

APPROACH TO: **LATERAL EPICONDYLITIS**

DEFINITIONS

LATERAL EPICONDYLITIS: An overuse syndrome or tendinosis affecting the lateral humeral epicondyle. It most commonly involves the extensor carpi radialis brevis (ECRB) but may also involve the extensor digitorum communis (EDC). Lateral epicondylitis is more commonly referred to as **tennis elbow**.

CLINICAL APPROACH

Etiology

Lateral epicondylitis is a condition that typically affects middle-aged men and women, resulting in mild to severe discomfort and functional impairment. Although it is also known as tennis elbow because of the vulnerability of tennis players to this injury, javelin throwers, bowlers, swimmers, golfers, and pitchers are also susceptible because of the stress that is placed on the forearm and wrist extensor tendons in those sports. Individuals whose vocational demands include repetitious upper extremity movements, such as carpenters, plumbers, shoemakers, surgeons, and musicians (ie, violinists), are also at risk of developing lateral epicondylitis.

The ECRB is most often implicated, but EDC involvement also occurs. Although epicondylitis is commonly thought of as an inflammatory process, this is a misconception; histology reveals neither acute nor chronic inflammatory changes, but instead hyaline degeneration and vascular proliferation, typically at the ECRB origin (Figure 1). These histologic findings have been termed **angiofibroblastic dysplasia**. One proposed mechanism by which this occurs involves repetitive microtrauma to the ECRB with an incomplete healing and regenerative response.

Clinical Presentation and Diagnosis

On presentation, patients complain of pain and sometimes stiffness around the lateral aspect of the elbow. They may also describe subjective feelings of tightness in the forearm. It is usually the dominant arm that is affected, and it is rarely seen bilaterally. Physical exam should include evaluation of range of motion at the wrist and elbow, motor strength of the forearm extensor muscles, and palpation of the radial head. Tenderness localized to the lateral epicondyle, where the extensor muscles originate, is present on palpation, especially when the elbow is held in extension, the forearm held in pronation, and the wrist held in flexion. Additionally, both resisted wrist extension and resisted radial deviation may cause pain in the region of the lateral epicondyle.

Cozen test: A test used to evaluate for tennis elbow. It is positive when the patient experiences pain in the region of the lateral epicondyle during resisted extension of the wrist.

Fig. 123 Cozen test



The **Cozen test** should also be performed and is positive when the patient complains of pain in the region of the lateral epicondyle during resisted extension of the wrist. A **lidocaine injection test** can be used to differentiate between tennis elbow and posterior interosseous nerve (PIN) syndrome, an entrapment neuropathy that is commonly misdiagnosed as lateral epicondylitis as a result of a similar constellation of symptoms. In the case of radial tunnel syndrome, an injection given 4 fingerbreadths distal to the lateral epicondyle will result in a temporary PIN palsy and in the setting of radial tunnel syndrome, a temporary relief in pain. If the injection fails to provide relief, the diagnosis of lateral epicondylitis is more likely and can be confirmed with transient pain relief from a lidocaine injection at the origin of the ECRB tendon.

Imaging has limited utility in the diagnosis of lateral epicondylitis and is most beneficial for ruling out other processes, such as arthritis or fractures.

Plain radiographs only rarely show soft-tissue calcification near the lateral epicondyle, which if present would be suggestive of tennis elbow. **Ultrasound and magnetic resonance imaging can be used to visualize the extensor tendons and elbow joint, but are only indicated if the patient's symptoms fail to improve after 3 months of conservative treatment.**

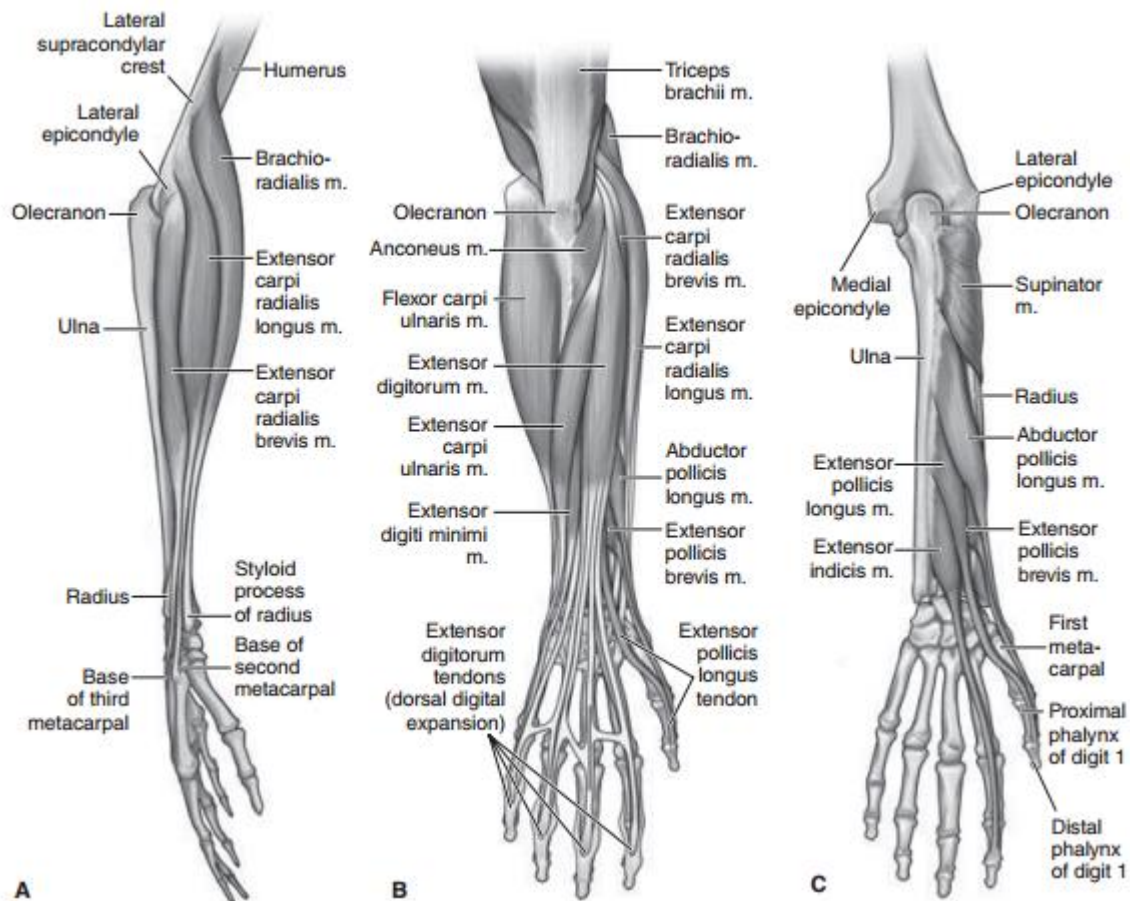


Figure 1. (A) Lateral view of the forearm. (B) Superficial and (C) deep muscles of the posterior forearm. (Reproduced, with permission, from Morton DA, Foreman KB, Albertine KH. *The Big Picture: Gross Anatomy*. New York, NY: McGraw-Hill; 2011:Fig. 32-2.)

TREATMENT

Conservative, nonoperative treatment modalities are always attempted first, with operative interventions reserved for refractory cases. Pain reduction is the first treatment goal, and NASIDs, rest, and splinting are often trialled. Patients should be advised to attempt to reduce performing strenuous activities that exacerbate their symptoms for at least 6 weeks.

Wrist splints are articularly useful if the elbow tenderness is exacerbated by resisted wrist extension. A counter-force brace can also be used and functions as an inelastic cuff around the proximal forearm against the extensor compartment that reduces the forces generated by the muscles.

Other conservative measures that may relieve pain include corticosteroid injections adjacent to the ECRB tendon and extracorporeal shock wave

therapy. More recently, injection of platelet-rich plasma has also shown some promise in providing symptomatic relief.

Once pain relief is achieved, extensor compartment stretching and strengthening exercises should commence and will help to prevent symptom recurrence.

Cases in which symptoms fail to resolve with 6 to 12 months of conservative treatment can be treated with operative intervention, in which any degenerative, angiofibrotic tissue is debrided, and the ERCB, common extensor tendon, and its aponeurosis are repaired if torn. Both open and arthroscopic techniques have been described. Surgery is followed by a period of rest followed by progressive rehabilitation and strengthening. The major complication following this procedure is posterolateral elbow instability, which results from excessive debridement.

CLINICAL PEARLS

- ▶ Lateral epicondylitis, or tennis elbow, is a diagnosis of exclusion.
- ▶ The ERCB is most often implicated, but EDC involvement also occurs in tennis elbow.
- ▶ Exam findings consistent with lateral epicondylitis include point tenderness at the forearm extensor origin on the lateral epicondyle, pain with resisted wrist extension, pain with resisted radial deviation, and a positive **Cozen** test.
- ▶ Imaging rarely has a role in the diagnosis of tennis elbow.
- ▶ Conservative treatment modalities should always be tried first, with operative intervention reserved for refractory cases.
- ▶ Despite its name, lateral epicondylitis is not technically the result of an inflammatory response, but rather a pathological process of hyaline degeneration and vascular proliferation termed *angiofibroblastic dysplasia*.

REFERENCES

- De Smedt T, et al. Lateral epicondylitis in tennis: update on aetiology, biomechanics and treatment. *Br J Sports Med*. 2007;41:816-819.
- Faro F, Wolf JM. Lateral epicondylitis: review and current concepts. *J Hand Surg Am*. 2007;32: 1271-1279.