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EFFECT OF GENDER ON OUTCOME OF PERCUTANEOUS EXTENSOR TENDON RELEASE IN LATERAL EPICONDYLITIS ELBOW (>2 MONTHS DURATION) AND ITS COMPARATIVE EVALUATION WITH CONSERVATIVE METHODS (REST, ANALGESICS AND PHYSIOTHERAPY)

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Conflicts of Interest: Nil
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Abstract:
Background: Lateral epicondylitis, also known as 'tennis elbow', is a very common condition affecting mainly middle-aged patients. The pathogenesis remains unknown but there appears to be a combination of local tendon pathology, alteration in pain perception and motor impairment.
Methods: The present study was aimed to assess the outcome of percutaneous extensor tendon release in tennis elbow (>2 months duration) and do a comparative evaluation of the group treated by conservative management. During the study period, a total of 62 patients were randomized to receive either conservative treatment (CE; n=32) or treated by percutaneous method (PT; n=30).
Results: Numerical rating scale (NRS) was used to assess pain at follow-up and compared with baseline in both groups. NRS assessment showed that pain score was significantly decreased (P=0.000) at 3- and 6-months in both CE and PT groups.
Conclusion: There was no significant sex-based difference in CE and PT group.
Keywords: DASH Score, Oxford elbow score, Tennis elbow, Gender.

Introduction:

Lateral elbow pain is one of the most common sources of medical consultation for non-traumatic elbow disorders. The most frequent diagnosis is the tendinous disorder known as lateral epicondylitis (LE) or 'tennis elbow'. However there are many pathological conditions that may mimic LE such as intra-articular plica, osteochondritis dissecans (OCD), radiocapitellar arthritis or posterolateral rotatory instability.[1]

Lateral epicondylitis was first described by Runge in 1873. It was described as a chronic symptomatic degeneration of the wrist extensor tendons involving their attachment to the lateral epicondyle of the humerus. It is a common condition, affecting between 1% and 3% of the population, generally affecting the middle-aged without gender predisposition.[2]

The initial treatment is with rest, modification of activity, local splints, and steroid injection, and 90% of patients respond to conservative treatment.[3] Steroid injections may provide relief of symptoms in up to 40% of patients. Patients who fail to respond to conservative measures may require surgery. Boyd and McLeod[4], and Posch, Goldberg and Larrey[5] reported that up to 8% of patients require surgery. The many operations available have been reviewed by Bosworth[6] include tenotomy of the extensor tendon, excision of the damaged portion of the tendon, exploration of the radiohumeral joint and alterations to the length of the tendon of ECRB.

Material and methods

Study design

Hospital-based prospective study.

Study site

Department of Orthopedics, Dr. Rajendra Prasad Govt. Medical College, Kangra at

Tanda, HP, India.

Sample Size

All patients of tennis elbow consenting to be part of the study.

Study duration

2016-17 (One year)

Study population

All patients of tennis elbow (>2 months duration) visiting Outpatient Department of Department of Orthopedics during the year of 2016-2017.

Inclusion Criteria

- Lateral epicondylitis for a period of more than two months.
- Localised pain over lateral epicondyle.
- Positive chair lift test.
- No localized skin problems.
- Patients who give consent.

Exclusion criteria

- Lateral epicondylitis less than two months in duration.
- Any previous elbow surgery.
- Elbow pathology like rheumatoid arthritis, osteoarthritis or radial tunnel syndrome.
- Patients refusing to give consent

Methodology

After informed consent which includes explaining the disease and procedure in detail to the patients, patients were enrolled into the study. Patients fulfilling inclusion criteria were randomized to the outpatient department (OPD) based surgical procedure (Percutaneous tenotomy) and conservative therapy (Rest, NSAIDS, and physiotherapy). Before embarking on either the modality of treatment, patient was evaluated by history and examination of the patient, which included NRS, DASH, and Oxford Elbow score measurements. Subsequent to a particular treatment intervention, patients were followed up at 3 months and six months and evaluated by NRS, DASH,and Oxford score.

Statistical Assessment

Data were expressed as frequency, percentages or mean/standard deviation.

Comparison between 2 groups was made using student t-test while the single group at different time interval compared using paired t-test for quantitative variables. For categorical variables, chi-square test was used. Mann-Whitney test was used to compare non-parametric variables. A p value less than 0.05 was considered significant. Statistical analysis was performed using Epi-info version 7.2

Results

The present study was aimed to assess the outcome of percutaneous extensor tendon release in tennis elbow (>2 months duration) and do a comparative evaluation of the group treated by conservative management. During the study period, a total of 62 patients were randomized to receive either conservative treatment (CE; n=32) or treated by percutaneous method (PT; n=30).

Age analysis showed that the patients' age ranged from 26-67 years with mean age of 41.74 years (n=62). Age was non-significantly (P=.070) higher in PT group

(43.83±10.21) compared to CE group (39.78±6.84). Majority of the patients were of 31-40 year age-group followed by 41-50 year. Sex-based analysis showed that females dominated over males in both the groups. There was no significant sex-based difference (P=0.465) in CE and PT group.

Table 1: Comparison of NRS on the basis of sex

NRS	CE Group (n=32)[C]			PT Group (n=30)[P]		
	Male	Female	p-value	Male	Female	p-value
Base line [a]	5.0±1.73	4.96±1.48	0.95	4.44±1.01	4.81±1.40	0.48
3-month [b]	4.0±1.73	3.84±1.31	0.75	3.44±0.72	3.91±1.48	0.38
6-month [c]	3.0±0.57	3.0±0.57	1.0	3.22±0.97	3.38±1.28	0.74
p-value	0.001	0.001		0.001	0.001	

Our study found that NRS was not significantly different among males and females in CE group at baseline (5.0±1.73 vs. 4.96±1.48; P=0.952), 3-months (4.0±1.73 vs. 3.84±1.31; P=0.792), and 6-months (3.0±0.57 vs. 3.0±0.57; P=1.0), and in PT group at baseline (4.44±1.01 vs. 4.81±1.40; P=0.487), 3-months (3.44±0.72 vs. 3.91±1.48; P=0.385), and 6-months (3.22±0.97 vs. 3.38±1.28; P=0.743) (table 4). We also observed that in both CE and PT groups among males and females, NRS was significantly improved at 3-months and 6-months when compared with baseline

Table 2: Sex-based distribution of DASH score

DASH score	CE Group (n=32)[C]			PT Group (n=30)[P]		
	Male	Female	p-value	Male	Female	p-value
Base line [a]	62.97±8.08	61.57±3.37	0.75	64.26±2.87	65.67±6.17	0.79
3-month [b]	56.78±7.19	57.70±4.63	0.32	59.17±3.58	60.63±5.50	0.79
6-month [c]	50.48±7.07	55.49±5.95	0.06	56.85±3.30	58.61±9.19	0.89
p-value	<0.05	0.001		0.001	0.001	

Our study found that DASH score was not significantly different among males and females in CE group at baseline (62.97±8.08 vs. 61.57±3.37; P=0.755), 3-months (56.78±7.19 vs. 57.70±4.63; P=0.324), and 6-months (50.48±7.07 vs. 55.49±5.95; P=0.061), and in PT group at baseline (64.26±2.87 vs. 65.67±6.17; P=0.790), 3-months (59.17±3.58 vs. 60.63±5.50; P=0.790), and 6-months (56.85±3.30 vs. 58.61±9.19; P=0.894). We also observed that in both CE and PT groups among males and females, DASH score was significantly improved at 3-months and
6-months when compared with baseline

Table 3: Sex-based distribution of Oxford elbow score

Oxford elbow score	CE Group (n=32)[C]			PT Group (n=30)[P]		
	Male	Female	p-value	Male	Female	p-value
Base line [a]	31.57±3.55	31.60±3.45	0.98	32.78±2.05	32.43±3.28	0.77
3-month [b]	33.71±3.68	33.44±3.97	0.87	34.22±2.05	34.09±3.34	0.91
6-month [c]	34.85±2.73	34.76±4.54	0.95	36.44±1.24	35.62±2.62	0.37
p-value	<0.05	0.001		0.001	0.001	

Our study found that Oxford elbow score was not significantly different among males and females in CE group at baseline (31.57±3.55 vs. 31.60±3.45; P=0.985), 3-months (33.71±3.68 vs. 33.44±3.97; P=0.871), and 6-months (34.85±2.73 vs. 34.76±4.54; P=0.958), and in PT group at baseline (32.78±2.05 vs. 32.43±3.28; P=0.771), 3-months (34.22±2.05 vs. 34.09±3.34; P=0.917), and 6-months (36.44±1.24 vs. 35.62±2.62; P=0.377) . We also observed that in both CE and PT groups among males and females, OES was significantly improved at 3-months and 6-months when compared with baseline

Discussion

The present study was aimed to evaluate the outcome of percutaneous extensor tendon release in resistant tennis elbow with conservative management. During the study period, a total of 62 patients were randomized to receive either conservative treatment (CE; n=32) or treated by percutaneous method (PT; n=30).

Our study found that pain was significantly decreased at 3 and 6-months when compared with baseline in the respective treatment groups: conservative and percutaneous. NRS improved from 4.97 to 3 in conservative group and from 4.7 to 3.15 in tenotomy group. However, no significant difference was noted when NRS scores were compared among two treatment groups.

Lin et al.[7] investigated the effectiveness of the percutaneous soft tissue release (using a needle) for the treatment of recurrent myofascial pain in the forearm in six study subjects who had recurrent lateral epicondylitis. For every individual case, the pain intensity was significantly reduced ($P < 0.01$) and the pressure pain threshold and the grasping strength were significantly increased ($P < 0.01$) immediately after the treatment. This significant effectiveness lasted for at least one year. They concluded that needle based percutaneous soft tissue release could be effectively used for treating chronic recurrent lateral epicondylitis to avoid recurrence.

In our study found that DASH score was significantly improved at 3- and 6-month in both groups when compared with baseline.

Dunkow et al.[8] compared the outcome of percutaneous release and open release for tennis elbow. They have shown that there was a significant difference in outcome in the two patient groups. Those patients undergoing a percutaneous release returned to work on average three weeks earlier and their symptoms as shown from their DASH scores improved significantly more than those undergoing an open procedure. The percutaneous procedure was a quicker, simpler procedure to perform than an open procedure. The study showed that patients have significantly better outcome measures after a percutaneous procedure.

Our study found that Oxford elbow score was significantly improved with time at 3 and 6 months in both groups while there was no significant difference between conservative and percutaneous method. Similar comparative studies have been done in past also where lateral epicondylitis was managed by two different methods and results compared. Lakhey et al. [9] used a needle tenotomy technique for the release of tennis elbow on 21 elbows. In his series 76.2% of the cases had an excellent or good outcome, 19% had a satisfactory outcome and 4% had a poor outcome.

Conclusion

There was no significant sex-based difference in CE and PT group.

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