

**LATERAL EPICONDYLITIS SYNDROME****D.K. Awasthi<sup>1</sup>****Archana Dixit<sup>2</sup>**<sup>1</sup>.Department of chemistry Sri J.N.M.PG. College Lucknow U.P, India<sup>2</sup>. Department of chemistry DG PG College Kanpur U.P. India**ABSTRACT**

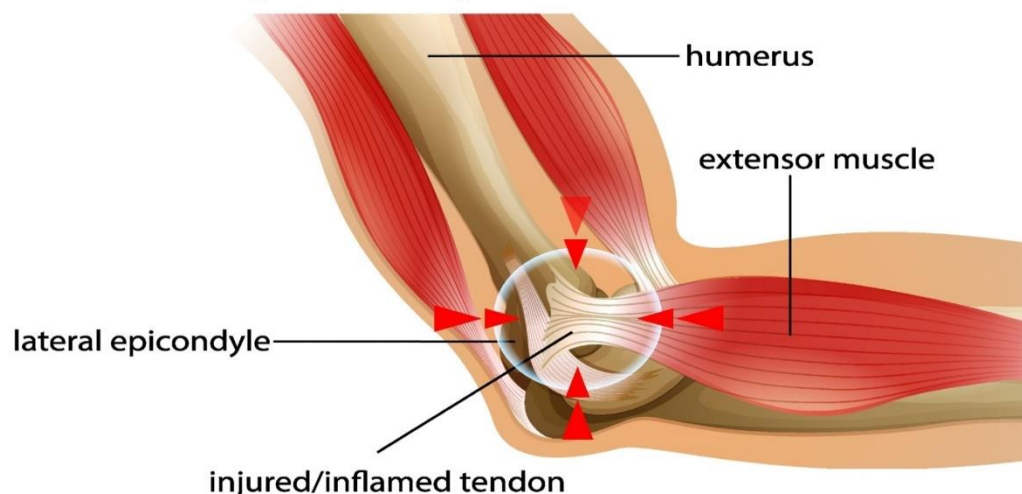
The most frequent overuse syndrome in the elbow is lateral epicondylitis, sometimes referred to as "Tennis Elbow" and recently proposed as lateral elbow (or epicondyle) tendinopathy (LET) . It is a tendinopathy injury affecting the forearm extensor muscles, as the previous description suggests. On the distal humerus' lateral epicondylar area, these muscles have their origin. Extensor carpi radialis brevis insertion is frequently involved.

**Keywords:**

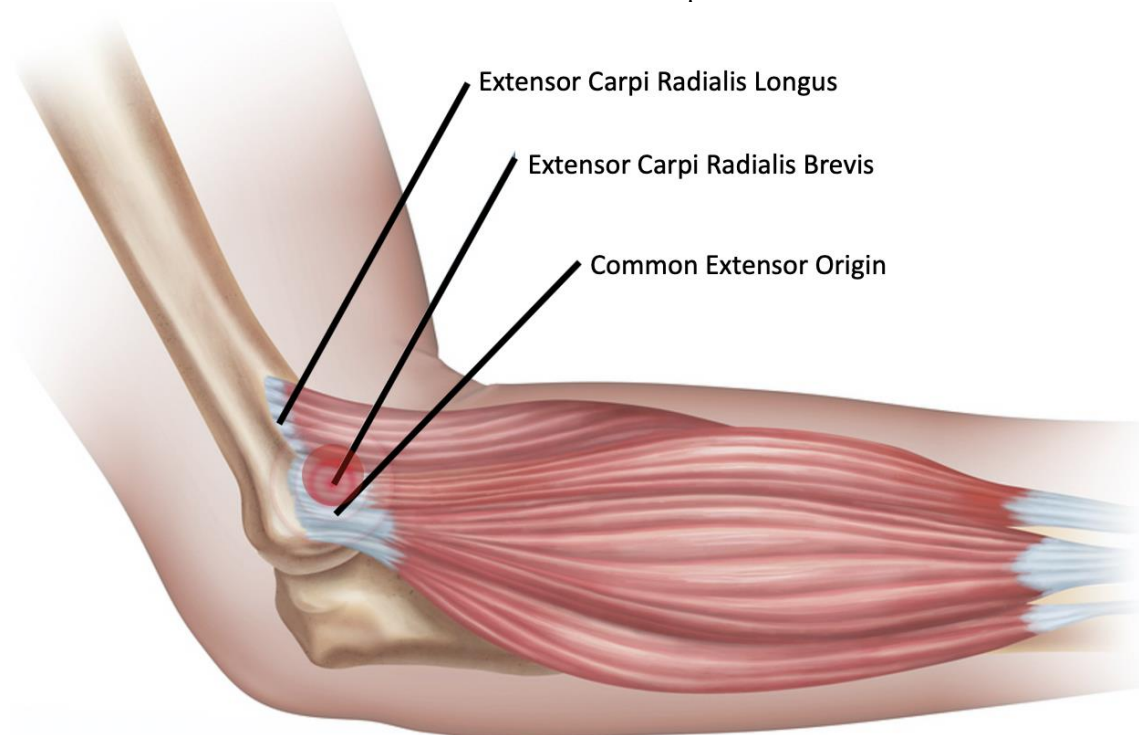
Lateral, epicondylitis, radial, brevis, elbow

**INTRODUCTION**

The most frequent overuse syndrome in the elbow is lateral epicondylitis, sometimes referred to as "Tennis Elbow" and recently proposed as lateral elbow (or epicondyle) tendinopathy (LET) . It is a tendinopathy injury affecting the forearm extensor muscles, as the previous description suggests. On the distal humerus' lateral epicondylar area, these muscles have their origin. Extensor carpi radialis brevis insertion is frequently involved. Tennis elbow, also known as lateral epicondylitis, is an inflammation of the tendons that allow your wrist to bend backward away from your palm. A tendon is a strong tissue cord that joins bones to muscles. Extensor carpi radialis brevis is the name of the tendon that tennis elbow is most likely caused by. Men and women are typically diagnosed with tennis elbow between the ages of 30 and 50. As the name suggests, tennis elbow is frequently brought on by the power of the tennis racket striking the ball when it is in the backhand position. You risk overusing the muscles in your forearm, which attach to the outside of your elbow. The tendons that roll over the end of the tennis racket during a backhand stroke are the humerus (upper arm bone), the radius, and the ulna (two bones in the forearm) make form the elbow joint. Two epicondyles, one lateral (on the outside) and one medial (on the inside), are present at the distal end of the humerus.

**Lateral Epicondylitis (Tennis Elbow)**

The lateral epicondyle, which is located just distal to the origin of the forearm's extensor muscles, is typically the region of most discomfort. The extensor carpi radialis brevis (ECRB) is the most frequently affected, but the extensor digitorum, extensor carpi radialis longus (ECRL), and extensor carpi ulnaris may all be involved. Also nearby is the radial nerve, which splits into the superficial radial nerve and the posterior interosseous nerve. The extensor tendon's origin may experience hyaline degeneration as a result of LET, which is categorized as an overuse injury. The tendons in the elbow might become unduly stressed from repetitive motions or manual labour combined with overuse of the forearm and elbow muscles and tendons. When the hand is moved during these contractions or manual chores, the tendon structure is adapted improperly, which results in pain over the lateral epicondyle. The lateral epicondyle is primarily anterior and distal to the area of discomfort. At least five times as frequently, elbow tendinopathy mostly affects the lateral rather than the medial portion of the joint, with a 4:1 to 7:1 ratio. 1-3% of people have it, primarily those in their 35 to 50s. being frequently impacted. It's crucial to take the patient's age into consideration while determining the differential diagnosis (growth plate disorder, referral from the cervical spine). Consider osteoarthritis (OA), referred pain to the cervical spine, if the patient is over 50. Recent research 50% of 200 tennis players over the age of 30 who participated experienced LET symptoms at some point. This injury frequently occurs at work, and activities like housework, hobbies, and manual labour that involve wrist extension, pronation, or supination are all key contributing causes. Both sexes experience LET at similar rates. The condition is most common in people between the ages of 30 and 50. It is uncommon to there are various viewpoints on what causes LET:



### 1. Inflammation

Even though the term "epicondylitis" suggests an inflammatory disorder, inflammation only appears in the very beginning stages of the disease process.

2. Microscopic tearing is determined that the extensor carpi radialis brevis (ECRB) muscle's origin experienced microscopic tearing, which resulted in the development of reparative tissue (angiofibroblastic hyperplasia). This microscopic tearing and healing reaction may result in structural failure of the ECRB muscle's origin.

Coonrad and Hooper were the first to mention macroscopic tearing in connection with the histology findings. Increased proteoglycan content, increased cellularity, neovascularization, and local necrosis cause disorientation, disorganization, and fibre separation. These histological abnormalities were referred to as angiofibroblastic hyperplasia. Since then, the word has changed to angiofibroblastic tendinosis. It is seen that

the tissue had irregular, immature collagen production as well as immature fibroblastic and vascular components. This varied degrees of tearing of the extensor carpi radialis brevis is associated with this grey, friable tissue.

### 3. The Decay Process

The conclusion is drawn that LET was caused more by a degenerative than an inflammatory mechanism. Increased fibroblasts, vascular hyperplasia, proteoglycans, glycosaminoglycans, and disordered, immature collagen are all signs of the condition's degenerative nature. This angiofibroplastic tendinosis of the ECRB is hypothesized to be caused by repetitive eccentric or concentric overloading of the extensor muscle mass. Increased fibroplastic activity and the production of granulation tissue are symptoms of the degenerative condition known as LET.

#### Hypovascularity

The tendinous unit is unable to appropriately react to recurrent stresses sent via the muscle because this tendinous region comprises areas that are relatively hypovascular, leading to diminishing functional ability. Pain, which can be caused by palpating the extensor muscles' origin on the lateral epicondyle, is the main sign of LET. The discomfort may travel up the outside of the forearm, down the outside of the upper arm, and, in rare instances, up to the third and fourth fingers. Additionally, it is frequently observed that the wrist extensor and posterior shoulder muscles lack flexibility and strength. Pain, which can be caused by palpating the extensor muscles' origin on the lateral epicondyle, is the main sign of LET. The discomfort may travel up the outside of the forearm, down the outside of the upper arm, and, in rare instances, up to the third and fourth fingers. Furthermore, Pain, which can be caused by palpating the extensor muscles' origin on the lateral epicondyle, is the main sign of LET. The discomfort may travel up the outside of the forearm, down the outside of the upper arm, and, in rare instances, up to the third and fourth fingers. Additionally, it is frequently observed that the wrist extensor and posterior shoulder muscles lack flexibility and strength.

In terms of the severity of the symptoms, there are four stages in the development of this damage, according to Warren

1. A momentary ache that appears a few hours after the inciting
2. Agony at the conclusion or right away following the inciting activity.
3. Acute pain that occurs during the triggering activity and worsens after it is stopped.
4. Constant discomfort that makes it impossible to do anything.
5. Additionally, it is frequently observed that the posterior shoulder muscles and wrist extensors lack flexibility and strength. Patients at least mention having weak grips or having trouble holding objects in their hands, particularly with the elbow extended. Finger supinator and extensor weakness is the cause of this weakness. Though it's uncommon, some people experience a sense of paralysis.
6. On average, symptoms endure between two weeks and two years. Without any therapy, 89% of patients recover within a year, with the possible exception of avoiding uncomfortable motions (sports injuries). Assessment Results
7. In order to ensure that the proper treatment plan is performed and the healing process is aided, a thorough assessment and examination are essential components. A differential diagnosis should be excluded by the evaluation as well.

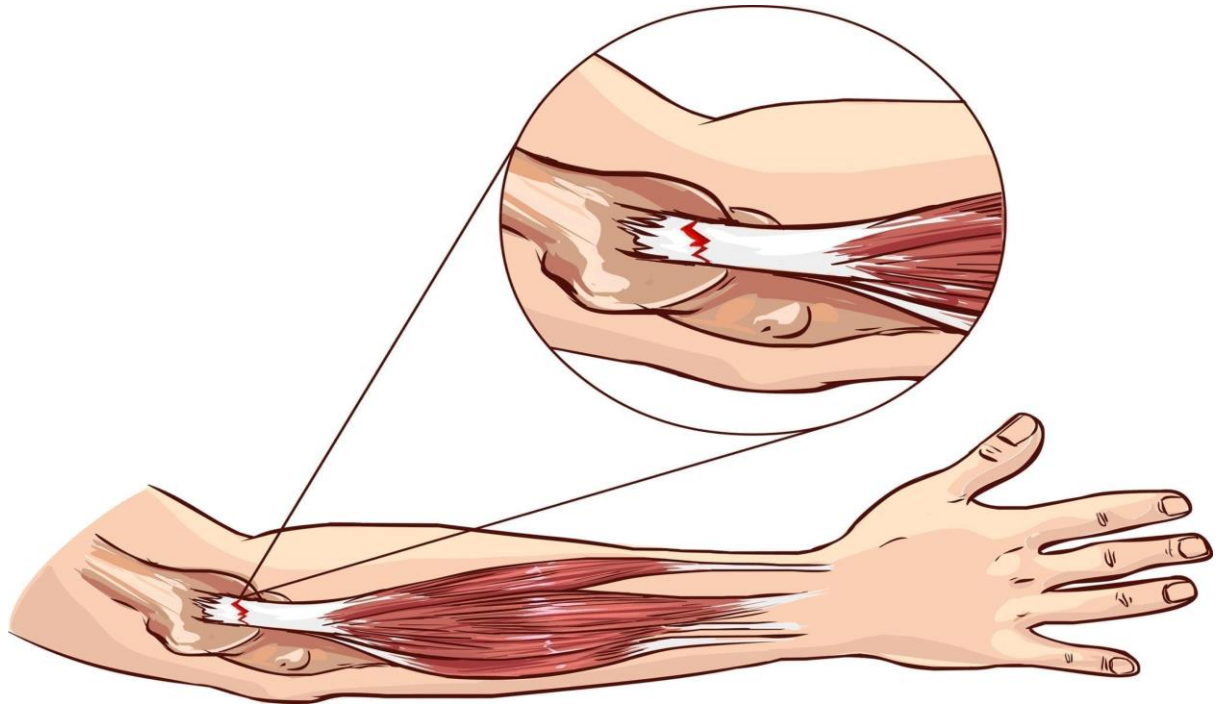
The following are some potential subjective assessment results:

1. Pain begins between 24 and 72 hours following provocative wrist extension.
2. Pain may travel down the forearm to the hand and wrist.
3. Changes in biomechanical parameters, such as a new tennis racquet, a moist ball, excessive training, improper technique, or a shoulder injury

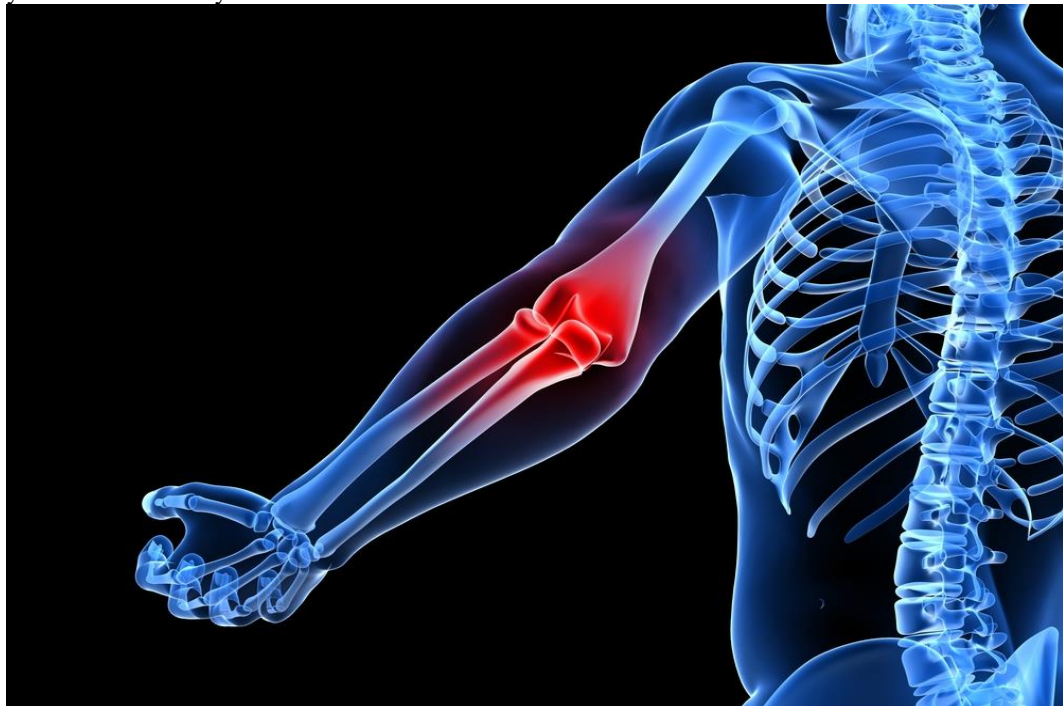
3The following findings could be made during the objective evaluation: • Pain and point tenderness over the lateral epicondyle and/or 1-2 cm distal to epicondyle • Pain and weakness on resisted wrist extension • Weakness on grip strength testing (Dynamo-meter) • Pain and/or decreased mobility on passive range of motion In the objective evaluation, one may discover: • Pain and point tenderness over the lateral epicondyle and/or 1-2 cm distal to epicondyle • Pain and weakness on resisted wrist extension

Weakness in the elbow extensors and flexors, pain during passive elbow extension, wrist flexion, ulnar deviation, and pronation.

## Diagnostic Techniques



The process of making a diagnosis begins with obtaining a patient's medical history and asking about activity level, occupational risk factors, participation in recreational sports, medication use, and other medical issues. It's crucial to understand the actions that aggravate your symptoms and the areas of your arm where they manifest



The anatomy of the elbow and other joints is examined during the physical examination. The skin, muscles, bones, and nerves are also inspected. Tenderness supports the diagnosis of LET. Her joints are evaluated. The skin, muscles, bones, and nerves are also inspected. Tenderness over the ECRB or common extensor origin supports the diagnosis of LET. The therapist or physiotherapist should be able to mimic the typical pain using the following techniques:

- A dynamometer and the Patient-rated Tennis Elbow Evaluation Questionnaire (PrTEEQ) are used to assess the severity. Grip strength is measured using a dynamometer. The 15-item PrTEEQ questionnaire is used to assess forearm discomfort and functional limitations in lateral epicondylitis patients. The patients must rate their tennis elbow discomfort and disability on a scale of 0 to 10, which has two subscales. There is a function and a pain subscale (0 = no pain, 10 = worst possible agony). The patients must rate their tennis elbow discomfort and disability on a scale of 0 to 10, which has two subscales. There is a function subscale as well as a pain subscale (0 = no problem, 10 = severe suffering imaginable).
- The Cozen test The resisted wrist extension test is another name for Cozen's test. The elbow is held steady at a 90-degree flexion. The therapist places the patient's hand in radial deviation and forearm pronation while palpating the lateral epicondyle with the other hand. The patient is then instructed to oppose wrist extension. If the patient feels a severe, abrupt, intense pain above the lateral epicondyle, the test is positive. High sensitivity has been discovered, and favourable results suggest An indication that LET is present is the connection of the wrist extensors.
- The Maudsley test involves the examiner palpating the lateral epicondyle while resisting the extension of the hand's third digit. Pain over the lateral epicondyle indicates a positive test result.[4][32]The LET diagnosis can be included with an 88% sensitivity, and it cannot be confidently excluded.

The coffee cup experiment : While doing a specified task, such as taking up a milk bottle or a cup of coffee that is already full, the test is conducted. On a scale of zero to ten, the patient is asked to rate their level of pain.

#### Conclusion

Lateral Epicondylitis, also known as 'Tennis Elbow,' is one of the most common upper extremity musculoskeletal disorders, causing elbow pain and dysfunction. This condition is often characterized by pain and tenderness over the lateral epicondyle of the elbow and is estimated to affect 1-3% of the population, primarily the middle-aged population of both male and female. Despite the name 'tennis elbow,' only 5% to 10% of affected individuals actually perform tennis. Majority of injuries take place in manual labor activities involving the repetitive movement of the upper extremity. Pathology/ Mechanism of Injury[edit | edit source] Lateral epicondylitis was first classified as an inflammatory process, especially in its initial phase of injury . However, histology has shown that lateral epicondylitis is actually a form of tendinosis; a degenerative process of the tendon. This condition is associated with repetitive microtrauma to the extensor tendon attached at the lateral epicondylar region of the humerus, primarily the extensor carpi radialis brevis (ECRB) being the most affected muscle. The supinator and other wrist extensor muscles including, the extensor carpi radialis longus, extensor digitorum, extensor digiti minimi, and extensor carpi ulnaris can also be involved. Pain is generally due to the overloading of the extensor tendons due to gradual increase in force. As force applied at the tendons increase, the tendons begin to stretch .

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