



A STUDY OF LOCAL CORTICOSTEROIDS INJECTION vs DRY NEEDLING IN LATERAL EPICONDYLITIS

Orthopaedics

Dr Nisarg J Shah*	Junior Resident, Department of Orthopedics, Surat Municipal Institute of Medical education and Research, Surat, Gujarat. *Corresponding Author
Dr Sunny M Patel	Junior Resident, Department of Orthopedics, Surat Municipal Institute of Medical education and Research, Surat, Gujarat.
Dr Yogesh B kucha	Junior Resident, Department of Orthopedics, Surat Municipal Institute of Medical education and Research, Surat, Gujarat.

ABSTRACT

Lateral epicondylitis is also known as a Tennis elbow is a common disease of middle age which is painful and functionally limiting entity affecting the upper extremity & causes decreased productivity. The first line treatment for LE is topical and oral anti-inflammatory drugs from ice applications and brace used. If the 1st line treatment fails second line treatment generally invasive are offered and second-line therapeutic regimens include saline, corticosteroid or platelet-rich plasma injections. Dry needling is relatively new for treating the same. We hypothesized that dry needling would be as effective as second-line treatment for LE. Here we compared the outcomes of second-line treatment, local steroids and dry needling.

MATERIALS AND METHODS: The study involved 50 patients having LE, dividing into 2 groups. Patients in group 1 received dry needling, where as those in group 2 received second-line treatment, consisting of local corticosteroid injections. The patients were evaluated after 2 and 4 weeks on the bases of Patients – rated tennis elbow evaluation score (PRTEE).

RESULTS: Both treatment were equally effective at 2 and 4 weeks. The effectiveness of both are same and both intervals but someone dry needling has low complications rate in compare to local steroids.

CONCLUSION: Because of the low complication rate, dry needling is a safe method, and it might be an effective treatment option for LE same as the second line treatment of local corticosteroid injections.

KEYWORDS

Dry needling, Lateral epicondylitis (LE), Tennis elbow, Corticosteroids

INTRODUCTION

Lateral epicondylitis (LE), a common disease, especially in middle age [1–3], causes decreased productivity and functional ability [4,5]. The first-line treatment for LE is conservative, consisting of topical and oral anti-inflammatory drugs, ice application, and brace use. This treatment might fail to resolve the complaints of some patients, and second-line therapy modalities, which are generally invasive, are offered. Second-line treatments include saline, corticosteroid, or platelet-rich plasma injections [6, 7]. Dry needling is relatively new. Although it has been used in the management of myofascial pain [8], low back pain [4], trigger points [9], and rotator cuff tears [9], there are only two reports of dry needling in LE [3, 10].

We hypothesized that dry needling would be at least as effective for LE as local steroids injection which is second line treatment. Therefore, this study compared the pain relief and the improvement in functional disability of local steroids injection treatment with those of dry needling in LE patients.

METHODS

Informed consent was obtained from all of the participants, and the rights of the subjects were protected. After Institutional ethical committee approval, the study was obtained.

INCLUSION CRITERIA

- 1) Patients who had pain at lateral epicondyle for more than 3 months.
- 2) Age more than 25 years.
- 3) Patients not getting any benefit from 1st line treatment of lateral epicondylitis.
- 4) Patients who had pain during forced forearm supination, forced wrist extension, and forced third finger extension for more than 3 months.

EXCLUSION CRITERIA

- 1) Patients who had other co-morbidities than the pain at lateral epicondyle.
- 2) Patients who have high RBS.
- 3) Patients having osteochondritis, dissecans, or osteonecrosis.

Assuming that the standard effect size would be 0.54, it was decided to enroll 50 cases in each group at 80% power and a 95% confidence

interval. The patients were enrolled consecutively and randomized into two groups using randomized controlled trials. After the Patient-rated Tennis Elbow Evaluation (PRTEE) score was determined, dry needling was performed on the patients in group I and local steroids injections treatment were given to group II.

- 1) After cleaning the skin with spirit & povidone iodine under all sterile precautions we inserted one 20 gauge needle in the area which was the most painful (patient locating the pain site with one finger) areas at the lateral epicondyle, of those in group I (Fig. 1). Than the needle was directed through the skin and underlying fascia to the bone (3–5 mm). The needle was rotated three to four times and left in place for ten minutes. Following needle withdraw, the insertion site was compressed firmly to avoid excessive bleeding. Applications were repeated twice per week.
- 2). After cleaning the skin with spirit and povidone iodine under all sterile precautions we injected triamcinolone acetonide 40mg/ml at the site of pain locally. Insertion site was compressed firmly to avoid any bleeding. The injection was given to patients who came under group 2.

Patients were not allowed to take any other medication during the trial. The patients were told not to use any other treatment, including ice application, topical nonsteroidal anti-inflammatory drugs, or other oral medications, during the trial so as not to affect the outcomes during follow up. Patients were told that they would be excluded from the study if they did not comply with this prohibition. The clinical evaluation was performed by authors who did not participate in the intervention. Patients were evaluated using the PRTEE score at two weeks and four weeks.

PRTEE score includes

- 1) Pain at the affected part
- 2) Functional disability which include (A) Specific Activities (B) Usual activities

Total Score = Pain Subscale + Function Subscale
Best Score – 0, Worst Score – 100

A p-value of less than 0.05 was considered statistically significant. Both the data were compared before and after using the paired sample t-test, and differences between groups were analyzed with the independent t-test.



Fig 1 Application of dry needle at pain site in lateral epicondylitis.



Fig 2 Application of steroid injection in lateral epicondylitis.

RESULTS

Although we planned to enroll 50 patients, we completed the study with 40 patients. Two (4%) patients in the dry needling group could not tolerate the intervention, one had a local hemorrhage, and one was lost to follow up. So we have taken the data of 20 patients.

In the group 2, 2 (4%) patients tried other therapies during the 4 weeks' follow-up period. 1 patient (2%) developed skin reaction at the site of the injection. 2 did not come for follow up. There were no differences between groups in terms of sex, age, dominant arm, and PRTEE scores before the treatments. The mean age of the patients was 42.7 years in group I and 48.9 years in group II. Overall, 73% of the patients were female, and 27% of the study group suffered LE in their dominant arms. In both groups, significant differences were detected at the two week follow up (Table 1). Both the groups gave good results at the interval of 2nd week and 4 week follow-ups. In both groups, a significant difference ($p < 0.05$) in PRTEE (pain and function) scores was detected between before and after treatment at two weeks. Although the mean PRTEE (pain and function) score of the group 2 at 4 weeks was higher than that before treatment, the difference was not significant (Table 2).

DISCUSSION

Lateral epicondylitis (LE), which is also known as tennis elbow, periostitis, extensor carpi radialis brevis-tendinosis, and epicondylalgia, is obscure and controversial. Because inflammatory cells are absent in LE, the term periostitis has fallen into disuse [5, 12]. LE is common, especially in middle age [12]. Studies report no gender difference, whereas tobacco consumption and forceful supination activities are risk factors [12].

Another controversial issue in LE is its pathophysiology. Although some publications advocate that the cause of LE is overuse trauma [3, 6, 12], recent publications do not confirm this understanding. New studies show that the main pathophysiological hallmark of tendinopathy is neovascularity and disorganized collagen fibers. However, the cause of the degenerative changes and pain is unclear. Mechanical, neural, and vascular problems and healing failure are blamed for the pathophysiology of LE [5, 10, 13].

Finally, the treatment in LE is also controversial. The main treatment of LE is non-surgical and involves antiinflammatory drugs, brace use, local anesthetic injection, and extracorporeal shock wave therapy [3, 5, 6, 10]. When non-surgical methods are not effective, invasive techniques, such as dry needling, platelet-rich plasma injections, and surgical intervention, are an option [10]. However, the best treatment must be effective, practical, and inexpensive to enable better recovery and a rapid return to work. Both the groups are compared here before taking treatment and after taking treatments.

Dry needling involves the insertion of thin monofilament needles without injective into, alongside, or around nerves, muscles, or connective tissues for the management of pain and dysfunction in neuromusculoskeletal conditions [17].

Although the exact mechanism by which dry needling works is not clear, it has been suggested that this technique reduces peripheral and central sensitization [17, 18, 20, 23], which positively influences tendon healing due to increasing blood flow via local vasodilatation and collagen proliferation [7, 17, 18]. Therefore, it may be possible to restore the range of motion and reduce the local and widespread pain of

LE patients. Moreover, the method of dry needling is controversial [19], including where the needles should be inserted, which type of needle or how many needles should be used, how much time should be waited after inserting the needles, and how often needling should be performed. In our study dry needling patients has proved very less complications compared to another group and patients has found very good results at the follow up period. The complications which were found was bruising at local site.

While in group 2 Corticosteroids have both anti-inflammatory and immunosuppressive effect, but their mechanism of action is complex. Corticosteroids act directly on nuclear steroid receptors and interrupt the inflammatory and immune cascade at several levels. By this means, they reduce vascular permeability and inhibit accumulation of inflammatory cells, phagocytosis, production of neutrophil superoxide, metalloprotease, and metalloprotease activator, and prevent the synthesis and secretion of several inflammatory mediators such as prostaglandin and leukotrienes.

The complications with this technique was much than the dry needling. We found septic arthritis at local joint, cartilage damage, whitening of skin at local site, irritation at local site.

After all these data we can conclude that both the techniques have good advantage in treating the lateral epicondylitis. But with the good results in follow ups as per PRTEE score and less complications dry needling has proven good results than the local site corticosteroids injection.

One limitation of this study was the relatively small patient group, which was primarily the result of the difficulty of convincing patients to adhere to the study protocol. One-fifth of the patients in the control group had to be excluded from the study because they some complications. A second limitation is the standardization of dry needling. The size of the needle and the placing technique should be adequate good. Although we found successful results for dry needling, outcomes may change as a function of the technique used. Further investigations with larger groups are needed to compare dry needling and local steroids injections in LE to make it a first line treatment. Here we can also take the help of ultrasonography to see give injections under its guidance. And we can also evaluate the thickness of common extensor tendon before and after treatment.

CONCLUSIONS

Both the techniques have proven good results at defined intervals at regular follow ups. But as the PRTEE score we found both the treatment are equally effective. But due to less complications we preferred dry injection over local steroids. More Comparative studies should be conducted to compare dry needling with other treatment modalities.

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