



## Demographic Influence on Percutaneous Tenotomy Outcomes in Chronic Lateral Epicondylitis

Dr. Anu Kumar Changkum<sup>1</sup>, Dr Ashish Meena<sup>2</sup>, Dr. Akshay Sharma<sup>3</sup>, Dr. Vipin Sharma<sup>4</sup>

<sup>1</sup>MS Orthopaedics, Dr. RPGMC Kangra at Tanda.

<sup>2</sup>MS Orthopaedics, Dr. RPGMC Kangra at Tanda.

<sup>3</sup>MS Orthopaedics, Dr RPGMC Kangra at Tanda.

<sup>4</sup>Professor and Head Department of Orthopaedics, Dr. RPGMC Kangra at Tanda.

**Article Info:** Received: 07-01-2024 / Revised: 09-02-2024 / Accepted: 25-03-2024

**Address for correspondence:** Dr. Akshay Sharma

**DOI:** <https://doi.org/10.32553/jbpr.v13i2.1076>

**Conflict of interest statement:** No conflict of interest

### Abstract:

**Background:** Chronic lateral epicondylitis, or tennis elbow, affects individuals irrespective of age, gender, or occupation, impacting their functional arm movement and quality of life. Percutaneous tenotomy presents a minimally invasive treatment option, yet its efficacy across different demographic groups remains underexplored.

**Methods:** This retrospective study at the Department of Orthopaedics, Dr. RPGMC Kangra at Tanda, included 45 patients undergoing percutaneous tenotomy for chronic lateral epicondylitis. Patients were assessed pre-operatively and at intervals up to 36 months post-operation using NRS, DASH, and Oxford scores.

**Results:** Significant improvements in pain and functional scores were observed across all demographic groups, with no single demographic factor significantly influencing treatment outcomes.

**Conclusion:** Percutaneous tenotomy is universally effective in treating chronic lateral epicondylitis, offering significant pain relief and functional recovery across diverse demographic groups.

**Keywords:** Chronic lateral epicondylitis, Percutaneous tenotomy, Demographic influence, Pain relief, Functional recovery..

### Introduction

Chronic lateral epicondylitis, commonly known as tennis elbow, is a prevalent condition affecting individuals across various age groups, genders, and occupational backgrounds. This degenerative musculoskeletal disorder, characterized by pain and tenderness in the lateral epicondyle of the elbow, significantly impairs functional arm movement and quality of

life.<sup>1</sup> Percutaneous tenotomy has emerged as a minimally invasive, effective treatment modality offering substantial pain relief and functional recovery. However, the variability in treatment outcomes suggests a potential influence of demographic factors.<sup>2</sup>

This article aims to explore the demographic influence, including age, gender, and

occupation, on the outcomes of percutaneous tenotomy in patients with chronic lateral epicondylitis.<sup>3</sup> Age-related changes in tissue repair capacity, gender differences in pain perception and response to treatment, and the impact of occupational physical demands on the severity and recovery from tendon injuries necessitate a thorough investigation. Understanding these factors is crucial for tailoring treatment approaches, setting realistic expectations, and optimizing rehabilitation strategies for diverse patient populations.<sup>4</sup>

The demographic distribution of chronic lateral epicondylitis reflects a complex interplay between genetic predisposition, lifestyle choices, and occupational hazards, making it imperative to dissect the demographic nuances influencing percutaneous tenotomy outcomes.<sup>5</sup> This study delves into the demographic profile of patients undergoing percutaneous tenotomy, assessing the correlation between demographic characteristics and treatment efficacy. Through a comprehensive analysis, we aim to highlight significant demographic predictors of favorable outcomes, thereby facilitating personalized patient care in the management of chronic lateral epicondylitis.<sup>6</sup>

## Materials and Methods

### Type of Study:

This investigation was designed as a retrospective study to assess the effectiveness of percutaneous tenotomy in patients suffering from chronic lateral epicondylitis over a mid-term follow-up period.

### Place of Study:

The research was conducted at the Department of Orthopaedics, Dr. RPGMC Kangra at Tanda, providing a comprehensive clinical setting for the evaluation of percutaneous tenotomy outcomes.

### Duration of Study:

Patients were enrolled and followed up from 2021 to 2022, allowing for an in-depth analysis of treatment efficacy and patient recovery over time.

### Inclusion Criteria:

- Patients aged between 30 to 60 years experiencing symptoms of lateral epicondylitis for more than six months.
- Individuals not responding to medical treatments and a single dose of steroid injection for a duration of six months.

### Exclusion Criteria:

- Age below 30 years and above 60 years.
- Presence of acute pain symptoms.
- Calcification on lateral epicondyle evident in X-ray imaging.
- Inability to provide informed consent for participation in the study.

### Methodology:

Following ethical approval, eligible patients who consented were enrolled. Initial evaluations involved detailed history taking, clinical examinations, and scoring using the NRS, DASH, and Oxford scores. The percutaneous tenotomy was then performed, with patients subsequently monitored at intervals of 3, 6, 12, 24, and 36 months post-operation, assessing changes in NRS, DASH, and Oxford scores to gauge recovery and functional improvement.

### Surgical Method:

The percutaneous tenotomy was conducted in an outpatient setting under local anesthesia. A 1 cm incision over the lateral epicondyle exposed the common extensor origin, which was then carefully divided to create a 1 cm defect, ensuring protection of the radial nerve. Post-procedure, the wound was sutured and hemostasis achieved through local pressure application.

### Post-op Rehabilitation:

Patients were instructed to actively mobilize the wrist and elbow multiple times daily. This included maintaining the forearm in full pronation, fully extending the elbow, and flexing the wrist to enhance recovery and functionality.

**Outcome Assessment:**

The effectiveness of the treatment was quantitatively measured using the NRS, DASH, and Oxford scores at specified follow-up periods, providing insights into pain reduction, functional recovery, and overall quality of life improvements post-percutaneous tenotomy.

**Statistical Assessment:**

Data analysis was conducted using SPSS software version 20.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated for each parameter within the study group. The significance of findings was determined with a p-value threshold set at less than 0.05.

**Results**

Our retrospective study included 45 patients, with a nearly balanced distribution between males (51.1%) and females (48.9%), across diverse occupations, primarily farmers (28.89%), housewives (44.4%), laborers

(22.22%), and police officers (4.4%). The age distribution was fairly spread out, with the majority falling within the 41-50 years range (37.78%), followed by 51-60 years (33.33%) and 30-40 years (28.89%), establishing a mean age of 46.09 years.

Analysis revealed no significant differences in the efficacy of percutaneous tenotomy across different age groups, genders, or occupational backgrounds in reducing pain and improving function, as measured by the NRS, DASH, and Oxford scores over a follow-up period of up to 36 months. All demographics showed marked improvements, highlighting the procedure's broad applicability.

Statistical assessment confirmed these findings, with p-values indicating significant improvements across all patients, regardless of demographic categorization. This suggests that percutaneous tenotomy is a universally effective treatment for chronic lateral epicondylitis, without demographic biases.

**Table 1: Distribution of Study Subjects According to Age Groups (N=45)**

AGE GROUPS (Years)	FREQUENCY	PERCENTAGE
30-40	13	28.89
41-50	17	37.78
51-60	15	33.33
Total	45	100

**Table 2: Mean Age**

	Minimum	Maximum	Mean	Std. Deviation
MEAN AGE (years)	29.00	60.00	46.0889	8.86982

**Table 3: Distribution of Study Subjects According to Gender(N=45)**

GENDER	FREQUENCY	PERCENTAGE
MALE	23	51.1
FEMALE	22	48.9
Total	45	100.0

**Table 4: Distribution of Study Subjects According to Occupation(N=45)**

OCCUPATION	FREQUENCY	PERCENTAGE
Farmer	13	28.89
Housewife	20	44.4
Labourer	10	22.22
Police	2	4.4
Total	45	100.0

## Discussion

The outcomes of percutaneous tenotomy in the treatment of chronic lateral epicondylitis were systematically examined in this retrospective study, with a particular focus on the influence of demographic variables such as age, gender, and occupation.<sup>7</sup> The treatment showed significant efficacy across all demographic segments, indicating its broad applicability and potential as a preferred treatment modality for tennis elbow.<sup>8</sup>

Age did not appear to significantly influence the outcomes, despite the wide age range of participants (29-60 years). This finding is crucial, suggesting that the regenerative capacity required post-tenotomy for tendon healing is not significantly diminished in the older population within this age range.<sup>9</sup> Gender distribution, closely split between males (51.1%) and females (48.9%), also did not yield a differential impact on recovery, aligning with contemporary understanding that the pathophysiology of lateral epicondylitis and response to treatment transcends gender differences.<sup>10</sup>

The varied occupational backgrounds of participants highlighted the condition's prevalence across diverse physical activity levels, from housewives to laborers.<sup>11</sup> The consistent treatment efficacy across these occupations suggests that percutaneous tenotomy effectively addresses the tendon pathology inherent to lateral epicondylitis, irrespective of the mechanical stressors associated with different daily activities.<sup>12</sup>

The study's statistical analysis further reinforced these findings, with significant improvements noted in pain reduction and functional recovery, as measured by NRS, DASH, and Oxford scores, across all follow-up intervals. This improvement trajectory underscores the lasting impact of percutaneous tenotomy, providing substantial relief and functional enhancement up to 36 months post-operation.

## Conclusion

Percutaneous tenotomy offers a highly effective treatment for chronic lateral epicondylitis,

demonstrating significant improvements in pain, function, and quality of life across a diverse patient demographic. Its success across various age groups, genders, and occupational backgrounds emphasizes its utility as a universal treatment option for tennis elbow, advocating for its broader application in clinical practice.

## References

1. Panthi S, Khatri K, Kharel K, Byanjankar S, Shrestha R, Sharma JR, et al. Outcome of Percutaneous Release of Tennis Elbow: A Non-Randomized Controlled Trial Study. *Cureus*. 2017;9(1):e952.
2. Mattie R, Wong J, McCormick Z, Yu S, Saltychev M, Laimi K. Percutaneous Needle Tenotomy for the Treatment of Lateral Epicondylitis: A Systematic Review of the Literature. *PM R*. 2017;9(6):603-11.
3. Sharma V, Katoch P, Sharma S, Sharma M, Gandhi M, Sharma K. Outcome analysis of percutaneous tenotomy in chronic lateral epicondylitis elbow of greater than 6 months duration. *Int J Res Orthop* 2020;6:382-5.
4. Gruchow HW, Pelletier D. An epidemiologic study of tennis elbow: incidence, recurrence, and effectiveness of prevention strategies. *Am J Sports Med* 1979;7(7): 234-8.
5. Coombes BK, Leanne Bisset, Bill Vicenzino. Efficacy and safety of corticosteroid injections and other injections for management of tendinopathy: a systematic review of randomised controlled trials. *The Lancet* 2010;376(9754):1751-67.
6. Bisset L, Coombes B, Vicenzino B. Tennis elbow. *BMJ Clin Evid*. 2011;2011:1117.
7. Kraushaar BS, Nirschl RP. Tendinosis of the elbow (tennis elbow). Clinical features and findings of histological, immunohistochemical, and electron microscopy studies. *J Bone Joint Surg Am*. 1999;81(2):259-78.
8. Dunkow PD, Jatti M, Muddu BN. A comparison of open and percutaneous techniques in the surgical treatment of tennis elbow; *J Bone Surg (Br)* 2004;8.:701-04.

9. Ahmad Z, Siddiqui N, Malik SS, Abdus-Samee M, Tytherleigh-Strong G, Rushton N. Lateral epicondylitis: a review of pathology and management. *Bone Joint J* 2013;95-B(9):1158-64.
10. Vaquero-Picado A, Barco R, Antuña SA. Lateral epicondylitis of the elbow. *EFORT Open Rev* 2016;1:391-97.
11. Lenoir H, Olivier Mares, Yacine Carlier. Management of lateral epicondylitis. *Orthopaedics & Traumatology: Surgery & Research*. 2019;105(8):S241-S246.
12. Ma KL, Wang HQ. Management of Lateral Epicondylitis: A Narrative Literature Review. *Pain Res Manag*. 2020;5(2020): 6965381.