

Chronic Elbow Pain: Is It Resistant Tennis Elbow or Radial Tunnel Syndrome?

Patients who present to the office with chronic lateral elbow pain most typically have lateral epicondylitis (tennis elbow). However, when the patient's pain and dysfunction does not respond to therapy doctors should suspect the possibility of radial nerve entrapment, or the Radial Tunnel Syndrome (RTS). The radial nerve may be entrapped at the elbow in two different syndromes: posterior interosseous, and the radial tunnel syndrome. Posterior interosseous nerve entrapment is typically manifested by motor deficit. RTS is typically manifested by a deep, dull lateral elbow pain with parathesias. Just distal to the elbow joint the radial nerve splits into sensory and motor branches. The posterior interosseous nerve may be compressed at the arcade of Frohse at the supinator muscle, fibrous bands at the radial head, a recurrent fan of vessels, and a sharp margin at the extensor carpi radialis brevis. Most believe entrapment at the arcade of Frohse is the most common site. RTS is a controversial diagnosis and may in fact just be a myofascial syndrome alone or in conjunction with radial nerve impingement.

The primary clinical feature of RTS is lateral elbow pain. Pain may be a result of trauma, or after strenuous use of the elbow. A second common physical finding is increased pain on resisted supination of the forearm, which causes increased radial nerve impingement at the arcade of Frohse. There are three important signs in the differential diagnosis of tennis elbow and RTS: tenderness over the posterior interosseous nerve; tenderness distal to the radial head through the extensor muscle mass (in RTS); and tenderness over the lateral epicondyle in lateral epicondylitis. A "middle finger test" is often helpful by asking the patient to extend the elbow, wrist, and middle finger against resistance. Electrodiagnostic testing can be helpful and typically consists of EMG and NCV studies. EMG will show denervation in the extensor digitorum communis. Motor NCV in neutral are typically normal. Rosen and Werner have found that adding forceful supination while testing caused increased latency by 0.5 ms.

The major differential diagnostic points are: 1) the location with tenderness (in tennis elbow maximal tenderness is over the epicondyle and in RTS it is over the muscle mass); 2) passive elbow extension with wrist and finger flexion will increase epicondylitis while resisted supination will increase pain in RTS. It should be noted that Lister and Werner both found a five percent incidence of both conditions occurring concurrently. Most times, conservative treatment is adequate and successful and may consist of physiotherapy, stretching, radial head manipulation, and myofascial technics such as "active release" as Leahy et al., described.

The literature suggests that up to months of conservative care be completed prior to surgical intervention. However, in resistant cases, surgery should be considered to release the entrapment.

I believe this syndrome is often overlooked and have found the active release technic helpful in reducing this syndrome. This syndrome may not only be seen after sports injury (i.e., in racquet sports), but after motor vehicle accidents as well. We have seen a fair amount of patients who have

positive middle finger tests, painful resisted supination, and lateral elbow pain post-MVA. Clinicians should be aware of this uncommon syndrome. For a description of active release technique, I refer readers to the work of Leahy.

References

Dawson DM, Hallet M, Milender L. Entrapment Neuropathies, Little and Brown Co., 217-227, 1990.

Leahy PM, Mock LE. Myofascial release technique and mechanical compromise of peripheral nerves of the upper extremity, *Chiro Sports Med*, 1992, 6(4):139-150.

Lister GD. Radial tunnel syndrome, *Journal of Hand Surg*, 1979, 4:52.

Nielson HO. Posterior interosseous nerve paralysis due to fibrous bands. *Acta Orthop*, 1976, 47:301.

Ritts GD. Radial tunnel syndrome, *Clin Orthop*, 1987, 219:201.

Rolls NC. Radial tunnel syndrome, *Journal Bone JT Surg*, 1972, 54B:499.

Rosen I, Werner CO. Neurophys investigation of the posterior interosseous nerve entrapment causing lateral elbow pain. *EEG Clin Neurophys*, 1980, 50:125.

Van Rossom JG Tennis elbow and radial tunnel syndrome, *Journal of JT Surg*, 1978, 60B:197.

Werner C. Lateral elbow pain and posterior interosseous nerve entrapment. *Acta Orthop Scand*, 1979, 174:1.

David BenEliyahu, DC, DABCSP
Selden, New York

MARCH 1995