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#### Search details

Posterior interosseous syndrome

#### Resources searched

National Library of Guidelines/NHS Specialist Trauma and Orthopaedics Library, TRIP, Sign, Cochrane Database of Systematic Reviews, Medline, Embase, Clinical Knowledge Summaries, Bandolier

#### Summary

#### Guidelines

- **Interosseous Nerve Compression**
  - [http://www.patient.co.uk/showdoc/40001151](http://www.patient.co.uk/showdoc/40001151)

- **Radial tunnel syndrome: emphasis on the superficial branch of the radial nerve.**

- **Radial Nerve Entrapment (Diagnosis)** (updated 2009).
Unusual compression neuropathies of the forearm, part I: radial nerve.

Evidence based reviews

Published research

1. **Title:** Diagnostic utility of ultrasound in posterior interosseous nerve syndrome.

   **Citation:** Archives of Neurology, July 2009, vol./is. 66/7(902-3), 0003-9942

   **Author(s):** Joy V, Therimadasamy A, Cheun CY, Wilder-Smith E

   **Full Text:** Available in fulltext at Highwire Press

2. **Title:** Radial tunnel syndrome: emphasis on the superficial branch of the radial nerve.

   **Citation:** Journal of Hand Surgery: European Volume, June 2009, vol./is. 34/3(343-7)

   **Author(s):** Bolster MA, Bakker XR

   **Abstract:** Reported success rates for decompressing the radial nerve in patients with radial tunnel syndrome vary between 10 and 95%. The combined treatment, releasing both the posterior interosseous nerve and the superficial branch of the radial nerve, has been described only three times, but seems to show more consistent success rates compared with releasing the posterior interosseous nerve alone. We present the results of decompressing the superficial branch of the radial nerve only, the anatomical basis for this approach and a description of the surgical technique. Our results are comparable to the results of the combined treatment. Eleven of 12 patients were satisfied with the results of the operation. This study indicates that pain in patients with radial tunnel syndrome may be treated successfully by surgical decompression of the superficial branch of the radial nerve.

3. **Title:** Another cause of occupational entrapment neuropathy: la main du cuisinier (the chef's hand).

   **Citation:** Journal of Clinical Neurophysiology, April 2009, vol./is. 26/2(129-31)

   **Author(s):** Krishnan AV, Fulham MJ, Kiernan MC

   **Abstract:** Recent studies have raised the possibility of a predisposition to mononeuropathies in a number of professions including musicians, cleaners, and industrial workers. There are, however, no previous reports of increased rates of mononeuropathies in the culinary arts. The authors report three cases of mononeuropathies occurring in professional chefs that presented over a 3-month period in the same outpatient clinic, with a case each of distal ulnar neuropathy, distal median motor neuropathy (thenar motor syndrome) and posterior interosseous neuropathy. There was no history of direct hand trauma in any of the patients. In all three patients, the injuries occurred exclusively in the dominant hand, further strengthening the argument for an occupational link.

4. **Title:** Posterior interosseous nerve compression syndrome following distal biceps brachii tendon rupture: An unusual sequel
Citation: European Journal of Orthopaedic Surgery and Traumatology, April 2009, vol./is. 19/3(191-192)

Author(s): Makhija Z., Jenkins A.I.R.

Abstract: We present an unusual case of a carpenter who had posterior interosseous nerve compression syndrome post-traumatic biceps brachii tendon rupture. The symptomatic presentation was confirmed by nerve conduction studies. Such a complication of biceps brachii tendon rupture has not been reported so far. copyright 2008 Springer-Verlag.

5. Title: MR imaging features of radial tunnel syndrome: initial experience.

Citation: Radiology, July 2006, vol./is. 240/1(161-8)

Author(s): Ferdinand BD, Rosenberg ZS, Schweitzer ME, Stuchin SA, Jazrawi LM, Lenzo SR, Meislin RJ, Kiprovski K

Abstract: PURPOSE: To retrospectively assess magnetic resonance (MR) imaging features of radial tunnel syndrome. MATERIALS AND METHODS: Institutional review board approval was obtained, and informed consent was waived for the retrospective HIPAA-compliant study. MR images of 10 asymptomatic volunteers (six men, four women; mean age, 30 years) and 25 patients (11 men, 14 women; mean age, 49 years) clinically suspected of having radial tunnel syndrome were reviewed for morphologic and signal intensity alterations of the posterior interosseous nerve and adjacent soft-tissue structures. MR images of the asymptomatic volunteers were reviewed to establish the normal appearance of the radial tunnel. MR images of the symptomatic patients were evaluated for the following: signal intensity alteration and morphologic alteration of the posterior interosseous nerve; the presence of mass effect on the posterior interosseous nerve such as the presence of bursae, a thickened leading edge of the extensor carpi radialis brevis, or prominent radial recurrent vessels; signal intensity alteration within the depicted forearm musculature such as edema or atrophy; and signal intensity changes at the origin of the common extensor and common flexor tendons, which would suggest a diagnosis of epicondylitis. RESULTS: All images of volunteers demonstrated normal morphology and signal intensity within the posterior interosseous nerve and adjacent soft tissues. Two volunteers had borderline thickening of the leading edge of the extensor carpi radialis brevis. Thirteen patients (52%) had denervation edema or atrophy within muscles (supinator and extensors) innervated by the posterior interosseous nerve. One patient had isolated pronator teres edema. Seven (28%) patients had the following mass effects along the posterior interosseous nerve: thickened leading edge of the extensor carpi radialis brevis (n = 4), prominent radial recurrent vessels (n = 1), schwannoma (n = 1), or bicipitoradial bursa (n = 1). The rest of the patients had either normal MR imaging findings (n = 4) or lateral epicondylitis (n = 2). CONCLUSION: Muscle denervation edema or atrophy along the distribution of the posterior interosseous nerve is the most common MR finding in radial tunnel syndrome. RSNA, 2006

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Citation: Journal of Orthopaedic Surgery, June 2004, vol./is. 12/1(83-6)

Author(s): Loh YC, Lam WL, Stanley JK, Soames RW

Abstract: PURPOSE: Radial tunnel syndrome refers to pain on the lateral aspect of the forearm as a result of compression of the posterior interosseous nerve within a tunnel with specific anatomical boundaries. Diagnosis of the condition is difficult because of its close association with lateral epicondylitis, which warrants different methods of treatment. Based on a cadaveric study, a new clinical test, the Rule-of-Nine test, is proposed to improve the diagnostic accuracy in radial tunnel syndrome. The test involves constructing 9 equal squares on the anterior aspect of the forearm and noting those squares where tenderness can be elicited. METHODS: 19 upper limbs were dissected to delineate the path of the posterior interosseous nerve through the radial tunnel, and the relationship of the path of the nerve with the 9 squares. RESULTS: A consistent mapping of the posterior
interosseous nerve to the lateral column of 3 squares was observed. CONCLUSION: The Rule-of-Nine test is proposed as a reliable method of diagnosing radial tunnel syndrome.

7. Title: Radial tunnel syndrome caused by ganglion cyst: treatment by arthroscopic cyst decompression.

Citation: Arthroscopy, May 2004, vol./is. 20/5(e39-44)

Author(s): Mileti J, Largacha M, O'Driscoll SW

Abstract: Compressive neuropathies of the radial nerve at the elbow can lead to one of 2 clinical entities. Posterior interosseous syndrome is primarily a motor deficiency of the posterior interosseous nerve, and radial tunnel syndrome presents as pain along the radial tunnel and extensor muscle mass. The radial nerve can be compressed at a number of sites around the elbow. In addition, numerous mass lesions reported in the literature can cause compressive neuropathy of the radial nerve at the elbow. Standard surgical management for persistent radial tunnel syndrome that is refractory to nonsurgical treatment is open decompression of the radial nerve. Cysts occurring in other joints are commonly treated arthroscopically. Supraglenoid cysts of the shoulder, meniscal cysts in the knee, and dorsal wrist ganglia are routinely treated with arthroscopic decompression or excision with management of the underlying etiology of the cyst. We present a case of radial tunnel syndrome caused by a ganglion cyst of the proximal radioulnar joint that was treated using arthroscopic excision of the cyst and decompression of the radial nerve.

8. Title: Dorsal wrist joint pain in tetraplegic patients during and after rehabilitation.

Citation: Journal of Rehabilitation Medicine, March 2003, vol./is. 35/2(57-61)

Author(s): Hara Y

Abstract: In a study of 42 tetraplegic patients, physiological, neurological, electrophysiological and radiological examinations were made in 11 patients with complete tetraplegia who had wrist pain after rehabilitation. Pain relief produced by a selective, posterior interosseous nerve lidocaine block indicated distal posterior interosseous nerve syndrome. This syndrome can sometimes be treated conservatively, but surgical excision was required after nerve scarification. Repetitive dorsiflexion, as in wheelchair handling, transfer and tenodesis-like movement, compresses the distal posterior interosseous nerve in some tetraplegic patients. Moreover, weakness of the wrist joint stabilizing muscles is likely to contribute to an increased weight load on the wrist joints. The aetiology of wrist pain in tetraplegia should be considered when there is carpal tunnel syndrome, Wartenberg syndrome, Kienbock syndrome or distal posterior interosseous nerve syndrome. The causes need to be adequately treated to reduce the negative impact of the resultant pain on carrying out the activities of daily life.

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9. Title: Radial tunnel release and tennis elbow disappointing results?

Citation: Acta Orthopaedica Belgica, December 1999, vol./is. 65/4(510-513), 0001-6462

Author(s): De Smet L., Van Raebroeckx T., Van Ransbeeck H.

Abstract: In a retrospective study, 19 patients with 20 decompressions of the posterior interosseous nerve for radial tunnel syndrome were reviewed. The results were evaluated using Roles and Maudsley’s criteria; they were found to be consistent with those previously reported: i.e. 75% favorable outcomes. Despite this finding only 8 patients (40%) stated they were satisfied. The main reason was residual pain. Shorter delay between the onset of symptoms and surgical treatment as well as simultaneous release of the lateral epicondylar muscles was found to influence positively patient satisfaction. These findings suggest that the scoring system used in the present study and also in previous studies is inappropriate. They also cast some doubt on the role of compression of the posterior interosseous nerve in the pathogenesis of chronic lateral elbow pain.
10. Title: Occult scapholunate ganglion: A cause of dorsal radial wrist pain

Citation: Journal of Hand Surgery, March 1999, vol./is. 24/2(225-231)

Author(s): Steinberg B.D., Kleinman W.B.

Abstract: There are multiple causes for chronic dorsal wrist pain over the scapholunate ligament, including occult dorsal carpal ganglion cyst, scaphoid impaction syndrome, dorsal carpal capsulitis, distal posterior interosseous nerve syndrome, and dynamic scapholunate ligament instability. Patients with such pain often have normal x-rays. A retrospective study of 21 patients undergoing surgical exploration for chronic dorsal radial wrist pain who had no palpable cyst and normal x-rays revealed that 18 of the patients had occult scapholunate ganglion cysts or myxomatous degeneration within the scapholunate ligament. All had failed long-term conservative management. Surgery involved an approach through Langer's lines, resection of a large triangular portion of the capsule between the dorsal intercarpal and radiotriquetral ligaments, and tangential debriement of the area of myxoid degeneration proximal to the distal 2 to 3 mm of dorsal scapholunate interosseous ligament. None of the patients had scapholunate instability or scaphoid impacting syndrome. Of the 18 patients with histologically confirmed myxomatous changes in the scapholunate ligament, 16 had an excellent outcome as defined by rigorous criteria; 1 had a good outcome. There was 1 patient with a poor result. A compelling argument is made for surgical exploration of the scapholunate joint in patients with persistent dorsal radial wrist pain and scapholunate point tenderness.

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11. Title: Posterior interosseous nerve syndrome due to pseudogout.

Citation: Journal of Hand Surgery - British Volume, February 1999, vol./is. 24/1(125-7)

Author(s): Taniguchi Y, Yoshida M, Tamaki T

Abstract: Posterior interosseous nerve palsy associated with pseudogout of the elbow joint in a 71-year-old woman is described. Local steroid injection and administration of a nonsteroidal anti-inflammatory drug was effective in treatment.

Full Text: Available in print at Grantham Hospital Staff Library

12. Title: Posterior interosseous syndrome resulting from deep tissue massage.

Citation: Plastic & Reconstructive Surgery, October 1998, vol./is. 102/5(1778-9)

Author(s): Giese S, Hentz VR

Full Text: Available in fulltext at Ovid

13. Title: The posterior interosseous nerve and the radial tunnel syndrome: an anatomical study.

Citation: International Orthopaedics, 1998, vol./is. 22/2(102-6)

Author(s): Portilla Molina AE, Bour C, Oberlin C, Nzeusseu A, Vanwijck R

Abstract: Twenty anatomical specimens were carefully studied in order to establish a possible connection between the posterior interosseous nerve and the radial tunnel syndrome. Our results
show that the posterior interosseous nerve distal to the supinator muscle may be compressed by various structures. These include the distal border of the supinator muscle, the ramifications of the anterior and posterior interosseous vessels, and the septum between the extensor carpi ulnaris and the extensor digitorum minimi. The posterior interosseous nerve is also stressed during passive supination (elongation and rotation), and during passive pronation (compression). This suggests that the interosseous nerve distal to the supinator muscle should be explored in radial tunnel compression syndromes.

14. Title: Posterior interosseous nerve syndrome: Literature review and report of 14 cases

Citation: European Journal of Plastic Surgery, May 1998, vol./is. 21/4(196-202), 0930-343X

Author(s): Vrieling C., Robinson P.H., Geertzen J.H.B.

Abstract: The posterior interosseous nerve (PIN) paralysis is characterized by weakness of the innervated muscles: the supinator muscle, the extensor muscles to the wrist, fingers and thumb (except the extensor carpi radialis longus) and the abductor pollicis longus muscle. Exploration of the nerve is recommended if there are no signs of spontaneous recovery after a period of observation of three to nine months. Another form of posterior interosseous nerve syndrome (PINS), also called the radial tunnel syndrome, presents with proximal forearm pain only. It is recommended to treat these patients conservatively at first. Only if conservative therapy does not relieve the symptoms of pain the PIN should be explored. A retrospective follow-up study of 14 patients with PINS was carried out, of which 12 patients had paresis or paralysis and two patients a pain syndrome. All, but one, were operated on. The results at follow-up will be discussed. It is recommended that the period of observation should be six to eight months for patients with PIN paresis, however, for patients with a full paralysis it is not possible to make any recommendation from this series. In contrast to the results reported in the literature, both our patients with pain as the only symptom obtained poor results at follow-up. For this group of patients the importance of the conservative treatment is emphasized.

15. Title: Posterior interosseous nerve syndrome associated with rheumatoid synovial cysts of the elbow joint.

Citation: Clinical Orthopaedics & Related Research, May 1990, vol./is. /254(134-9)

Author(s): Ishikawa H, Hirohata K

Abstract: Three rheumatoid arthritis patients developed synovial cysts of the elbow joint and an acute compression neuropathy of the posterior interosseous nerve. All patients had weakness of the finger extensors; in one the extensor tendons were explored before the exact diagnosis was made. Intraarticular steroid injections were effective in one patient. In the other two patients surgical decompression of the radial nerve and elbow synovectomy with radial head resection were curative. Although relatively rare, the diagnosis of an antecubital cyst must be considered when complications such as a nerve compression syndrome are present.

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