. In Type 1, the radial head is completely exposed during ROM. In Type 2, there is partial coverage of the radial head by the capsuloligamentous complex without interposition into the joint in any position. Type 3 elbows it is similar to Type 2 but with capsuloligamentous complex interposed in the radio-capitellar joint during flexion and extension, whereas in Type 4 elbows, the radial head is completely obscured by a fully thickened band throughout the range of motion. The lesion was equally prevalent in men and women.

The purpose of this study was to evaluate the short-term outcomes of arthroscopic release of lateral epicondylitis including resection of the radio-capitellar capsular complex, using different validated scores. Authors also attempted to identify socio-demographic factors and arthroscopic findings that may be associated with the outcomes after arthroscopic surgery for lateral epicondylitis.

2. Materials and methods

2.1. Patients

Our study consisted of 33 consecutive arthroscopic tennis elbow releases performed in 31 patients between September

2010 and November 2012. There were 20 male (22 elbows, 66.7%) and 11 female (11 elbows, 33.3%). The average patient age at the time of surgery was 33.70 years (range: 24–42 years). Twelve patients (38.7%) were involved in heavy manual labor, 15 patients (48.3%) described their work as repetitive, and 4 patients (12.9%) were not working at the time of surgery. Eighteen (55%) of the 33 elbows involved the dominant arm. All of these elbows were treated non-operatively before undergoing arthroscopic release. Non-operative measures used were rest, activity modification, physical therapy, non-steroidal anti-inflammatory medication, and corticosteroid injection. All the patients had at least 2 injections before surgery. The overall average number of injections was 2.7. The mean duration of this treatment was 16.3 months (range: 6–36 months). Although all patients ultimately failed nonsurgical measures, 80% of them reported some transient symptomatic relief with the cortisone injections. Clinically, the predominant symptoms were pain that increased with grasping and lifting. On physical examination, patients consistently had point tenderness over the lateral epicondyle as well as pain with resisted wrist dorsiflexion with the elbow extended. Radiographs were insignificant.

All patients underwent an examination and evaluation preoperative and at 6 months postoperatively. Patients were assessed and asked to assess their elbow function and pain using different scores including: Mayo Elbow Performance Index (MEPI), the Patient-Rated Tennis Elbow Evaluation (PRTEE), and the Disability of the Arm, Shoulder, and Hand (DASH), beside visual analog scale (VAS) for pain and satisfaction criteria.

2.2. Operative procedure

The patient positioned in lateral decubitus position with his arm in a holder. General anesthesia with a non-sterile tourniquet is used. The elbow is distended with 20–30 mL of fluid through the standard lateral “soft spot” portal between the tip of the olecranon, lateral epicondyle, and the radial head. This step allows a safe entry into the joint through the antero-medial portal, which becomes the viewing portal. A small skin incision is made about 2 cm proximal to the medial epicondyle and 1 cm anterior to the intermuscular septum. Then bluntly spreading, using small artery, down to the capsule along the anterior humerus aiming toward the radio-capitellar joint with the arm at 90° of flexion in neutral rotation, this made the trocar to be introduced into the distended capsule. The proper placement of this portal allows excellent viewing of the lateral compartment of the elbow. Using the 30° scope, a diagnostic arthroscopy is performed through the medial viewing portal before the creation of the lateral working portal. This allows visualization of the anterior aspect of the elbow and a perfect evaluation of the lateral structures including the ECRB tendon. Then working instruments were passed through the proximal lateral portal which made using an outside-in method. The status of the ECRB origin were evaluated according to Baker et al¹⁰ and those of the radio-capitellar synovial plica were evaluated according to Mullett et al.⁹ Next, a 4.5 mm mechanical shaver is inserted through the cannula and the procedure is initiated. The radio-capitellar capsular complex was excised distally to

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