

Radial tunnel syndrome is caused by a pinched nerve, called the radial nerve, that runs through the muscles on the top of the elbow and forearm (Figure 1). The radial nerve is one of the five major nerves of the upper extremity. It powers the muscles that straighten your elbow, wrist, and fingers. It also powers the muscles that rotate the forearm so the palm is facing up or down. Finally, it gives feeling or sensation to the back of the arm, forearm, and hand. The area where the muscles overlap on the top of the forearm is called the radial tunnel. Within the tunnel, the radial nerve divides into two branches: One branch provides sensation, and the other powers the forearm muscles. Pain and weakness can occur if the nerve is compressed by swelling or tightness in the tunnel. Radial tunnel syndrome can coexist with tendinitis, which occurs at the outer elbow and is also called lateral epicondylitis (tennis elbow).

Radial tunnel syndrome is common. However, its diagnosis and treatment are notable for some controversy among providers. There is no single, clear test to diagnose the condition. The patient's history and physical exam determine the diagnosis.

Causes

Radial tunnel syndrome is not considered an inherited or genetic condition. It can be common in individuals who have:

- A history of overuse in a single event or repetitive activities
- A history of rotation of the forearm activities
- A history of tight-grip activities

Symptoms

Symptoms of this condition can include:

- Pain deep in the back/top of the forearm
- Forearm pain described as dull or burning
- Pain that may extend or radiate from near the elbow down to the wrist
- Pain with rotation of the forearm
- Pain with straightening of the wrist
- Pain that may be more noticeable at night or the day after use
- Feelings of weakness of the wrist due to pain

Diagnosis and Treatment

DIAGNOSIS

The symptoms described above, as well as signs during the physical examination with your doctor, will determine the diagnosis. There are no clear tests to diagnose radial tunnel syndrome. Electromyography (EMG) and nerve conduction studies (NCS) are often normal in radial tunnel syndrome. These studies can still be useful to rule out other diagnoses. A magnetic resonance image (MRI) might be helpful. This can sometimes identify a reason the nerve is being pinched. It also can identify other muscle, ligament, tendon, bone, ar-

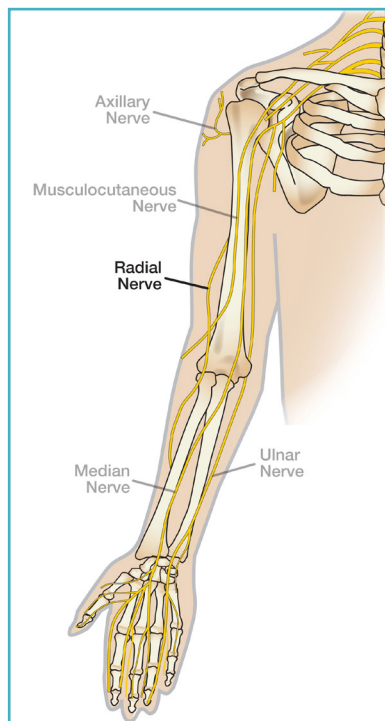


Figure 1 - The radial nerve, one of the five major nerves in the upper extremity, runs through the muscles on the top of the elbow and forearm.

tery, or cartilage sources of pain. Injections around the nerve can be helpful to diagnose and treat the problem. These injections typically include a numbing medication. Temporary pain relief aids the diagnosis. It shows that a medication in the area can decrease the pain. Steroid injections can decrease inflammation in the area in some cases.

NON-SURGICAL TREATMENT

Potential treatment options include:

- Non-steroidal anti-inflammatory drugs
- Wrist splinting
- Change in activities
- Ice or heat
- Avoiding forearm straps
- Injections of anti-inflammatory medications such as steroids
- Physical therapy

SURGICAL TREATMENT

Patients with a suspected diagnosis who fail months or years of nonsurgical treatments are candidates for surgery. There are many surgical techniques to treat radial tunnel syndrome, and there can be significant differences in surgical outcomes. A common way is to make a cut between the forearm muscles to open the space for the nerve to pass through. The surgeon will remove all sites of compression on the nerve. This is an outpatient surgery. Some surgeons will also treat tennis elbow, which can occur at the same time as radial tunnel syndrome, during the surgery. Recovery might take three to six months and benefit from therapy to allow muscles and nerves to recover and prevent scarring. Risks of surgery include general risks of anesthesia, injury to the nerve, persistent pain, scarring, and weakness.