EVALUATION OF THE RESULTS FROM ARTHROSCOPIC TREATMENT OF THE LATERAL EPICONDYLITIS

Alberto Naoki Miyazaki¹, Marcelo Fregoneze², Pedro Doneux Santos³, Luciana Andrade da Silva³, Davi Calixto Pires⁴, Jose da Mota Neto⁵, Luis Henrique Rossato⁶, Sergio Luis Checchia⁷

ABSTRACT

Objective: To evaluate the results from patients with lateral epicondylitis following surgical treatment using the arthroscopy technique. Methods: Twenty patients underwent surgery using the arthroscopic technique. Their ages ranged from 19 to 54 years (average of 41 years and eight months). Twelve (60%) of them were female and eight (40%) were male. The minimum follow-up period was 12 months and the maximum was 48 months, with an average of 20 months. All the cases were refractory to conservative treatment (rest and physiotherapy), with previous clinical treatment times ranging in duration from six to 136 months. To evaluate the results, we used the criteria of the American Medical Association (AMA), as modified by Bruce. Results: We obtained 13 excellent results (65%) and seven moderate results (13%), with just one complication (reflex sympathetic dystrophy). This was the only patient who reported dissatisfaction. Conclusion: Surgical treatment of the lateral epicondylitis of the elbow using arthroscopy was a good option for 65% of the cases.

Keywords – Arthroscopy; Tennis elbow; Outcome assessment (Health Care)

INTRODUCTION

Lateral epicondylitis is the most common disorder of the elbow¹ and can be triggered by trauma or repetitive effort². It was first described as an occupational disease in 1880¹,³. With regard to its etiology, several theories exist, including: bursitis, synovitis, ligament inflammation, periostitis and lesions of the short radial extensor tendon of the carpus². In 1979, Nirschl and Pettrone⁴ histologically identified areas that are primarily affected by lateral epicondylitis in the short radial extensor tendon of the carpus and, to a lesser degree, in the anteromedial face of the common extensor of the fingers. These lesions would be the result from applying continuous and repeated traction, thereby leading to microtears originating from the short radial extensor tendon of the carpus, followed by fibrosis and formation of granulation tissue. Macroscopically, the appearance of the tissue was friable, shiny and edematous. They also found that the tendon was not inflamed, but had degenerated. For this reason, they introduced the term angiofibroblastic hyperplasia to describe the microscopic appearance of the lesion, which has been accepted up to the present day, along with their etiological theory²-⁴.

Lateral epicondylitis most commonly affects individuals between the ages of 35 and 60 years and generally occurs among males and in the dominant limb. It also occurs more frequently in whites¹.

On physical examination, patients report localized pain...
on palpation at the origin of the extensors, and can often precisely determine its location. The point with the greatest pain may be located in the region anterior and distal to the lateral epicondyle of the humerus\(^5\).

Diagnostic confirmation using imaging examinations is unnecessary. If a magnetic resonance examination is requested, signal abnormalities can be seen at the origin of the short radial extensor tendon of the carpus\(^1\). In 25% of the patients, calcifications may appear in tissues adjacent to the epicondyle, particularly if there have been previous infiltrations of steroids at this location\(^6\).

Most patients respond to conservative treatment. Only 5 to 10% evolved with chronification of the symptoms\(^1,7\). If the symptoms persist, surgical treatment may be indicated. Open, percutaneous and endoscopic procedures have been described\(^5,6,8\). Baker \textit{et al}\(^8\) introduced arthroscopic release of the origin of the short radial extensor tendon of the carpus.

The aim of the present study was to evaluate the results from arthroscopic surgical treatment for relieving pain caused by lateral epicondylitis, among patients who were refractory to nonsurgical treatment, along with their return to their previous work and sports activities.

**SAMPLE AND METHODS**

Between August 1998 and March 2006, 20 patients with lateral epicondylitis underwent operations performed by the Shoulder and Elbow Group of the Department of Orthopedics and Traumatology, School of Medical Sciences, Santa Casa de São Paulo, “Pavilhão Fernandinho Simonsen”.

All patients with a diagnosis of lateral epicondylitis who had not improved with clinical treatment over a minimum period of six months and had then undergone arthroscopic surgical treatment were retrospectively included in this series. Patients who did not fit within these criteria were excluded from the sample.

These patients’ ages ranged from 19 to 54 years (mean of 41 years and eight months). There were 12 female patients (60%) and eight male patients (40%). All the patients were right-handed and the dominant arm was operated in 13 cases (65%). The etiological cause of the lateral epicondylitis was repetitive effort in 14 cases (70%), non-sports injuries in five cases (25%) and mixed origins in one case (5%). The minimum follow-up was 12 months and the maximum was 48 months, with a mean of 20 months (Table 1).

The patients were primarily treated with rest and physiotherapy. Thirteen patients (65%) underwent infiltration of corticoids, with a minimum of one and maximum of three applications (mean of two). One patient had undergone previous open surgical treatment at another service 11 years earlier, with complete remission of the symptoms. However, the condition recurred nine years later. The duration of clinical treatment had ranged from six months to 136 months, with a mean of 28.5 months (Table 1).

The patients underwent the operation positioned in ventral decubitus. Firstly, a posterolateral port was created between the olecranon and the lateral epicondyle, in order to position the arthroscope. Next, an inventory of the posterior compartment was made and any lesions that might be present there were treated (cases 6, 7, 14, 17 and 20). Through a proximal anteromedial port, the anterior compartment was explored and the best positioning for the anterolateral port was located under direct viewing, in order to introduce the arthroscopic blade to the soft tissues (Figure 1). Partial resection of the anterolateral capsule, identification and resection of the angiofibroblastic tissue and partial deinsertion of the extensor musculature were started through this port. In all cases, decortication of the anterior region of the lateral epicondyle was performed using an arthroscopic bit (Figure 2).

Postoperative evaluations were performed two, four and six weeks and three, six and twelve months after the operation. Analgesics were prescribed over the first two weeks and the patients’ operated arm was kept in a sling. Active movements were encouraged during the postoperative period. No specific physiotherapy was indicated.

To evaluate the results, we used the criteria of the American Medical Association (AMA), as modified by Bruce \textit{et al}\(^9\) (Box 1).

The results were compared statistically in relation to the variables of sex, profession and sports practice. For this, we used the SPSS software (Statistical Package for the Social Sciences), version 13.0, to obtain results. We applied Fisher’s exact test with the aim of investigating the degree of association between the variables of interest. We took the significance level to be 5% (0.05), in order to validate the results.
Table 1 – Clinical data on the patients

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Source: Same-DOT ISCMSP

Legend: M = male, F = female, m = months, ROM = range of motion, ADLs = activities of daily living, HSF = hypertrophy of the synovial fold, RSD = reflex sympathetic dystrophy

RESULTS

Among the 20 patients who underwent operations using the arthroscopic technique, we obtained 13 excellent results (65%) and seven moderate results (35%). Only one patient lost points regarding the criterion of range of motion.

Figure 1 – Arthroscopic image of the right elbow showing: Cp = anterolateral joint capsule, Ca = capitellum, Cr = head of radius, and angiofibroblastic tissue (arrow).

Figure 2 – Arthroscopic image of the right elbow showing: FM = muscle fascia, Ca = capitellum, angiofibroblastic tissue (arrow), and stippled area = area of debrided angiofibroblastic tissue.
motion (Table 1). One patient presented the complication of reflex sympathetic dystrophy (RSD) (case 18). When the patients were asked how satisfied they were regarding the results from the surgery, only the patient who evolved with RSD expressed dissatisfaction.

Only one patient (case 17; Table 1) had undergone previous surgery, carried out by means of the open route at another service. This patient had evolved well for nine years, but then started to present symptoms again. Despite intermittent clinical treatment for two years, there was no improvement in the symptoms. This individual then underwent arthroscopic treatment with a moderate result.

The statistical results from correlating sex versus results, profession versus results and sports practice versus results were as follows, respectively: p = 0.158, p = 0.158 and p = 0.354, and these associations were therefore not statistically significant.

**DISCUSSION**

The controversies regarding surgical treatments for lateral epicondylitis continue until today. The arthroscopic technique makes it possible to perform excision at the origin of the extensor tendons involved in this disease, and to view and treat any associated intra-articular lesions, thereby promoting an early return to habitual activities.6,10

Good results have also been reported using the traditional open techniques, but these techniques do not locate the associated intra-articular lesions. Such lesions are present in 11% to 69% of the cases.4,6,10

In our series, we found intra-articular lesions in 25% of the patients, which was compatible with the literature, and we were able to treat them immediately, during the same procedure.

We obtained excellent results in 65% of our cases, which is compatible with some studies in the literature, in which 62% of the patients were found to be relatively free from pain, while 10%, despite expressing satisfaction, continued to present pain in some activities of daily living.6 Cohen and Romeo1 observed the presence of moderate to severe pain in 24% of their patients, one year after open and/or arthroscopic surgery. Two years after surgery, 33% presented moderate and poor results.1 From open surgery, Verhaar et al.11 also presented similar results, with 69% of their patients expressing satisfaction, either without pain or with slight pain when performing activities. Likewise, Nirschil et al.4 found that 97.7% of their patients reported improvements in pain levels, although only 85.2% of them were able to fully return to their previous activities.

The 13 patients (65%) in our sample who were classified as presenting excellent results were satisfied with their treatment. Among the seven (35%) who evolved with moderate results, six (30%) also expressed satisfaction with their evolution but did not manage to fully return to their previous activities.

We had one patient (5%) who evolved with reflex sympathetic dystrophy of the operated arm, which was considered to be a complication, and this individual was dissatisfied with the result (Table 1).

In the literature, we found some studies that showed up to 100% excellent results from the arthroscopic technique, which did not occur among out sample6,7.

Taking pain into consideration as an evaluation criterion, we noted that our results were dissimilar to those in the literature. The lack of a specific evaluation scale for the results from treating epicondylitis and the differences between the evaluation criteria used in various studies may explain this result. We can take

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**Box 1 — AMA criteria, as modified by Bruce et al.**

1) Range of motion (ROM) – 60 points:
   Number of points for ROM = 60 – (percentage incapacity of the upper limb x 0.6)

2) Activities of daily living (ADLs) and professional status – 20 points:
   Function of affected arm is symmetrical to contralateral arm – 20 points
   Independent in relation to ADLs (not more than two manual limitations) – 15 points
   Incapacity regarding three or more ADLs (need to change occupation) – 10 points
   Incapacity regarding four or more ADLs (functional incapacity) – 5 points

3) Pain – 15 points:
   Free from pain – 15 points
   Slight pain without functional impairment – 13 points
   Pain with functional impairment – 10 points
   Pain with limitation regarding some ADLs – 5 points
   Incapacitating pain – 0 points

4) Anatomy – 5 points:
   Acceptable cosmetic appearance – 1 point
   Without clinical angling – 1 point
   Without clinical luxation – 1 point
   Clinical change in carrying angle < 10º – 1 point
   Radiological consolidation – 1 point

**Results (total: 100 points):**

- Excellent: 96-100
- Good: 91-95
- Moderate: 81-90
- Poor: < 80

Legend: AMA: American Medical Association; ROM: range of motion; ADLs: activities of daily living.
the view that the moderate classification for six of our cases (30%) was ascribed to these cases because of the criteria that we adopted, which were more rigorous with regard to evaluating the activities of daily living (Table 1). Patient number 17, who had undergone previous surgery 11 years earlier, remained free from symptoms for nine years before manifesting the condition again, but we do not believe that the previous surgery influenced the recurrence, or the result from the present treatment.

According to the literature, patients who present lesions that may mean taking time off work tend to have worse evolution with regard to the criteria of activities of daily living, work and/or sports, in comparison with sports players. In our study, in the group of seven patients with results classified as moderate, six patients were on sick leave from their jobs and were receiving sickness benefit. Even though not presenting statistical significance, we observed better results in relation to returning to work and/or sports activities among the patients whose etiology for epicondylitis was associated with sports practices.

We agree with Morrey and believe that persistence of pain may be due to erroneous selection of patients for operations (work-related causes) or initial diagnostic error, or even because changes caused by the disease were not fully corrected during the surgery. Cases in which good results are not obtained need to be reassessed.

Excluding the patients who did not obtain secondary gains with the disease, we could see that arthroscopic treatment for lateral epicondylitis offered a series of advantages: intra-articular diseases could be assessed and treated; debridement of the short radial extensor tendon of the carpus could be performed without dividing the fibers of the aponeurosis of the common extensor of the fingers; the rehabilitation period was short; and, furthermore, there was the possibility of adding an open procedure, if required (although we did not have this need). This was exactly what Cohen and Romeo and Baker et al. observed in their respective studies.

The disadvantages relating to the endoscopic method are the risks of neurovascular lesions occurring at the time of constructing the ports and of posterolateral ligament lesions of the elbow. Such lesions may be one of the causes of failure of surgical treatment of this disease. These complications are rare and did not occur in our study.

CONCLUSION

Surgical treatment for lateral epicondylitis of the elbow using the arthroscopic technique was a good option, with satisfactory results in 65% of the cases.

REFERENCES