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FROM THE ELBOW TO THE FINGERTIP
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Tennis Elbow (Lateral Epicondylitis)

Tennis elbow, or *lateral epicondylitis,* is a painful condition of the elbow sometimes associated with overuse. Despite its named association with tennis, the vast majority of patients I see with this condition have never played the game.

Tennis elbow is a degenerative tear that develops in a tendon near the lateral epicondyle – the bony prominence on the outside of your elbow. This leads to pain and tenderness on the outside of the elbow.

There are many treatment options for tennis elbow, and a veritable plethora of historical remedies have seen great popularity, only to fade away as the next promised success rises.

Anatomy

Lateral epicondylitis, or tennis elbow, involves the muscles and tendons of your forearm. The degenerative tendon tear that is “lateral epicondylitis” occurs in one of the wrist extensors near its attachment to the lateral epicondyle, the Extensor Carpi Radialis Brevis (ECRB). Make a strong fist, and feel over the dorsum of your wrist in line with your index finger, and you will feel the tendons of the radial wrist extensors, the ECRB and ECRL. The ECRB tendon inserts at the base of the index finger metacarpal, and not only extends the wrist, but also stabilizes the wrist in cooperation with the flexors when lifting.

Cause

Overuse

The extensor carpi radialis brevis (ECRB) muscle helps stabilize the wrist, especially when the elbow is straight, such as lifting away from your body, or reaching out for something. Degenerative tears form in the tendon near where it attaches to the lateral epicondyle. This leads to pain. Interestingly, when the involved tissue is examined microscopically, the cells seen are not inflammatory cells, and the pain is not thought to be caused by inflammation. The honest truth is that it is not fully understood why this condition is so painful.

Activities

Athletes are not the only people who get tennis elbow. Many people with tennis elbow participate in work or recreational activities that require repetitive and vigorous use of the forearm muscle.

Painters, plumbers, and carpenters are particularly prone to developing tennis elbow. Studies have shown that auto workers, cooks, and even butchers get tennis elbow more often than the rest of the population. It is thought that the repetition and weight lifting required in these occupations leads to injury.

In many cases, the symptoms develop without any preceding unusual activity or trauma. This may be the most common presentation!

Other conditions are commonly seen in patients with tennis elbow, such as Achilles or patellar tendonitis, trigger fingers, or carpal tunnel syndrome, potentially indicating a genetic predisposition toward degenerative tendon conditions.

Age
This is generally considered to be an diagnosis of adults, often in ages greater than 40.

Symptoms

The symptoms of tennis elbow develop gradually. In most cases, the pain begins as mild and slowly worsens over weeks and months. There is usually no specific injury associated with the start of symptoms, although there are cases in which a direct blow or trauma to the lateral elbow has occurred just prior to the beginning of the pain.

Common signs and symptoms of tennis elbow include:

- Pain or burning on the outer part of your elbow
- Weak grip strength and pain with grip
- Tenderness/sensitivity over the lateral epicondyle

The symptoms are often worsened with forearm activity, such as holding a racquet, turning a wrench, or shaking hands. Your dominant arm is most often affected; however either can be affected. In the most painful stages, patients often report that even reaching for a pen can be very painful

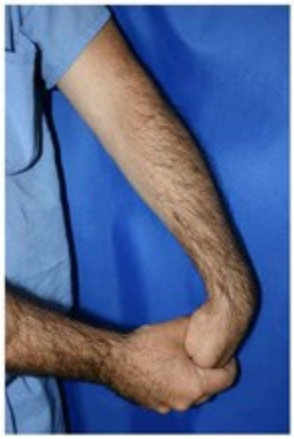
Treatment

Nonsurgical Treatment
Approximately 80% to 95% of patients have success with nonsurgical treatment.

Rest. The first step toward recovery is to give your arm proper rest. This means that you will have to stop participation in sports or heavy work activities for several weeks. **Avoidance of any activity that you know worsens the pain is the single most effective intervention to shorten the course of this painful condition!** As the pain then improves, cautious strengthening and return to previous activities can progress. Smoking cessation is also critical, as nicotine directly compromises the small vessels critical for soft tissue healing.

Non-steroidal anti-inflammatory medicines. Drugs like naprosyn or ibuprofen can help to reduce the pain. Never take these medications on an empty stomach, and discontinue them if stomach upset or heartburn occur.

Stretching and massage. The dorsal forearm muscles frequently shorten in reaction to the pain, and consistent stretching is recommended. Massage of these muscles as well as deep massage over the region of greatest tenderness is also recommended. Freeze water in a paper cup, then peel back the paper, and use this to rub the area of greatest tenderness. Doing this prior to the deep massage can make it far more tolerable!



Wrist stretching exercise with elbow extended.

Equipment and ergonomics check. If you participate in a racquet sport, your doctor may encourage you to have your equipment checked for proper fit. Stiffer racquets and looser-strung racquets often can reduce the stress on the forearm, which means that the forearm muscles do not have to work as hard. If you use an oversized racquet, changing to a smaller head may help prevent symptoms from recurring. If you spend a great deal of time at a computer keyboard, be sure your set-up does not require too much extension away from your body. Support under the wrists to minimize the stress on the muscles that extend your wrist can be helpful as well.

Physical therapy. Modalities such as ultrasound, ice massage, deep tissue massage, e-stim, or other modalities can help to improve the early symptoms. Instruction in a continued home program is emphasized. Strengthening should never be initiated until the pain is nearly zero, as this will consistently exacerbate the course when performed too early.

Brace. Some patients find some relief using a forearm counterforce strap, which theoretically minimizes the stresses transferred to the ECRB tendon. Caution is recommended in positioning and in the tightness of the strap, as too much force can cause compression of a nerve that runs deep to the muscles over the dorsal forearm near the elbow.

Counterforce brace.

Steroid injections. A steroid injection at the site of the greatest pain and tenderness can sometimes help improve the pain. **I strongly caution against repeated injections**, as the most critical supporting ligament of the elbow (lateral ulnar collateral ligament) is directly adjacent to the ECRB tendon, and repeated injections may compromise the ligament, and result in an unstable joint. In some cases this requires a ligament reconstruction. In some cases, the region of degeneration associated with the tendon tear can itself be so broad that the ligament origin is compromised. This instability is suspected when the pain with elbow extension is much greater when the forearm is supinated (palm-up) than when the forearm is pronated (palm-down).

Other treatments. Extracorporeal shock wave therapy sends sound waves to the elbow. These sound waves create "microtrauma" that may promote the body's natural healing processes. Injections of your own platelet-rich plasma are also thought to promote healing. Studies are still somewhat mixed with regard to the effectiveness of these interventions, and many insurance plans do not cover them.

Surgical Treatment

Surgery becomes an option in cases in which the pain becomes intolerable despite the above interventions, or when symptoms persist without improvement.

As previously mentioned, examination of the involved tissue around the degenerative tendon tear does not reveal inflammation. At surgery, the tissue has a dull appearance, reminding me of gristle (occasionally awkwardly encountered in a formal dining setting). While there is not great understanding of why this condition is painful, removal of this tissue removes the pain! The ECRB tendon, the rascal responsible for the pain, is deep to the other extensor tendons/muscles at the elbow. Open procedures must therefore go through these healthy tissues in order to expose and remove the diseased one. Arthroscopic debridement offers the advantage of minimal trauma to the overlying healthy tissue, allowed removal of the diseased tendon tissue essentially from the inside. The surgery is performed through small incisions (portals). It also allows a thorough examination of the joint, looking for any other associated pathology, including instability that may indicate an associated ligament compromise. A soft dressing and sling are placed, and therapy usually begins 2-3 days following surgery beginning with mobilization and modalities, and then with cautious and progressive strengthening. Postoperative courses are variable person to person, but full return to most activities can occur between 6-8 weeks after surgery.

Surgical risks. As with any surgery, there are risks with tennis elbow surgery. The most common things to consider include:

- Stiffness
- Nerve irritation
- Continued pain
- The need for further surgery in the future (such as in cases in which there is ligament instability)