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Original Article

# A Non-randomized Control Trial Study on the Outcome of Percutaneous Release of Tennis Elbow

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## Abstract

**Background:** Lateral epicondylitis or tennis elbow is considered one of the most frequent types of myotendinosis of the upper extremity. Both conservative and surgical treatments are available. A simple surgical method adopted to analyze its effectiveness in patients failing to respond to conservative treatment.

**Aim:** The aim of the study was to analyze the effect of the percutaneous release of extensor origin in tennis elbow compared to the conservative treatments with analgesics and steroid injection.

**Materials and Methods:** Thirty-five patients with diagnosis of tennis elbow and not responding to a conservative line of treatment were subjected to the division of the extensor origin at the site where the patient was maximum symptomatic. The results were classified according to the subjective relief informed by the patients. The data were analyzed to conclude.

**Observations and Results:** Among the 35 patients 22 (62.85%) were females, and 13 were males (37.14) with a male to female ratio of 1:1.69. In all the patients' symptoms of tennis elbow were unilateral. The patients in the study were in the age group of 25-50 years with a mean age of 32.46 ± 2.30. In 48.57%, i.e., 17 patients, the results were excellent. In 25.71%, i.e., 9 patients, the results were good and in 14.28%, i.e., 5 patients, the results were satisfactory. In 11.42%, i.e. 4 patients, the results were considered poor.

**Conclusions:** Percutaneous release of common extensor origin with 18 G needle provided a superior outcome in the management of tennis elbow patients who are not responding to the conservative line of management.

**Key words:** Lateral epicondylitis, Myotendinosis, Percutaneous release, Tennis elbow

## INTRODUCTION

Lateral epicondylitis or tennis elbow is considered one of the most frequent types of myotendinosis of the upper extremity. It is mostly associated with substantial pain and loss of function at the affected elbow. The chief complaints in lateral epicondylitis are decreased grip strength, decreased functional activities.[1] It affects 1-6% of the general population.[2] Controversy exists regarding the pathophysiology of lateral epicondylitis; periostitis, fibrositis, radial nerve entrapment, bursitis, extensor tears, infection, intraarticular abnormality, and orbicular ligament inflammation have all been suggested.[3] In 75% of cases dominant side is affected suggesting that work-related forceful and repetitive extension of writ movements may have a role in the pathogenesis.[4] Clinically, there will be tenderness over the lateral aspect (lateral epicondyle) of the humerus, pain on resisted dorsiflexion of the wrist, middle finger, or both are classical findings.[5,6] There had been numerous researchers on the possible etiology of tennis elbow, and the most accepted one suggests that it is primarily an overuse injury with consequent microtears of the hyaline layer of the extensor muscles.[7] Many conservative measures have been advised including nonsteroidal anti-inflammatory drugs (NSAIDs), ultrasound, low-dose laser therapy, steroid injections, functional brace, and manipulative treatment, but none have shown consistent results.[8] Most of the patients respond to nonoperative treatment.[9] However, surgical intervention is required in 4-11% of the patients in whom the symptoms persist.[6] Mostly, these are treated

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conservatively with analgesics or oral steroids. The outcome of the percutaneous release of the common extensor origin has been very attractive considering the simplicity of the procedure, safety, morbidity, and good to excellent outcome in vast majority of patients. This study is conducted in the light of the above information gathered from literature.

### Aim of the Study

The aim of the study was to analyze the effect of the percutaneous release of extensor origin in tennis elbow compared to the conservative treatments with analgesics and steroid injection.

### Study Period

Study was conducted from January 2016 to December 2017.

### Institute of Study

Study was conducted at KMCT Medical College Hospital, Mukkam, Manassery, Calicut, Kerala.

## MATERIALS AND METHODS

This nonrandomized control trial study was conducted at the Department of Orthopaedics, KMCT Medical College, Calicut, from 2016 to 2017 on a total of 35 patients who underwent percutaneous release of the common extensor origin using an 18 gauge (hypodermic) needle. Study duration was 12 months. An Ethical Committee clearance was obtained, and a consent form approved by the Ethical Committee was used.

### Inclusion Criteria

1. Patients aged between 25 and 50 years were included,
2. Patients of both sexes were included,
3. Patients with duration of symptoms for more than 4 months were included,
4. Patients taking previously primary conservative treatment with analgesics and steroids were included.

### Exclusion Criteria

1. Patients who are pregnant/breastfeeding mothers were excluded,
2. Patients with previous history of trauma to the symptomatic elbow/polytrauma were excluded,
3. Patients on long-term use of systemic steroids,
4. Patients with acute presentation (<2 months),
5. Patients who have undergone previous surgical intervention,
6. Patients who are not willing to be part of the study.

Data were collected by going through the patient's past medical records, and a follow-up was done to assess the outcome and patient satisfaction with the procedure based on preset questionnaire. The diagnosis of tennis elbow was made on the basis of clinical findings such as tenderness over the lateral humeral epicondyle, pain on extension of the wrist against resistance. 35 patients with age ranging from 25 to 50 who had pain presenting for more than 6-month period, who did not responding to medical therapy or single dose of local steroid injection was included in our study. A total of 35 elbows were included in the study. All the data were analyzed using standard statistical methods.

### Procedure

All the procedures were performed in the minor procedure room of KMCT Medical College, Department of Orthopaedics, outpatient department (OPD) under local anesthesia, after attaining written consent from the patient.

### Position

The patient is positioned supine on an examination table with the forearm resting freely on arm board by the side of the patient and elbow at 90°.

### Preparation

The entire elbow starting from mid humerus up to mid-forearm is painted with chlorhexidine and betadine solution (Figure 1).

The elbow was draped using a sterile holed towel (Figure 2).

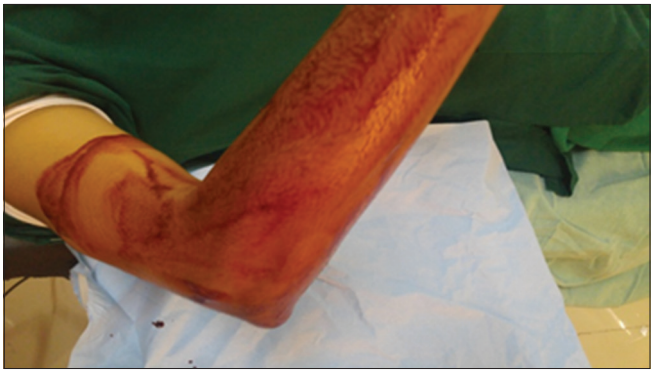

**Figure 1: The preparation of the elbow**

**Figure 2: The covering the elbow**

Local anesthesia was given around the common extensor origin using 30 G needle and 10 ml of 2% lignocaine (Figure 3).

### Operative Procedure

Once the local anesthesia action was confirmed, the bevel of an 18 G needle was used to divide the extensor origin at the site where the patient was maximum symptomatic. Care was taken not to go to the area of radial nerve by staying around the extensor origin (Figure 4).

### Post-operative Follow-Up

The needle puncture site is sealed using a leukomed, along with a tennis elbow brace as support. NSAIDs and antacids were given along with antibiotic coverage for 5 days postoperatively. The tennis elbow brace is discontinued once the patient is symptom-free (Figure 5).

The final outcome of the procedure was graded as excellent, good, fair, and poor on the basis of symptoms.

| Excellent | Completely symptom-free |
|---|---|
| Good | Symptom-free on daily activities with occasional pain |
| Fair | Symptoms on heavy/strenuous activities |
| Poor | No relief at all |

## OBSERVATIONS AND RESULTS

Among the 35 patients, 22 (62.85%) were females, and 13 were males (37.14) with a male to female ratio of 1:1.69. In all the patients' symptoms of tennis elbow were unilateral. The patients in the study were in the age group of 25-50 years with a mean age of 32.46 ± 2.30. Among the 22 female patients, 10 were housewives, 8 were office goers, and the remaining 4 were working as manual laborers.

Among the males, 7 were manual laborers and the remaining were office goers. 33 patients were satisfied with the overall procedure (94.28%), and 2 patients were not symptom-free after the procedure and were subsequently managed by surgical release. These 2 patients in whom the symptoms did not subside were daily workers on daily wages and had an immediate return to strenuous activity post-procedure. In 48.57%, i.e., 17 patients, the results were excellent. In 25.71%, i.e., 9 patients, the results were good and in 14.28%, i.e., 5 patients, the results were satisfactory. In 11.42%, i.e., 4 patients, the results were considered poor (Table 1).

Considering the above results totally 31/35 patients (88.57%) became symptom-free.

## DISCUSSION

Once the diagnosis of tennis elbow is made the treating orthopedic surgeon considers conservative management and looks forward to subjective response from the patient.

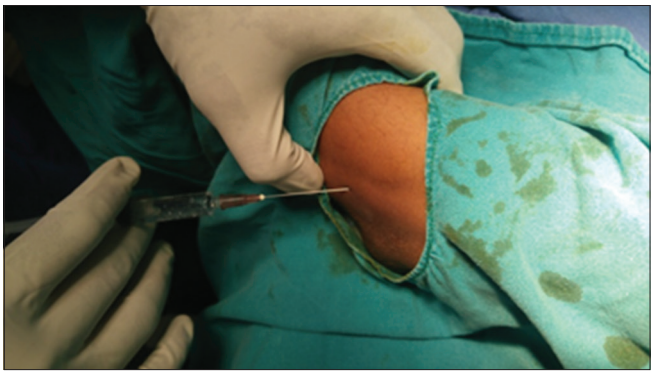

**Figure 3: The infiltration of the elbow**

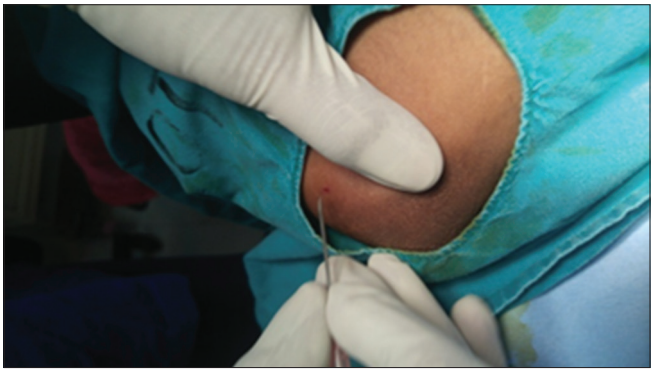

**Figure 4: The division of extensor origin at the site where the patient is having maximum pain**

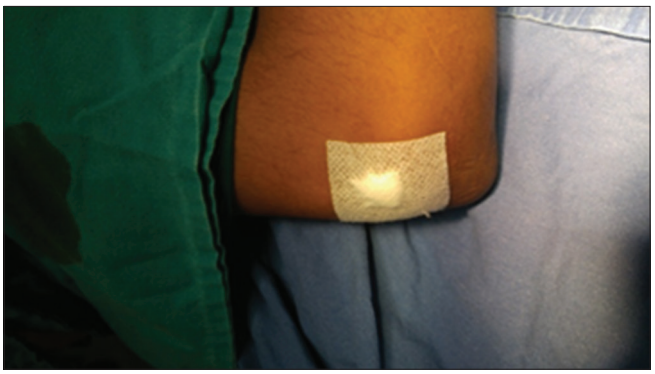

**Figure 5: The surgical bandage at the end of the procedure**

**Table 1: The post-procedure results (*n*=35)**

| Observation | *n* (%) |
|---|---|
| Excellent | 17 (48.57) |
| Good | 9 (25.71) |
| Fair | 5 (14.28) |
| Poor | 4 (11.42) |

Around 90% of patients initially can be managed with conservative treatment, i.e., by rest, lifestyle/activity modification, analgesics, or local steroid injection with good results.[10] However, when surgery is indicated we have a wide variety of options as different theories have been proposed over time as a cause for this condition.[10] There are various studies which discuss the outcome following the percutaneous release of extensor carpi radialis brevis for tennis elbow, but none of them had a clear criterion to study the outcome.[11,12] Majority of these studies suggest that tennis elbow results from a gradual degenerative tear of the common extensor origin.[13] Tenotomy of the common extensor tendons and scraping of the epicondylar region using an 18 G needle fasten the healing process of the damaged tendon by converting a chronic inflammatory condition to an acute inflammatory condition which heals rapidly, thereby providing immediate symptomatic relief of tennis elbow.[14] In this study, the procedure adopted has given an 88.57% of subjective symptomatic relief in patients.

## CONCLUSIONS

Percutaneous release of common extensor origin with 18 G needle provided a superior outcome in the management of tennis elbow patients who are not responding to the conservative line of management.

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