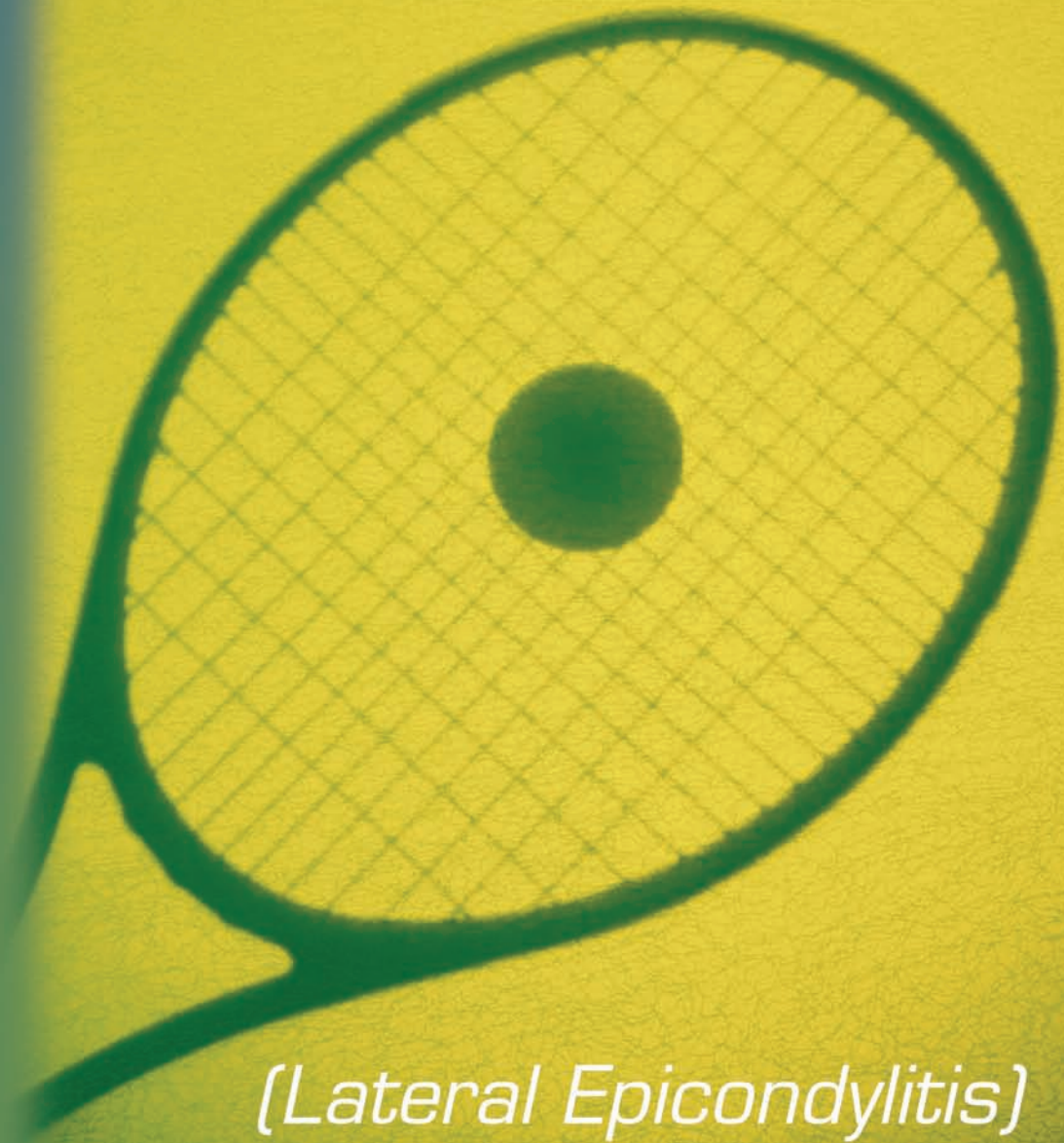
Tennis Elbow



(Lateral Epicondylitis)

By Ben E. Benjamin

The elbow is such an inconspicuous part of the body that we rarely notice it unless it hurts. Pain at the elbow is most often caused by injuries to the tendons. Sometimes a muscle injury is involved as well, which may cause the pain to extend down the forearm. There are other structures surrounding the elbow that can become strained or inflamed, but tendons and muscles cause the most troublesome problems.

Three common injuries account for the majority of elbow pain. If the elbow aches inside and is difficult to fully bend or straighten, most likely there is irritation inside the elbow joint. Pain felt on the lateral or medial side of the elbow is usually caused by tennis elbow or golfer's elbow, respectively. In this article we will look at tennis elbow injuries.

What is it?

Tennis elbow is a slight tear or inflammation of the extensor carpi radialis brevis or longus mechanism, which may occur during a variety of different activities. The injury earned its name by plaguing several famous tennis players, but the vast majority of people with tennis elbow have never picked up a racquet.

The extensor carpi radialis brevis and extensor carpi radialis longus are extensors of the wrist. In 90 percent of cases, tennis elbow affects the tenoperiosteal junction of the brevis tendon. To locate the lateral epicondyle, where the tendons attach, bend your arm at a 90-degree angle, as though you were going to shake hands with someone, and then lean sideways against a wall. As you push your elbow gently against the wall, the knobby bone you feel is the lateral epicondyle. The brevis tendon lies right on top of this bone. Tears can also occur in the body of the tendon, at the musculotendinous junction, in the muscle belly, or in the longus tendon at the supracondylar ridge of the humerus (where the longus muscle originates), but these are less common (Figure 1).

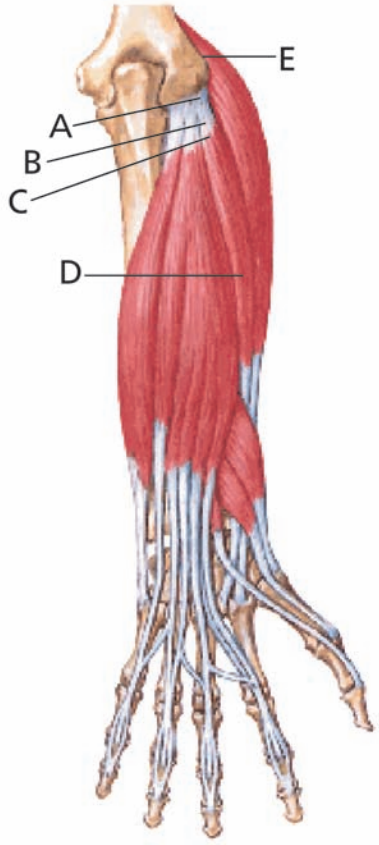


Figure 1.
Extensor Carpi Radialis Brevis
Tenoperiosteal junction (A)
Tendinitis at the radial head (B)
Muscle tendon junction (C)
Muscle belly (D)
Longus Attachment on the Supracondylar Ridge of the Humerus (E)

How and Why

This bothersome and often long-term injury is extremely common. It regularly afflicts people who lift heavy objects, scrub floors, wait tables, type at computers for extended periods of time, do massage for a living, or perform various types of construction work—as well as those who play racquet sports. When racquet enthusiasts get tennis elbow, it's usually because they haven't warmed up properly, they've played for too long, or they've played with poor form, causing unnecessary strain to the extensor muscles of the wrist.

At first the pain from tennis elbow is hardly discernible, but about two weeks after the injury, the pain noticeably increases. During this interim, the tendon has suffered hundreds of microtears with normal activity and/or sports, building a large V-shaped scar which begins to hurt. Activities that place stress on the injured structure(s) cause pain at the lateral aspect of the elbow. The pain may extend into the forearm as far as the wrist if various parts of the muscle/tendon unit are injured. Lifting movements can lead to severe, sudden pain, causing people with tennis elbow to drop even light objects. While this injury persists, activities as simple as shaking hands and opening doors may be painful.

Tennis elbow is frequently complicated by re-injury; it is often difficult for athletes or others whose livelihoods require using their hands to rest long enough to heal naturally. One contributing factor may be the decrease in pain that people experience when they are warmed up and active. This creates the illusion that

what they're doing is not exacerbating the injury. As a result of repeated strain and tearing, the pain often reappears with greater force as time goes on.

Another factor that makes healing difficult is tennis elbow's characteristic V-shaped tear (Figure 2). The tear heals more quickly at the bottom, the narrower portion of the V. At the top of the tear, the new tissue has a greater distance to span and therefore takes longer to knit together. Due to this uneven healing, the person starts to feel better before the tendon is fully healed and strengthened, so it is easy to re-injure it and cause the formation of adhesive scarring to worsen.

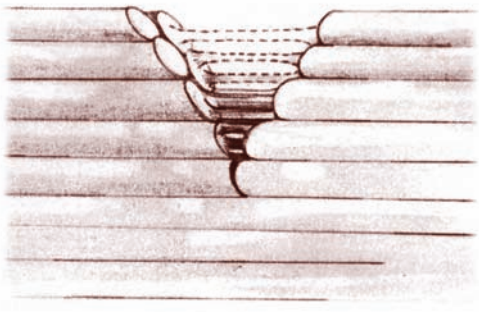


Figure 2. Tennis elbow's V-shaped tear

Injury Verification—Resisted extension of the wrist

Have the client extend the injured arm out in front, making sure the elbow is straight. Ask the person to extend the wrist, as if imitating a traffic cop saying "Stop." Then place one of your hands under the client's wrist, creating a shelf for the hand to rest on. Place your other hand at the back of the client's wrist, as shown. Ask the person to keep the hand in that position and not let you move it, as you pull the wrist forward with equal force (Figure 3). If tennis elbow is present, this test will produce pain in the injured area. Use moderate force at first. If the injury is severe, this will be sufficient to cause mild pain. If the injury is mild, you and the client will need to apply more force to verify the injury.

Figure 3. Resisted extension of the wrist

Treatment Choices

Self-treatment is an option, but it takes patience. With rest alone, recovery is very slow. In those under 60, the average healing time is between six months and a year. For those over 60, healing may take up to two years. A few simple measures can speed the healing process. A person who stops activities that re-injure the elbow will often heal in 2–4 months. That includes both simple and strenuous activity that causes pain—for example, lifting a frying pan or playing the piano, as well as lifting a heavy box. Also, applying ice or heat to the injured area daily can stimulate circulation. In mild cases just following the exercise program described later in this article may be all that is needed.

Medical Treatment

1. Deep Massage and Friction Therapy

A combination of deep massage of the forearm muscles (to enhance circulation) and friction therapy of the tendon (to diminish adhesive scar tissue) is often an effective treatment for tennis elbow. Perform the friction first and end the treatment with massage. If the client is very sensitive at the injury site, you might experiment with alternating between the two.

Friction therapy for tennis elbow—*The tenoperiosteal junction of the extensor carpi radialis brevis*

To perform friction at this location, have the client bend the elbow at a 90-degree angle, with the forearm fully supinated. With one hand, hold the client's wrist and supinate it. Use your other hand to find the lateral epicondyle, and place the tip of your thumb at its lateral edge. (The tendon attachment is on top of the lateral epicondyle.) Making sure that the client's hand remains supinated, press down and friction medially toward the center of the elbow. Repeat this action for 5–6 minutes, then take a break and repeat. After you've completed the →

friction therapy, massage the entire arm to ensure maximum blood circulation to the tendon. Friction twice a week for 10–15 minutes, along with deep massage to the arm and shoulder area. After the second treatment, encourage the client to do the rehabilitation exercises described later in this article.

—The tendon body of the extensor carpi radialis brevis

With the client's elbow still bent at a 90-degree angle, place the tip of your thumb on the lateral epicondyle. Now move your thumb distally along the tendon for about half an inch. You are now on the tendon body, which lies on top of the head of the radius. (To check that you're in the right place, ask the client to supinate and pronate the forearm. With supination, the radial head should push up under your finger. With pronation, the radial head should momentarily move away from your finger and then disappear.) Friction perpendicularly across the tendon, applying pressure in one direction only (either direction is okay). Continue for 5–6 minutes, then rest and repeat.

Figure 4. Tennis elbow stretch

—The extensor carpi radialis longus

To find the attachment site of the extensor carpi radialis longus, place the tip of your thumb on the lateral epicondyle and move directly superior. You will feel a very sharp edge of bone, called the supracondylar ridge, that extends up the upper arm for several inches. The longus tendon is attached to the anterior aspect of the lowest half-inch or so of the supracondylar ridge. To work the fibers at a 90-degree angle, you must perform the friction motion in an inferior to superior direction as if you were moving up and down the upper arm. Continue for 5–6 minutes, then rest and repeat. If the tendon body, the tenoperiosteal junction, and the longus tendon are all injured, spend 5–6 minutes on each area.

2. Exercise Rehabilitation

This five-part program must be done daily to rehabilitate and strengthen the tendon. Give the client the following instructions:

Step 1. Warm up the arm for 2–3 minutes by gently moving the wrist back and forth anteriorly and posteriorly (as though you are waving goodbye to someone).

Step 2. Stretch the tendon by placing the back of the hand on a table with the elbow straight. Press down until you feel a stretch or slight pulling sensation in the forearm. Hold that position for 30 seconds, and repeat five times (Figure 4).

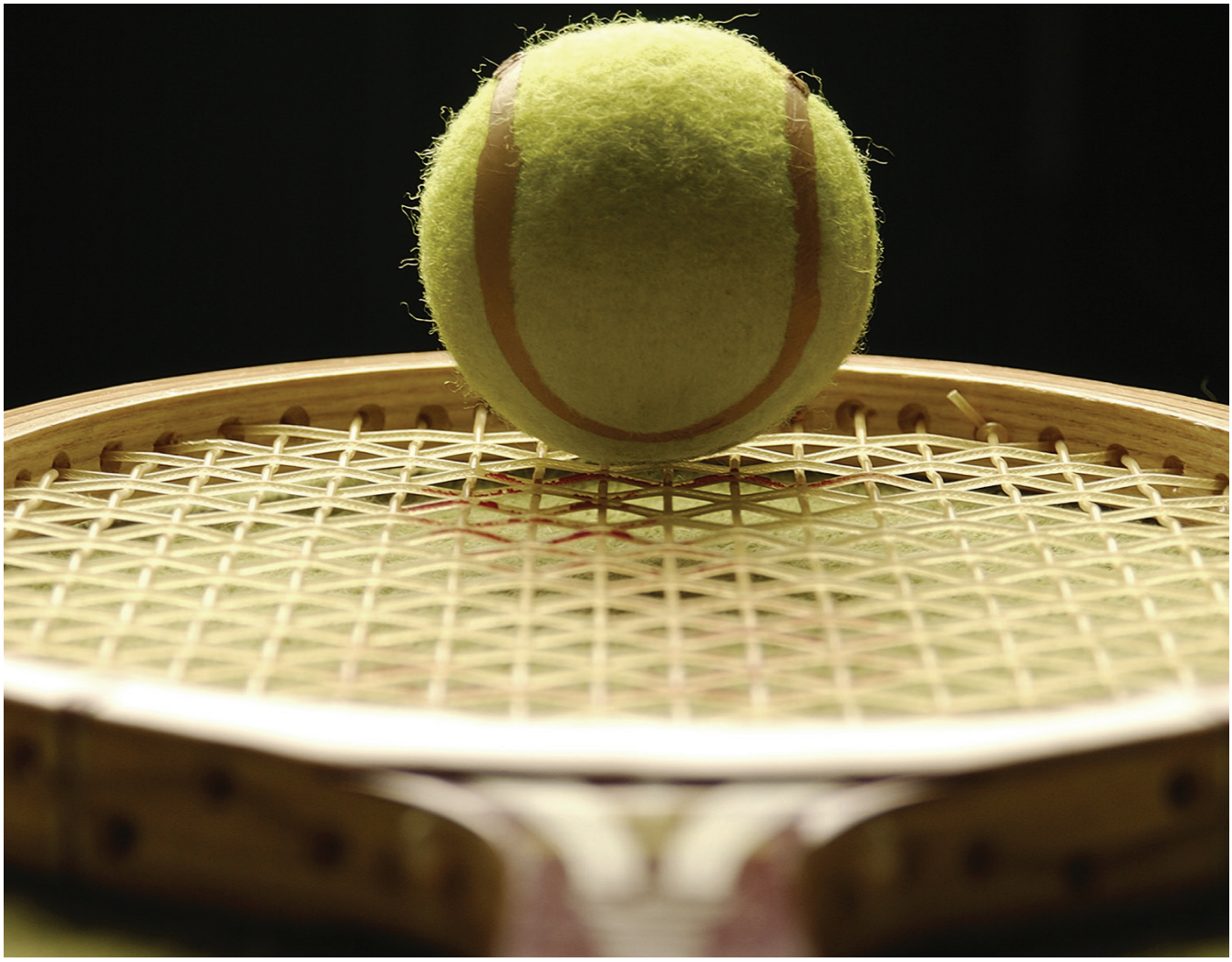
Step 3. Sitting in a chair, bend slightly forward and rest the elbow of the injured arm on your knee. Hold a light weight in your hand with the palm facing the floor. Lift the wrist up as far as it will go, then slowly bring it back to its original position. Do three sets of ten repetitions. If you're using the appropriate amount of weight, the forearm will feel slightly tired during the last set of ten repetitions. Begin with 1 or 2 pounds. If you feel no fatigue in the last set, add more weight the next day. If you feel fatigue before the last set, stop and use less weight the next day. It may be necessary to begin with as little as a half a pound in some cases. Stay at the same weight for about a week or until you do not tire during the last set, and then increase by 1 pound (Figure 5).

Step 4. Repeat the stretch as described above in Step 2.

Step 5. Apply ice or heat to the elbow for 5–10 minutes.

Continue increasing the amount of weight for 6–8

Figure 5. Tennis elbow exercise



weeks. The average person should be able to lift 8–10 pounds before resuming strenuous activity.

3. Injection Therapy

Corticosteroid injection is an effective treatment for tennis elbow, but only when administered properly. The precise area of injury must be identified and injected thoroughly, or else the pain will return. The injection should be followed by a week of rest, and then a period of strength building (as described above), before normal activity is resumed. During the healing process, a person recovering from tennis elbow has one relatively weak muscle surrounded by many stronger ones. The weak one is not able to pull its weight, and this can cause injury to occur again.

Proliferant injection, which helps to strengthen the fibers of the injured tendon, is often an effective treatment for stubborn cases of tennis elbow when the other approaches described have failed. It often takes several weeks after this type of injection for the client to feel well again.

Conclusion

Tennis elbow is a very common cause of elbow pain, and without proper treatment, it can persist for many months or years. With a thorough understanding of this condition and the hands-on techniques necessary to treat it, you can help speed healing and provide your clients with lasting relief. However, to avoid re-injury, patience is essential. As clients begin to feel better, they are often tempted to resume normal activity before the healing process is fully complete. At this stage, the damaged structures are still vulnerable and can easily be strained or torn again. Urge your clients to exercise caution while these tissues are gradually strengthened so that when their injuries heal, they heal for good. M&B

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