

RADIAL TUNNEL SYNDROME

I. BACKGROUND

Radial Tunnel Syndrome involves compression of the radial nerve in the proximal forearm. In this region, the radial nerve splits into the posterior interosseous nerve branch (the main trunk) and the sensory branch of the radial nerve (the minor trunk) in the proximal forearm. Compression can occur either before or after this split off of the sensory branch of the radial nerve has occurred. The condition has multiple causes including space-occupying lesions such as tumors, local edema or inflammation, overuse of the hand and wrist through repetitive movements, blunt trauma to the proximal forearm with secondary bleeding, and idiopathic onset. The condition can occur at any age but is generally seen in younger individuals.

This is a rare condition, infrequently encountered by most practitioners, and in the case of failure to respond to non-operative treatment, the patient should be referred to a surgeon who has had experience in the treatment of Radial Tunnel Syndrome.

II. DIAGNOSTIC CRITERIA

A. Pertinent Historical and Physical Findings.

Patients generally complain of a deep-seated aching or tightness in the proximal forearm over the mobile wad of Henry muscle mass. Patients can occasionally have sensation of paresthesias and numbness and tingling in the distribution of the sensory branch of the radial nerve (the dorsal first web space of the hand including the back of the thumb and back of index finger).

Patients frequently have symptoms after significant repetitive or power grip use of the upper extremity involved. Burning or pain can also be associated with the condition and should be related to the proximal forearm, specifically over the mobile wad of Henry muscle mass. Strength in the hand is generally not reduced. Patients can have pain with resisted wrist extension or

resisted extension of the middle finger with pain being noted in the proximal forearm during these maneuvers. A Tinel's sign is rarely seen over the nerve itself.

Patients most commonly have a positive radial tunnel compression test which involves the examiner rolling the fingers over the radial nerve region in the proximal forearm eliciting pain and tenderness in the local region. Occasionally, distal radiation of symptoms along the sensory branch of the radial nerve distribution will occur during this test.

B. Appropriate Diagnostic Tests and Examinations.

1. Radiographs of the forearm.
2. Electromyogram and nerve conduction studies.
3. Trial injection of Xylocaine around the radial nerve to see if symptoms resolve.

C. Supporting Evidence.

EMG/nerve conduction tests can be helpful if positive but are most frequently negative in this particular condition. The nerve conduction velocity component is rarely positive, and diagnosis is generally made on the electromyographic component showing changes in the muscle innervated by the posterior interosseous nerve.

III. TREATMENT

A. Outpatient Treatment.

1. Nonoperative treatment - treatment time generally limited to three to six weeks, provided all appropriate conservative measures have been assessed.

- a. Indications.
 - 1) Mild to moderate symptoms.
 - 2) Symptoms after significant use activities of the affected upper extremity.
- b. Treatment Options.
 - 1) Neutral position wrist splint.

- 2) Steroid injection.
- 3) Nonsteroidal anti-inflammatory medications.
- 4) Activity modification.
- c. Rehabilitation.
 - 1) Modification of activities of daily living and/or job tasks.
 - 2) Ultrasound over the mobile wad of Henry.
- d. Supportive evidence consisting of favorable response to Xylocaine injection at the radial nerve region.

2. Ambulatory Surgery.

- a. Indications.
 - 1) Failure to respond to nonoperative treatment.
 - 2) Loss of wrist or finger extensors or significant weakness in this distribution.
 - 3) Progressive or unchanged symptoms.
- b. Treatment Options.
 - 1) Neurolysis of the radial and posterior interosseous nerves under regional or general anesthesia.
- c. Rehabilitation.
 - 1) Range of motion and strengthening exercises of the fingers, wrist, and elbow.

B. Estimated Duration of Care.

- 1. Nonoperative treatment - maximum medical improvement.
- 2. Operative treatment - six to eight weeks following surgery.

PROTOCOL HISTORY
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