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Tennis elbow release under local anaesthesia

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Abstract

Introduction: When the non-operative treatment of tennis elbow fails to improve the symptoms a surgical procedure can be performed. Many different techniques are available. Local release of the common extensor origin was first presented by Loose at a meeting in 1962. Despite the simplicity of the operation and its effectiveness in relieving pain with minimal scarring this procedure is still not widely accepted. This study presents the long-term results of tennis elbow release in patients when conservative measures including local steroid injections have failed to relieve the symptoms.

Patients and Methods: under aseptic conditions lateral epicondyle is marked and 2% lignocaine with adrenaline is infiltrated under the skin on either side of epicondyle. Periosteum is also infiltrated deep. 4 cm incision is made on lateral epicondyle with elbow flexed and supine position. Fascia over the common extensors is opened and retracted. Subperiosteal elevation of common extensors is done on both anterior and posterior aspect of lateral epicondyle. Lateral epicondyle is decorticated till bleeding occurs. Debridement of the diseased extensors done. Wash given. Fascial closure done followed by skin closure. Compression bandage applied for 2 days. Sutures removed after 10 days. Movements encouraged. The patients were assessed post operatively by using DASH (disabilities of arm, shoulder and hand) score and Oxford elbow scores. The mean follow up period was 24 months.

Results: Twenty-one patients returned the DASH and Oxford elbow questionnaires. Four patients were lost in the follow up. The post operative outcome was good to excellent in most patients. Eighty seven percent of patients had complete pain relief. The mean post-op DASH score was 8.47 (range 0 to 42.9) and the mean Oxford elbow score was 42.8 (range 16 to 48). There were no complications reported. All the patients returned to their normal jobs, hobbies such as gardening, horse riding and playing musical instruments.

Conclusion: In our experience local release of the epicondylar muscles for humeral epicondylitis has a high rate of success, is relatively simple to perform, is done as a day case procedure and has been without complications release is a viable treatment option after failed conservative management of tennis elbow.

Keywords: Tennis elbow, release, tendinitis, mill's manipulation, local anaesthesia.

Introduction

Tennis elbow (TE)-also called lateral epicondylitis, epicondylosis, epicondylalgia or tendinopathy - is a common disorder of the elbow with a prevalence of 1-3% in the general population and 7% in manual workers.

Previous studies have suggested a prevalence of 35-50% among tennis players. However, a recent prospective study in junior tennis players reported elbow injuries in 9% during the two studied years and found injuries to the ankle, shoulder or low back to be more common [18]. TE is occurring most often in the age group of 40-60 years-except in tennis players who are generally younger and it affects men and women to the same degree [8, 20, 28]. In addition to age, risk factors for developing tennis elbow include repetitive and forceful motions of wrist and arm, participating in racket sports, using a faulty tennis playing technique and smoking tobacco [8]. It has been claimed that conservative care leads to recovery in up to 90% of TE patients within 1-2 years and that surgery is indicated in less than 10% of the cases [5, 6, 25]. However, recent studies of patients with elbow complaints, including TE, in general practice report a less favourable prognosis [2, 17]. Bot and co-workers found that although 90% of all patients reported at least some improvement after 1 year of follow-up, only 13% of the patients reported full recovery at the 3-month follow-up and 34% at 12 months [2]. In patients with persisting pain and disability, surgery may be considered. Many different techniques have been described. However, at present no technique has been shown to lead to better results than the others.

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Few randomised studies have been reported, and many case studies are hampered by methodological short-comings such as small study population, low percentage of follow-up and inclusion of cases with concomitant lesions in elbow, hand or shoulder [20]. The purpose of this study was to evaluate short-term (median 18 months after surgery) and medium-term (median 4 years after the surgery) results after open lateral release in recalcitrant tennis elbow and to determine any prognostic factors.

Materials and Methods

All patients presenting with chronic lateral epicondylitis between 2018- 2020 were eligible for the study release was performed having fulfilled the following criteria:

1. Symptoms of two months or more duration following treatment.
2. Failed conservative management.
3. Localized pain over the lateral epicondyle.
4. Positive chair lift test.
5. No localized skin problems.

Cases were excluded if there had been previous surgery or other elbow pathology such as RA, OA, or radial tunnel syndrome.

Scoring was completed at the stated follow-up times with a single DASH and Oxford Elbow score performed in the outpatient clinic.

Ethics committee approval was not sought since this was a review study using a proven technique.

Conservative management included local steroid injection, physiotherapy, local ultrasound and stretching extensor exercises, and compression bracing. All patients were advised post-operatively to mobilise the wrist and the elbow several times a day and to repeat the following sequence: maintain the forearm in full pronation; fully extend the elbow; flex the wrist; fully; flex the fingers.

Patients were assessed post operatively by using DASH (disabilities of arm, shoulder and hand) score and Oxford elbow scores. Return to work and hobbies were also ascertained post-operatively.

Operative Technique

Under aseptic conditions lateral epicondyle is marked and 2% lignocaine with adrenaline is infiltrated under the skin on either side of epicondyle. Periosteum is also infiltrated deep.4 cm incision is made on lateral epicondyle with elbow flexed and supine position. Fascia over the common extensors is opened and retracted. Subperiosteal elevation of common extensors is done on both anterior and posterior aspect of lateral epicondyle. Lateral epicondyle is decorticated till bleeding occurs. Debridement of the deceased extensors done. Wash given fascial closure done followed by skin closure. Compression bandage applied for 2 days. Sutures removed after 10 days. Movements encouraged.





Results

The median duration of symptoms was 13 months (range, 6–72 months). 30 patients had experienced symptoms for 12 months or more. The onset of symptoms was sudden in 7 patients. 21 patients considered their work as the main cause of the elbow problem, whereas 2 patients related their problem to sporting activities. None of the patients played tennis on a regular basis. Twenty-three patients had occupations classified as strenuous according to Haahr *et al.* [16]. 30 elbows were operated upon. The dominant elbow was involved in 73%. We did not observe macroscopic ruptures or other convincingly grossly pathologic changes in the extensor origin or internal derangement of the joint such as chondral or osteochondral lesions, osteoarthritis or loose bodies. Major complications such as deep infection, permanent nerve injuries or stiffness of the elbow were not observed. Superficial wound problem/infection was seen in three patients, and a postoperative haematoma was evacuated in one patient. In three patients, revision surgery was carried out

due to lack of improvement during the observation period. The mean Quick DASH was significantly improved compared with baseline both at the median 18-month and the median 2-years follow-ups. No significant difference was found in mean Quick DASH between the short-term and the medium-term follow-ups. An improvement of the Quick DASH at the final follow-up compared with the baseline was observed in 78 of 80 (97.5%) elbows. We rated the Quick DASH outcome according to Phillips *et al.* as excellent in 21; good in 6 elbows, fair in 2 elbows and poor in 1 elbow.

We found a moderate correlation between the short-term and the medium-term results for the Quick DASH ($r = 0.691$; $P \setminus 0.001$). We found a weak correlation between the Quick DASH at the final follow-up (a high value denotes residual symptoms) and baseline Quick DASH ($r = 0.388$; $P \setminus 0.001$), acute occurrence of symptoms ($r = 0.362$; $P \setminus 0.001$), duration of symptoms ($r = 0.276$; $P = 0.007$), female gender of patient ($r = 0.269$; $P = 0.009$) and age of patient ($r = -0.203$; $P = 0.04$). We found no significant correlation between the Quick DASH at the final follow-up and affection of dominant (vs. non-dominant) arm, a work-related cause (as evaluated by the patient) or strenuous (vs. non-strenuous) work and/or occupation. Thus, the latter variables were excluded in the stepwise regression analyses. The linear regression line equation was as follows: (Quick DASH at final follow-up) = $15.335 + 0.247$ (baseline Quick DASH) + 17.845 (acute occurrence) + 0.388 (duration) + 4.057 (female gender) - 0.440 (age) ($P \setminus 0.001$). The overall model R^2 was 0.338. The P value for the regression was 0.001.

Table 1: The mean value \pm SD of the Quick DASH [from 0 (best) to 100 (worst)] before the operation and at the short- and medium-term follow-ups

	Quick DASH	P value*
Preoperative	61 \pm 16	
Median 18-month follow-up	17 \pm 20	$P < 0.001$
Median 4-year follow-up	18 \pm 19	$P < 0.001$

Discussion

According to the current literature, tennis elbow is treated successfully by non-operative measures in more than 90% of cases and in resistant cases a surgical treatment is available [2]. Several surgical options are available. Nirschl suggests that 85 to 90% of cases can have symptomatic relief following any of a number of surgical options.

Release of the origin of the common extensor tendons was proposed by Loose in 1962 [7] at the Hawkeye Sport Medicine Symposium, Iowa. No articles were published following this presentation. Baumgard [8] reported 35 cases of percutaneous release of tennis elbow in which an excellent result was achieved in 32 cases, while 3 cases were unsatisfactory. The surgical technique that was proposed is similar to our surgical technique. He performed the operation in the office or as an outpatient procedure in the office requiring infiltration of xylocaine. In our experience, infiltration of local anaesthetic in the area of surgery may alter the anatomical rapports and cloud the ability of the surgeon to appreciate the effectiveness of the procedure (palpation of the retraction of the extensors tendons). The axillary block provides a good control of the pain without compromising the procedure.

A similar technique was performed by Powell and Burke [6] and their results have been published more recently where they reviewed 20 patients at follow up from 5 to 36 months. They showed 85% excellent or good results. More recently Grundberg presented the results of a release of 32 cases of

tennis elbow. The procedure was performed in the operating room under axillary block or general anaesthetic. He recommended using a Number 15 blade and his incision is placed transversely just distal to the lateral epicondyle. With a follow up period of an average of 26 months he found 90.6% of excellent and good results, but 22% of patients were not available for follow up and their information was "obtained entirely from charts".

Hohmann in 1933 predated the described technique proposed by Nirschl, consisting in identification and excision of all pathological tissues at the common extensor tendon origin. This gave 97% improvement in symptoms and 85% of patients fully returned to work without pain. The results of an epicondylar stripping procedure for humeral epicondylitis with an open technique were reported on 26 cases of tennis elbow with 96% good or excellent results. Garden reported the results of 50 cases of lateral epicondylitis treated by Z-lengthening of the extensor carpi radialis at the wrist for which he stated, "Most obtained full and lasting relief". This technique in the hands of other surgeons did not provide the same results. Carroll a few years later only reported 20% of cases showed good results.

Wilhelm recommended a complete denervation of the epicondylar region associated with decompression of the posterior interosseous nerve. He published the results of lateral epicondyle denervation alone (39 cases), associated with decompression of the posterior interosseous nerve (81

cases), and associated with isolated denervation of the supinator (46 cases). The results of the denervation were not improved by an additional radial nerve release. Excellent and good results were obtained in 90% of cases.

When non-operative treatments fail to improve the symptoms, a surgical procedure should be performed. Many different techniques are available. The percutaneous release of the common origin is a simple technique, can be performed under local anaesthetic with more comfort for the patient and leave a barely noticeable scar. The release of the tennis elbow offers results that are comparable with all the more accredited procedures. A good selection of the patients should be carefully done, following the criteria outlined in the paper. A complete release of the common tendon of the extensors should be performed in order to obtain control of the symptoms.

Limitations of this study include the fact that it was retrospective and therefore there was no randomisation or control group. No pre-operative scores were available and only one scoring system was used.

Conclusion

In our experience local release of the epicondylar muscles for humeral epicondylitis has a high rate of success, is relatively simple to perform, is done as a day case procedure and has been without complications. Percutaneous release is a viable treatment option after failed conservative management of tennis elbow.

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