

AN ANALYSIS OF FUNCTIONAL OUTCOME OF AUTOLOGOUS BLOOD INJECTION FOR REFRACTORY LATERAL EPICONDYLITIS

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Abstract

Background: A common forearm extensor tendon is inflamed at its origin on the lateral epicondyle, with a bony prominence on the outside aspect of the elbow. **Aim:** The study aims to evaluate autologous blood injection's short-term and long-term results in treating refractory lateral epicondylitis. **Materials and Methods:** A prospective study was conducted at the Department of Orthopaedics & Traumatology OPD at Govt Rajaji Hospital, Madurai, for one year. All the patients selected for the study will be examined according to protocol, associated injuries should be noted and clinical, and laboratory investigations should be conducted to get fit for the procedure. **Result:** A total of 120 elbows, 72 male (60%) and 48 female (40%) conducted from 118 patients (male- 70; female-48) 2 patients had Bilateral elbows & aged 20-60 years with a mean age of 43.56 years. After autologous blood injections, the average pain score decreased from 8.7 to 0.19, the average NIRSCHL stage decreased from 6.4 to 0.1 & Hand grip from 28.8 to 97.3 % at 1-year follow-up. Most patients dramatically improved with a single injection. Only 3 patients required another second episode of injection. The significant maximal benefit was reached at an average of 5 weeks (1 week to 10 weeks) after injection. 2 Patients were injected for a bilateral elbow and 1 for a bilateral elbow. **Conclusion:** We conclude that Autologous Blood Injection can be safely advised as a method of treatment for all Chronic, Refractory & Relapsed cases of lateral epicondylitis (Tennis Elbow).

INTRODUCTION

Lateral epicondylitis is an inflammatory condition that occurs at the origin of the common extensor tendon of the forearm over the lateral epicondyle. It is the commonest chronic disabling painful condition of the elbow. It causes symptoms in 1% to 3% of the general population. It is common in people whose occupation requires frequent rotary motion of the forearm, like Tennis players, carpenters, gardeners, computer workers and knitting workers. The onset of lateral epicondylitis is between 35 and 50 years, with an equal male-to-female sex ratio.^[1,2] Nirschl observed that the basic pathology originated at the extensor carpi radialis brevis (ECRB) tendon. But sometimes, the anteromedial edge of the extensor digitorum communis (EDC) and the deep surface of the extensor carpi radialis longus (ECRL) may also be

involved. Therefore, idiopathic tennis elbow is considered a sub-inflammatory pathology.³ The pain persists because of the non-completion of inflammation, a fundamental requirement for the healing phase. By injecting blood, we provide inflammatory mediators that complete the inflammatory process, resulting in healing.^[1,3] Various modalities of treatment have been recommended for lateral epicondylitis. However, there is still no uniform consensus on the most effective management therapy for tennis elbow, especially for long-term outcomes.^[1,2,4] In addition, local injections such as steroids, platelet-rich plasma, autologous blood and botulinum toxin type A injection at the site of pathology are, in many cases, recommended. In non-responsive cases, surgery ranges from percutaneous tenotomy to excision of pathological tissue or tenotomy by open surgery.^[1,4] Not all pain around the elbow is due to

Lateral epicondylitis ruling. Other possible conditions are Osteochondritis dissecans of capitellum, Lateral compartment arthrosis, Varus instability, and most commonly, Radial tunnel syndrome, Cervical spondylosis and cervical disc disorders at C5-6 or C6-7 level with referred pain to elbow, Posttraumatic periostitis, Extra-articular radiohumeral bursitis.^[1,4,5] It is typically diagnosed by classical H/O pain over the elbow with a triad of positive cozen test, Mills manoeuvre, Coffee cup test, and Chair test. Local injection of hydrocortisone gives results the same as a needle under local anaesthesia. It gives better results in early follow-up, but long-term steroid use has been reported with high local recurrence.^[5,6] The autologous blood injection technique is an outpatient basis, easy procedure, safe (no reactions), cheap for both patient & institution, devoid of any biohazard complications, minimally traumatic, avoid regular use of NSAIDS, early recovery, no complications, effective & reduced recurrence rate, provides pain-free elbow.^[7,8,9] These details make us conduct the above study. Even though previously similar studies have been conducted, we have decided to conduct the study on a larger group of patients.

Aim

To evaluate the short-term and long-term results of autologous blood injection to treat refractory lateral epicondylitis.

MATERIALS AND METHODS

A prospective study was conducted at the Department of Orthopaedics & Traumatology OPD at Govt Rajaji Hospital, Madurai, for one year. First, all the patients selected for the study will be examined according to protocol, associated injuries should be noted and clinical and laboratory investigations should be conducted to get fit for the procedure. Then, the consent of the patient will be taken for the procedure. Finally, a patient will be followed till a good functional outcome is achieved Clinically.

Inclusion Criteria

Age between 20 & 60 years, failed previous modalities of treatment such as non-steroidal anti-inflammatory drugs/Physical therapy/Bandage/Corticosteroid injections, VAS score > 4, and duration of symptoms >1 month.

Exclusion criteria: Pregnancy, H/O recent trauma involving the elbow, recent surgery on the elbow, other causes of elbow pain like Elbow arthritis, loose bodies, carpal tunnel syndrome, cervical radiculopathy, osteoarthritis, systemic conditions such as rheumatoid arthritis, diabetes.

Patients underwent a pre-operative evaluation including the following parameters: Hb, blood sugar, RFT, uric acid, RA factor, CRP, and X-ray elbow anteroposterior & lateral view. Pain (VAS) and NIRSCL Score & Hand grip will be assessed on follow-up. In addition, the patient's clinical improvement will be assessed using NIRSCL SCORE & manual Hand grip clinically during every follow-up.

RESULTS

Table 1: Demographic data of the study

		Frequency	Percentage
Gender	Male	65	55%
	Female	55	45%
		Male (N)	Female (N)
Age	20-30	2	3
	31-40	15	25
	41-50	28	15
	51-60	20	13
Side	Right	53	40
	Left	19	8

A total of 120 elbows, 72 male (60%) and 48 female (40%) conducted from 118 patients (male- 70; female-48) 2 patients having Bilateral elbows & aged 20-60 years with a mean age of 43.56 years, were included in our study. Among the 120 elbows studied, the highest number of patients were seen in the 41-50 years (35.8%) age group. The average was 43.56 years; on the right side were mostly affected, 53 males and 40 females [Table 1].

Table 2: Follow-up scores in the study

	VAS score	NIRSCHIL score	Hand grip
Pre-injection	8.7	6.4	28.8
1st week	3.7	2.3	53.78
1st month	2.21	1.37	85.3
3rd month	1.02	1.14	88.6
6th month	0.85	0.68	94.07
1 year	0.19	0.1	97.3

Among 120 elbow pre-injection VAS score was 8.7, the NIRSCHL score was 6.4, and the Hand grip was 28.8. In the combined analysis, both VAS & NIRSCHL scores are decreasing & Hand grip is increasing. Hand grip was marked as the highest score of 10 (normal hand grip in 100% divided by 10) [Table 2 and Figure 1].

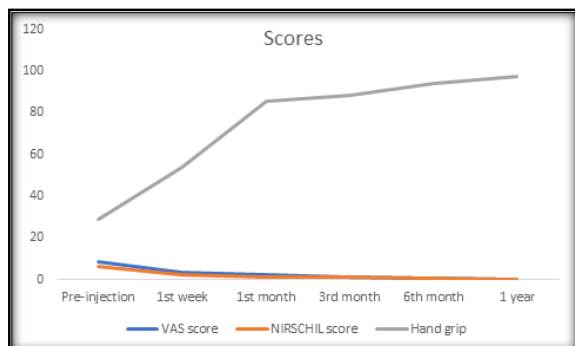


Figure 1. Distribution of follow-up scores in the study

Pre-injection average pain (VAS) score was 8.7 (range, 6-10), and the average NIRSCHL stage was 6.4 (range, 5-7) & the Hand grip was 28.8 (range 20-50%). After autologous blood injections, the average pain score decreased from 8.7 to 0.19, the average NIRSCHL stage decreased from 6.4 to 0.1 & Hand grip from 28.8 to 97.3 % at 1-year follow-up. Most patients dramatically improved with a single injection. Only 3 patients (2.5 %) required another second episode of injection. Those 3 patients also had some improvement in VAS score, NIRSCHL score & Hand grip from pre-injection & first-time ABI, and second injection for achieving maximum improvement in functional & pain score. The significant maximal benefit was reached at an average of 5 weeks (1 week to 10 weeks) after injection. 2 Patients were injected for a bilateral elbow

DISCUSSION

Lateral epicondylitis is an inflammatory condition that occurs at the origin of the common extensor tendon of the forearm over the lateral epicondyle. It is the commonest chronic disabling painful condition of the elbow. It causes symptoms in 1% to 3% of the general population. The onset of lateral epicondylitis is between 35-50 years, with an equal male-to-female sex ratio. The dominant upper limb is most commonly affected.^[4,5,6] Comparative studies are few but have shown better long-term results with ABI, PRP has been shown to give good results, and few studies have shown it to be better than ABI on long-term follow-up. Gani et al.^[10] showed the effectiveness of ultrasound-guided ABI and wrist immobilization on 38 patients. Furthermore, he was satisfied with his cohort's treatment and patient satisfaction. Kaziem et al.^[11] also showed good results with ABI compared to

local steroid injection. However short-term effects of local steroids were better than the ABI. He concluded that visible drug injection might have psychological effects over no drug in autologous blood injection. Rabago et al.^[12], in their systemic review of four injection therapies; prolotherapy, polidocanol, whole blood and platelet-rich plasma for tennis elbow, concluded that there is strong pilot-level evidence supporting the use of all four types of injection therapies for the treatment of tennis elbow. In their study, De Vos et al.^[13] were more satisfied with PRP than ABI. Still, the difference in the hospital set-ups, population catering, resources, health care policies and socio-economic conditions of the patient forced us to focus on cheaper and acceptable treatment. Bostan et al.^[14] reported the mean age of the patient was 47.25 years (range 20-68 yrs), and follow-up for 3 years. They analyzed the visual analogue scale (VAS), Nirschl score and grip strength were significantly improved after injections compared to before treatment. The best improvement in VAS score, hand grip strength & Nirschl score was detected at the one-year follow-up. The improvement was sustained until the third year. Gani et al.^[10] studied the mean pain score & Nirschl score before the procedure was 3.3 ± 0.9 & 6.2 ± 0.82 . However, at the final follow-up, the pain score & Nirschl score were 1.1 ± 0.9 & 1.5 ± 0.91 . Therefore, autologous blood injection was found to be one of the cheap, available and easy methods of treatment, and it should be considered a treatment modality before opting for surgery. Monreal et al.^[15] reported before autologous blood injections, the average pain score was 8.2 (range, 4-10). The average Nirschl stage was 6.5 (range, 5-7). After autologous blood injections, the average pain score decreased from 8.2 to 1.3. The average Nirschl stage decreased from 6.5 to 1.0. The maximal benefit was reached at an average of 2.5 weeks (1 week to 8 weeks) after injection. Autologous blood injection effectively treats patients with lateral epicondylitis, improving pain and functional status. In our study, 120 patients having refractory lateral epicondylitis participated with a follow-up of 1 year. Most patients dramatically improved with a single injection. Only 3 patients required another second episode of injection. After autologous blood injections, the average pain score decreased from 8.7 to 0.19. The significant maximal benefit was reached at an average of 5 weeks (1 week to 10 weeks) after injection. The autologous blood injection technique is an outpatient basis, easy procedure, safe (no reactions), cheap for both patient & institution, devoid of any biohazard complications, minimally traumatic, avoid regular use of NSAIDS, early recovery, no complications, effective & reduced recurrence rate, provides pain-free elbow & improving functional status.

CONCLUSION

Autologous Blood Injection (ABI) provides excellent functional outcomes on long-term follow-up. It is cheap, doesn't require any specialized apparatus & practically nil complications. The results are comparable in all these three modalities concerning immediate & intermediate improvement in pain & function. Therefore, we conclude that Autologous Blood Injection can be safely advised as a method of treatment for all Chronic, Refractory & Relapsed cases of lateral epicondylitis (Tennis Elbow).

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