



## A PROSPECTIVE EVALUATION OF SCLEROTHERAPY FOR CHRONIC LATERAL EPICONDYLOSIS

### Orthopaedics

<b>Dr. Lakhan Singh Maravi</b>	MS (Orthopaedics) Associate Professor Department of Orthopaedics Netaji Subhash Chandra Bose Medical College, Jabalpur (M. P.)
<b>Prof. Dr. HKT Raza</b>	MS (Orthopaedics) Professor and Head Department of Orthopaedics Netaji Subhash Chandra Bose Medical College, Jabalpur (M. P.)
<b>Dr. Ashish Sirsikar*</b>	MS (Orthopaedics) Assistant Professor Department of Orthopaedics Netaji Subhash Chandra Bose Medical College, Jabalpur (M. P.)*Corresponding Author
<b>Dr. Aditya Soni</b>	Post Graduate Student Department of Orthopaedics Netaji Subhash Chandra Bose Medical College, Jabalpur (M. P.)

### ABSTRACT

Sclerosing agents such as polidocanol are widely used for treating varices and vascular malformations. Sclerotherapy has been advocated to target neovascularity that is often present in tendinopathy. Objective: To assess whether sclerotherapy, an injection-based therapy, improves elbow pain in patients with lateral epicondylitis. Methods: In this study, 18 patients (22 elbows) (10 men and 8 women, mean age 40years) with the diagnosis of lateral epicondylitis were included. All patients had a chronic history of pain (mean 18 months). All patients were treated with a single injection of the sclerosing agent polidocanol. Results: At 6-months follow-up post-injection, there was a good clinical result in 17 out of 22 elbows. Extensor origin pain during wrist loading activities was significantly reduced. Conclusion: Sclerotherapy with polidocanol was well tolerated, effectively decreased extensor origin pain and improved elbow function in patients with refractory lateral epicondylitis.

### KEYWORDS

sclerotherapy, lateral epicondylitis, polidocanol, injection therapy.

#### Introduction

Lateral epicondylitis (LE), also known as tennis elbow, is a common painful condition of the upper extremity, with an incidence of 4-7/1000 patients per year in primary care settings.<sup>1-3</sup> The term "lateral epicondylitis" is often used indiscriminately to refer to chronic overuse lateral elbow injury. However, the vast majority of overuse tendon injuries, including LE, show no histopathologic evidence of inflammatory cells. Rather, they are chronic degenerative conditions. Therefore, "lateral epicondylitis" is the preferred term.<sup>4-6</sup>

It is typically seen in patients whose activities involve repeated forceful extension of the wrist, and can lead to a chronic pain syndrome without proper treatment. Lateral epicondylitis is thought to be due to repetitive strain of the common tendon at the origin of the wrist extensor muscles, which may result in microscopic tears of the aponeurosis followed by a local inflammatory reaction in the tendon fibres close to the lateral epicondyle. Usually, patients present with chronic lateral elbow pain which is exacerbated by supination or wrist extension with focal lateral epicondyle tenderness on clinical examination. Individuals in the 40-50 years age group are at the highest risk, regardless of their sex and ethnicity.<sup>7-9</sup>

Conservative management includes anti-inflammatory drugs, physiotherapy or injection of corticosteroid into the tender area. While many non-surgical therapies have been tested for LE refractory to conservative measures, none have shown to be uniformly effective in the long term.<sup>10-12</sup> If conservative treatment is insufficient, surgical treatment is required which consists of relieving the tension in the tendon by detaching the origin of the common extensor muscle from the lateral epicondyle.

Sclerosing agents such as polidocanol are widely used for treating varices and vascular malformations. These agents have a direct effect on the intima of blood vessels, resulting in thrombosis and vessel occlusion. Sclerotherapy has also been advocated to target neovascularity that is often present in tendinopathy. Although pain frequently correlates with tendon neovascularization on ultrasound, it is likely that pain is secondary to the associated neural ingrowth within the areas of tendinopathy.<sup>13</sup> Thus, sclerotherapy may reduce tendinopathic pain by eliminating nociceptive nerve fibres, which are found adjacent to the neovessels either directly (by destruction) or indirectly (by ischaemia).<sup>14</sup>

Sclerosing polidocanol injections have been demonstrated to give promising clinical results in patients with chronic painful Achilles and patellar tendinosis.<sup>14</sup> However, there is lack of literature regarding its efficacy in the management of lateral epicondylitis. It was with this objective that we decided to test the efficacy of sclerotherapy in the treatment of chronic lateral epicondylitis.

#### Materials and Methods

22 elbows of 18 patients (10 men and 8 women, mean age 40 years, range 33-63) with a chronic history of pain (mean 18 months, range 4-30), diagnosed as lateral epicondylitis were included in our study. A total of 30 patients were referred for evaluation and the diagnosis of lateral epicondylitis was established, based on the history and clinical examination. 12 patients refused for injection therapy after counselling, mostly females due to unknown fear for injection. Rest 18 patients agreed to participate in the study and were enrolled for the study after taking proper written informed consent. Clinically, all these patients had tenderness in the extensor muscle origin, and pain was elicited by forced extension of the wrist joint. All patients had pain during their work.

Previous treatment included the following: NSAIDs (18), cortisone injection (6), stretching (8), strength training (5), orthotic device (5) and acupuncture (2).

#### Treatment injection of the sclerosing substance polidocanol:

The substance polidocanol (10mg/ml) was used as sclerosing agent. The active substance is an aliphatic non-ionised nitrogen-free surface anaesthetic. Before the treatment, the skin was washed with a solution of chlorhexidine and alcohol. The patients were sitting with the arm resting on a table, having 70-80 of elbow flexion, and pronated wrist. The injection procedure was performed from the lateral side. Injection was given with a 22 gauge needle, connected to a 2-ml syringe. Altogether, 0.4-1.0 ml was injected slowly. The patients were advised to give rest to the elbow for the first 24 hours, after which, the patients were allowed to continue their normal daily activities without restrictions.

#### Outcome measures

At baseline and at follow-ups, we assessed patient's extensor origin pain during wrist activity. Using a visual analogue scale (VAS) for severity of pain, the patients recorded the amount of pain during wrist activity, on a 100-mm-long scale. The amount of pain was recorded

from 0 to 100 mm, where no pain is recorded as 0 and severe pain as 100.

Patient's satisfaction with treatment was also recorded on a 100-mm-long scale, evaluating from 0 to 100% how much satisfied the patients were with the result of the treatment. Results were evaluated before and after treatment.

### Results

Before treatment, patients were evaluated for extensor origin pain during wrist loading activity. The mean VAS before treatment was 75 (range 26–100). At the 6-months follow-up, the mean VAS had decreased significantly ( $P < 0.003$ ) from 75 to 34. There was a good clinical result in 17 out of 22 elbows. Extensor origin pain during wrist loading activities was significantly reduced. 5 elbows in 4 patients has fair to poor clinical results. Overall, improvement in elbow function was noticed. There were no complications related to the treatment. Two patients, both females, complained of having severe pain in the extensor origin and stiffness in the elbow during the first week after injection. There were no allergic reactions to polidocanol.

### Discussion

Our study was a prospective evaluation of efficacy and safety of Sclerotherapy using polidocanol injection in the treatment of lateral epicondylitis. We report a significant reduction in extensor origin pain during wrist loading activities and improvement in elbow function. We also report overall good clinical result, with no allergic reactions or complications.

In a pilot study 15 of 11 patients (13 elbows) with lateral epicondylitis, treated with polidocanol injection, there was a clinical improvement in 11/13 elbows at 8 months. The elbow pain was significantly reduced (mean VAS decreased from 75 to 34;  $p < 0.003$ ), and grip strength was significantly improved (from 29 to 40 kg;  $p < 0.025$ ).

A subsequent small size cross-over randomized controlled trial (30 patients) was performed by the same research group. In this study, Group 1 received image-guided polidocanol injection only, whereas Group 2 received lidocaine plus epinephrine. Subsequently, both groups had polidocanol injection at 3-month follow-up. This study showed no statistically significant differences ( $p < 0.05$ ) in the outcomes between the two groups. In both groups, there was a significantly lower VAS at 3-month and 12-month follow-up, and grip strength was significantly higher at 12 months.<sup>16</sup> Furthermore, a systematic review and network meta-analysis found no benefit of polidocanol compared with placebo.<sup>17</sup> Further Level 1 evidence is required to evaluate whether sclerotherapy has significant advantage.

### Conclusion

Sclerotherapy with polidocanol in patients of lateral epicondylitis was well tolerated, effectively decreased extensor origin pain and improved elbow function. Sclerotherapy performed by trained personnel is a reasonable therapeutic option for patients with refractory lateral epicondylitis.

### References

- Verhar J. Tennis elbow: anatomical, epidemiological and therapeutic aspects. *Int Orthop* 1994;18:263–267. [PubMed: 7852001]
- Hamilton P. The prevalence of humeral epicondylitis: a survey in general practice. *J R Coll Gen Pract* 1986;36:464–465. [PubMed: 3440991]
- Kivi P. The etiology and conservative treatment of lateral epicondylitis. *Scand J Rehabil Med* 1983;15:37–41. [PubMed: 6828831]
- Maffulli N, Khan KM, Kuddu G. Overuse tendon conditions: Time to change a confusing terminology. *Arthroscopy* 1998;14:840–843. [PubMed: 9848596]
- Khan KM, Cook JL, Kannus P, et al. Time to abandon the 'tendinitis' myth. *BMJ* 2002;324:626–627. [PubMed: 11895810]
- Potter HG, Hannafin JA, Morwessel RM. Lateral epicondylitis: Correlation of MR imaging, surgical and histopathological findings. *Radiology* 1995;196:43–46. [PubMed: 7784585]
- Shiri R, Viikari-Juntura E, Varonen H, Heliövaara M. Prevalence and determinants of lateral and medial epicondylitis: a population study. *Am J Epidemiol* 2006; 164: 1065–74.
- Jobe FW, Ciccotti MG. Lateral and medial epicondylitis of the elbow. *J Am Acad Orthop Surg* 1994;2: 1–8.
- Nirschl RP, Pettrone FA. Tennis elbow. The surgical treatment of lateral epicondylitis. *J Bone Joint Surg Am* 1979; 61:832–9.
- Buchbinder R, Green S, White M, et al. Shock wave therapy for lateral elbow pain. *The Cochrane Collaboration* 2005:3.
- Smidt N, van der Windt DA, Assendelft WJ, et al. Corticosteroid injections, physiotherapy, or a wait-and-see policy for lateral epicondylitis: a randomised controlled trial. *Lancet* 2002;359:657–662. [PubMed: 11879861]
- Struijs PA, Smidt N, Arola H, et al. Orthotic devices for the treatment of tennis elbow. *The Cochrane Collaboration* 2005:3.
- Alfredson H, Harstad H, Haugen S, Ohberg L. Sclerosing polidocanol injections to treat chronic painful shoulder impingement syndrome-results of a two-centre collaborative

- pilot study. *Knee Surg Sports Traumatol Arthrosc* 2006; 14: 1321–6.
- Alfredson H, Ohberg L. Sclerosing injections to areas of neo-vascularisation reduce pain in chronic Achilles tendinopathy: a double blind randomised controlled trial. *Knee Surg Sports Traumatol Arthrosc* 2005; 13: 338–44.
- Zeisig E, Ohberg L, Alfredson H. Sclerosing polidocanol injections in chronic painful tennis elbow-promising results in a pilot study. *Knee Surg Sports Traumatol Arthrosc* 2006; 14: 1218–24
- Zeisig E, Fahlström M, Ohberg L, Alfredson H. Pain relief after intratendinous injections in patients with tennis elbow: results of a randomised study. *Br J Sports Med* 2008;42:267–71.
- Krogh TP, Bartels EM, Ellingsen T, Stengaard-Pedersen K, Buchbinder R, Fredberg U, et al. Comparative effectiveness of injection therapies in lateral epicondylitis: a systematic review and network meta-analysis of randomized controlled trials. *Am J Sports Med* 2013; 41: 1435–46.