

# OUTCOME OF LOCAL STEROID INJECTION IN THE MANAGEMENT OF TENNIS ELBOW

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**Objective:** The objective of this study was to determine the outcome of local steroid injection in the management of tennis elbow (lateral epicondylitis)

**Methodology:** 97 patients of Tennis elbow meeting inclusion criteria were included in this study. The study was performed in the department of Orthopaedics and Traumatology of Khyber teaching hospital Peshawar, from Nov 2009 to August 2010. The diagnosis of the tennis elbow was done clinically by tenderness at the lateral epicondyle and painful resisted extension of the wrist with elbow in full extension elicits pain at the lateral epicondyle (Cozen's Test). Informed written consent was taken from the patients. Steroid plus local anesthetic injections were administered under aseptic conditions in O.P.D. as a day case. The patients were followed at intervals of three weeks and six weeks. The findings were recorded in the proforma and the outcome was assessed by using Verhaar et al criteria.

**Results:** Four hundred ninety seven patients included in the study with tennis elbow. Out of these patients, 38 (39.6%) were males and 59(60.4%) were females. They were graded according to the Verhaar et al criteria. In this short term follow up of three weeks 49 (51%) patients had excellent results, 28 (29%) patients had good results, 20 (20%) patients had fair results and none had poor results. At six weeks follow up, 70(72%) patients had excellent, 16(17%) had good, 11(11%) had fair and no patient showed poor results.

**Conclusion:** Patients with Tennis elbow can be successfully treated with local steroid injection.

**Key Words:** Tennis Elbow (Lateral epicondylitis), Steroid injection, Outcome.

## INTRODUCTION

Lateral elbow pain is a common problem with peak incidence occurring at 40-50 years of age<sup>1</sup>. It equally affects both genders<sup>2</sup>. Tennis elbow (Lateral epicondylitis) typically presents as pain and localized tenderness at the lateral aspect of the elbow<sup>3</sup>. Up to 50% of all tennis players experience some kind of elbow pain and 75-80% of these elbow complaints are attributed to tennis elbow<sup>4</sup>. The incidence amounts to 3% of the general population and increases after 35 years of age<sup>5</sup>. In some occupational groups, characterized by intensive manual work and repeated movements of the elbow joint, the incidence of tennis elbow is much higher and ranges from 6% to 15%<sup>6</sup>. The term describing this syndrome is well-justified, as 50% tennis-players have the symptoms of various intensity<sup>7,8</sup>.

The grip force and load tolerance, especially on elbow joint extension, is considerably limited. Each of the wrist or finger extensors can be involved, but most frequently the pathology affects the short radial extensor of the wrist.<sup>9,10,11,12</sup>

Although originally described as an inflammatory process, the current consensus is that lateral epi-

condylitis is initiated as a micro tear, most often within the origin of extensor carpi radialis brevis (ECRB)<sup>13</sup>. The anatomic basis of injury to ECRB origin appears to be multifaceted, involving hypo vascular zones, eccentric tendon stresses and microscopic degenerative response<sup>14</sup>.

There are various treatment modalities including conservative and surgical. Conservative treatment includes non-steroidal anti inflammatory drugs (NSAIDs), exercises, restriction from manual work, local steroid injection and lithotripsy. The initial treatment is rest, local splints, activity modification and steroid injection<sup>14</sup>. Conservative treatment is usually successful in 90% of cases and the frequency of operative intervention is relatively low<sup>15,16</sup>.

Non-surgical treatment is the mainstay of management<sup>17</sup>. Steroid injection alone is considered to be the first line treatment for patients presenting with tennis elbow demanding a quick return to daily activities<sup>18</sup>. In medium term, local steroid injection is more successful and 100 times less expensive than other treatment options for tennis elbow like lithotripsy<sup>19</sup>.

## METHODOLOGY

97 patients of Tennis elbow meeting inclusion criteria were included in this study. The study was performed in the department of Orthopaedics and Traumatology Khyber Teaching Hospital, Peshawar, from November 2009 to August 2010. Data was collected from patients in O.P.D. Ninety seven patients of tennis elbow were included in the study.

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All patients of both genders more than 20 years and less than 70 years of age (as tennis elbow is more common in this age range) with chronic lateral elbow pain not responding to oral medications, short wave diathermy and physiotherapy were included in the study.

Following conditions/pathologies were excluded for our study as these will interfere with our injection protocol/ clinical findings and thus alter our results and introduce bias in the study.

1. Prior surgery of elbow, dislocation, tendon ruptures, fractures, cervical, shoulder and wrist pathology.
2. Duration of elbow pain less than 6 weeks
3. Local skin infection or osteomyelitis
4. Bilateral elbow symptoms (in bilateral tennis elbow we cannot compare the response/ results of treatment with normal side).

The diagnosis of the tennis elbow was done clinically by tenderness at the lateral epicondyle and painful resisted extension of the wrist with elbow in full extension elicits pain at the lateral elbow (Cozen's Test). Informed written consent was taken from patients and also from the ethical committee of Khyber Teaching Hospital, Peshawar. Lateral epicondyle steroid injection (Methylprednisilone-Depomedrol 40mg) 1c.c plus local anesthetic injections (Lignocane 2% plain) 1 c.c was administered under aseptic conditions in O.P.D. as a day case. The patients were followed at intervals of three weeks and six weeks for clinical evaluation according to Verhaar criteria. Grip strength was measured with Jamar Dynamometer (Jamar Hydraulic hand dynamometer (Jamar® Type 0- 200 lbs., Dimensions 83 × 113 No.5030 J1) according to the standard protocol. The findings were recorded in the proforma and the outcome was assessed by using Verhaar et al criteria<sup>16</sup>.

Verhaar et al criteria

### **Excellent**

Complete relief of pain on Lateral epicondyle (LE)

Patient satisfied with result of treatment.

No Subjective loss of grip strength (measured with Jamar

Dynamometer >64kg for males & > 38kg females)

No pain (Visual Analog Scale 0) provoked by resisted dorsiflexion of wrist (measured in degrees with Goniometer- >70)

### **Good**

Good Occasional slight pain on LE after strenuous activities

Patient satisfied with result of treatment.

No or slight subjective loss of grip strength (52-64Kg for males & 30-38kg for females)

No pain provoked by resisted dorsiflexion of wrist (61-70)

### **Fair**

Discomfort on LE after strenuous activities but at more tolerable level than before treatment.

Patient satisfied or moderately satisfied with the result of treatment.

Slight or moderate subjective loss of grip strength (41-52 kg for males & 21-30kg for females).

Slight or moderate pain (VAS 4-7) provoked by resisted dorsiflexion of wrist (51-60°)

### **Poor**

No decrease of pain on LE

Patient dissatisfied with result of treatment

Severe subjective loss of grip strength (<40 kg & < 20 kg)

Severe pain provoked by resisted dorsiflexion of the wrist (< 50)

## **RESULTS**

Ninety seven patients of tennis elbow were included in the study. Out of these patients, 38 (39.6%) were males and 59 (60.4%) were females with male to female ratio of 1:1.5.

The mean age of male patient was  $33.95 \pm 3.39$  years and female patient was  $35.90 \pm 4.51$  years.

Seventy eight (80.3%) patients had right sided tennis elbow while nineteen (19.7%) patients had left sided tennis elbow.

Patients with different professions having tennis elbow in our study are shown in Table No.1.

In our study the outcome of steroid injection as determined by Verhaar et al criteria at 3 weeks post injection was 49 (51%) patients had excellent results, 28 (29%) patients had good results, 20 (20%) patients had fair results and none had poor results.

The post injection outcome of steroid determined at follow up of 6 weeks was 70(72%) patients had excellent, 16(17%) had good, 11(11%) had fair and no patient showed poor results as shown in graph-1.

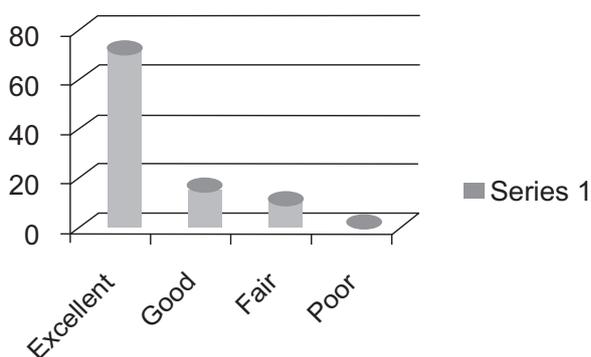
## **DISCUSSION**

Tennis elbow is a common ailment of the elbow encountered in orthopedic outpatient department. Male to female ratio in our study was 1:1.5, while.

**Table 1:**

Profession	Male n(%)	Female n(%)
Household workers	0 (0)	37 (62)
Official workers	8(21)	11(18)
Sports person	17 (44)	6 (10)
Laborers	11(30)	0(0)
Students	2(05)	5(10)

**Graph-1**



Walz DM and Newman JS reported equal gender incidence of tennis elbow<sup>2</sup>. We recorded 38 (39.6%) males and 59 (60.4%) females' patients with tennis elbow. Seventy eight (80.3%) patients had right sided tennis elbow while nineteen(19.7%) patients had left sided tennis elbow while cases of bilateral tennis elbow were excluded from our study. A local study at Ayub Teaching Hospital documented thirteen female (81.25%) and three male (18.75%) patients of tennis elbow. Fifteen patients (93.75%) had unilateral Tennis Elbow, while one had bilateral involvement (6.25%). In unilateral disease, right side was affected in eleven patients (68.75%) and left side in four (25%).<sup>15</sup>

In our study the outcome of local steroid injection was determined by Verhaar et al criteria and at 3 week post injection our results were 49 (51%) patients had excellent results, 28 (29%) patients had good results, 20 (20%) patients had fair results and none had poor results. Boisaubert et al. described 14 methods of conservative treatment. Corticosteroid therapy yielded the best early results. Distant results were the best in patients who underwent physiotherapy. However, no statistically significant differences between patients treated with physiotherapy and patients managed according to the "observe and wait" method were noted.<sup>20</sup>

Toker et al. compared the effectiveness of treatment of tennis elbow with two methods. The first group was treated only with non-steroid anti-inflammatory

drugs (NSAIDs) administered orally and locally. The other group received a combined therapy with NSAIDs plus glyocorticoid injections. The patients from the second group achieved considerably better results both according to the pain scales (VAS) and during physical examination.<sup>22</sup>

But this study was also comparative in design and patients had used NSAIDS while in our study no NSAIDS were given to the patients.

In our study the post injection outcome of steroid as determined by Verhar et al at follow up of 6 weeks was 70(72%) patients had excellent, 16(17%) had good, 11(11%) had fair and no patient showed poor results. A Turkish study found that Steroid injections are well tolerated and more effective for tendonitis in the short-term (1–3 weeks and 4–8 weeks) than pooled other treatments, though similar to NSAIDs. No long-term benefit was shown.<sup>22</sup>

Dogramaci Y, and Kalaci A observed that in the treatment of lateral epicondylitis, combination of corticosteroid injections with peppering is more effective than corticosteroid injections or peppering injections alone and produces better clinical results but in our study no peppering was used.<sup>23</sup>

The limitations of our study were lack of regular physiotherapy, NSAIDS and short follow up period. Further local studies of longer duration and comparison may be needed to confirm our results.

## CONCLUSION

Patients with Tennis elbow can be successfully treated with the use of local steroid injection as it can bring quick relief from pain and improves the function.

## REFERENCES

- 1) Buchbinder R, Green S, Struijs P. Tennis elbow. Clin Evid 2007;16:508-10.
- 2) Walz DM, Newman JS, Konin GP, Ross G. Epicondylitis: pathogenesis, imaging, and treatment. Radiographics 2010;30(1):167-84.
- 3) Oron A, Schwarzkopf R, Loebenberg M. Tennis elbow (Lateral epicondylitis)-assessment and treatment. Harefuah 2008; 147(4):340-3,373.
- 4) Bisset L, Paungmali A, Vicenzino B, Beller E. A systemic review and meta-analysis of clinical trials on physical interventions for lateral epicondylalgia. Br J Sports Med 2005;39:411-22.
- 5) Allander E. Prevalence, incidence, and remission rates of some common rheumatic diseases or syndromes. Scand J Rheumatol 1974;3:145-53.
- 6) Chiang HC, Ko YC, Chen SS, Yu HS, Wu TN, Chang PY. Prevalence of shoulder and upper-limb disorders among workers in the fish-processing industry. Scand J Work Environ Health 1993;19(2):126-31.

- 7) John D. Kelley, Stephen J. Lombardo, Marilyn Pink, Jacquelin Perry, and Charles E. Giangarra. Electromyographic and cinematographic analysis of elbow function in tennis players with lateral epicondylitis. *Am J Sports Med* 1994;22:359-63.
- 8) Gruchow HW, Pelletier D. An epidemiologic study of tennis elbow. Incidence, recurrence, and effectiveness of prevention strategies. *Am J Sports Med* 1979;7(4):234-38.
- 9) Bunata RE, Brown DS, Capelo R. Anatomic factors related to the cause of tennis elbow. *J Bone Joint Surg Am* 2007; 89(9):1955-63.
- 10) Calfee RP, Patel A, DaSilva MF, Akelman E. Management of lateral epicondylitis current concepts. *J Am Acad Orthop Surg* 2008;16(1):19-29.
- 11) Wang AW, Erak S. Fractional lengthening of forearm extensors for resistant lateral epicondylitis. *ANZ J Surg* 2007; 77(11):981-84.
- 12) Nirschl RP, Ashman ES. Tennis elbow tendinosis (epicondylitis). *Instr Course Lect* 2004;53:587-98.
- 13) Canale ST, Beaty JH. Tennis elbow (Lateral Epicondylitis) *Campbell's Operative Orthopaedics*. 11<sup>th</sup> ed. 2008;3:2634.
- 14) Faro F, Wolf JM. Lateral epicondylitis review and current concepts. *J Hand Surg [Am]* 2007;32(8):1271-9.
- 15) Khan MS, Kamran H, Khan SA, Ahmed M, Khan A, Younas M et al. Outcome of modified surgery in tennis elbow. *J Ayub Med Coll Abbottabad* 2007; 19: 50-2.
- 16) Kumar VS, Shetty AA, Ravikumar KJ, Fordyce MJF. Tennis elbow outcome following the Garden procedure a prospective study. *J Orthop Surg* 2004; 12: 226-9.
- 17) Calfee RP, Patel A, Dasilva MF, Akelman E. Management of lateral epicondylitis current concepts. *J Am Acad Orthop Surg* 2008;16: 19-29.
- 18) Tonks JH, Pai SK, Murali SR. Steroid injection therapy is the best conservative treatment for lateral epicondylitis a prospective randomized controlled trial. *Int J Clin Pract* 2007; 61: 240-6.
- 19) Crowther MA, Bannister GC, Huma H, Rooker GD. A prospective randomized study to compare extracorporeal shock-wave therapy and injection of steroid for the treatment of tennis elbow. *J Bone Joint Surg Br* 2002; 84: 678-9.
- 20) Boisauvert B, Brousse C, Zaoui A, Montigny JP. Non-surgical treatment of tennis elbow. *Ann Readapt Med Phys* 2004; 47(6): 346-55.
- 21) Toker S, Kilincoglu V, Aksakalli E, Gulcan E, Ozkan K. Short-term results of treatment of tennis elbow with anti-inflammatory drugs alone or in combination with local injection of a corticosteroid and anesthetic mixture. *Acta Orthop Traumatol Turc* 2008; 42(3): 184-87.
- 22) C Gaujoux-Viala, M Dougados, L Gossec. Efficacy and safety of steroid injections for shoulder and elbow tendonitis a meta-analysis of randomized controlled trials. *Ann Rheum Dis* 2009; 68: 1843-49.
- 23) Dogramaci Y, Kalaci A, Sava N, Duman IG, Yanat AN. Treatment of lateral epicondylitis using three different local injection modalities a randomized prospective clinical trial. *Arch Orthop Trauma Surg* 2009; 129(10): 1409-14.

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