

ULNAR NERVE COMPRESSION IN GUYON'S CANAL CAUSED BY A PSEUDOTUMOR OF THE PISIFORM

S. A. ANTUÑA, C. F. GUTIERREZ, J. PAZ JIMENEZ

A rare case of ulnar nerve compression at the wrist by a hypertrophic pisiform is reported. The patient was treated with pisiform bone excision, and this resulted in complete relief of symptoms with no functional deficit.

Keywords : wrist ; ulnar nerve ; pisiform ; compression.
Mots-clés : poignet ; nerf cubital ; pisiforme ; compression.

INTRODUCTION

Since it was first described by Hunt in 1908, many different causes of ulnar nerve compression in Guyon's canal have been described. A ganglion or an anomalous muscle is the most frequent causative lesion (2, 4). Ulnar neuropathy associated with acute trauma to the pisiform bone has also been reported (1). We report an unusual case of ulnar nerve compression secondary to a hypertrophic osteoarthritic pisiform.

CASE REPORT

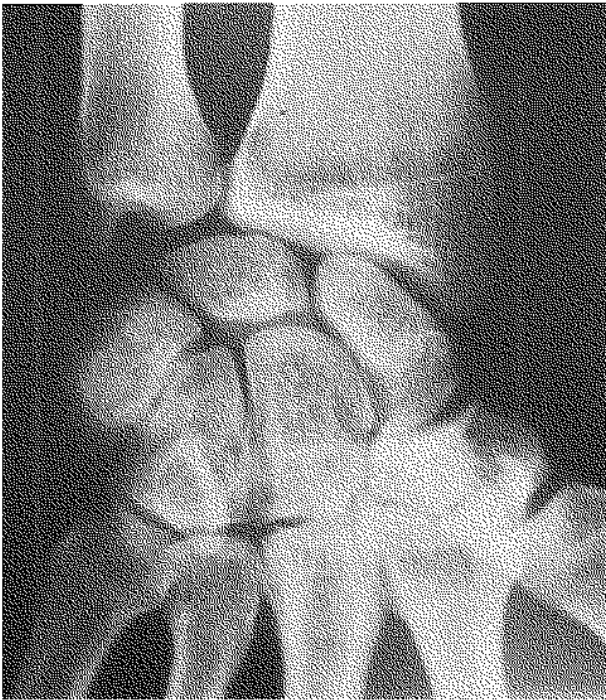
A 33-year-old right-handed man complained of pain in the right hypothenar region of two years' duration. Nine months before referral he noted a tender mass in that region with numbness and tingling of the ring and little fingers. The past medical history was significant because his job as a miner involved repetitive trauma to his right hand while using a pneumatic hammer. He denied any acute trauma to the hand. He had been treated with splinting and antiinflammatory medication without relief.

Physical examination showed a firm tender mass at the base of the hypothenar eminence. There was no atrophy of the hypothenar muscles, and grip strength was within normal limits. Tinel's test was clearly positive over Guyon's canal and two-point discrimination of the ring and little fingers was decreased compared with the other hand. Nerve conduction studies were consistent with compression of the ulnar nerve in Guyon's canal. Plain radiographs of the right wrist taken at the time of the initial presentation showed no abnormality. Two years later, when the patient was referred to us, new xray films showed an enlarged pisiform with slight signs of pisotriquetral osteoarthritis (fig. 1). An MRI of the wrist and hand revealed a tumor-like lesion of the pisiform with secondary compression of the ulnar nerve in Guyon's canal. The scan could not define the nature of the lesion (fig. 2).

Surgical exploration was performed through a palmar zig-zag incision made over Guyon's canal, along the radial aspect of the flexor carpi ulnaris (FCU). The palmar carpal ligament was divided longitudinally so that the ulnar nerve and artery could be identified and protected. A very enlarged, irregular pisiform was found to be compressing the ulnar nerve at the entrance of Guyon's canal. A subperiosteal excision of the pisiform was performed. The insertion of the FCU was preserved, as was the pisometacarpal ligament. The pisotri-

Department of Orthopedic Surgery, Asturias Central Hospital, Celestino Villamil, s/n. 33006 Oviedo, Spain.

Correspondence and reprints : A. Antuña, Avenida de Galicia 13, 6b. Oviedo 33005, Spain.



a

Fig. 1. — a: Anteroposterior and b: supinated oblique projections of the wrist showing an enlarged pisiform with slight narrowing of the pisotriquetral joint.



b

quetral joint showed degenerative changes in the articular cartilage of the pisiform without damage to the triquetrum articular surface. The ulnar nerve was traced distally, and the pisohamate ligament and the fibrous arch of the hypothenar muscles were divided in order to perform a complete decompression of the nerve. Histologic examination of the specimen was consistent with hypertrophic osteoarthritic bone (fig. 3). Six months after surgery the patient was free of symptoms, and he had resumed his usual employment.

DISCUSSION

The distal ulnar tunnel is a region of the wrist in which the ulnar nerve is particularly vulnerable to external compression. Its proximal hiatus is bounded medially by the pisiform, superficially by

the palmar carpal ligament and deeply by the ulnar edge of the transverse carpal ligament (3). According to the type of neurological deficit, Kushner *et al.* (4) divided the distal ulnar tunnel into three zones. Pure sensory deficits were most often found with compression lesions in zone 3, which encircles the superficial branch of the ulnar nerve, but not uncommonly they resulted from a lesion in zone 1, the entrance to the tunnel, proximal to the bifurcation of the nerve. This could presumably be caused by compression of the sensory fibers with sparing of the motor fibers of the nerve. Any enlargement of the pisiform could, therefore, explain a compression neuropathy of the ulnar nerve at that level. It has been previously reported associated with pisohamate coalitions and acute pisiform fractures (1, 2, 5).

Pisotriquetral joint disfunction is an uncommon but otherwise well-recognized pathologic condition



Fig. 2. — Coronal MRI view revealing a tumor-like lesion of the pisiform with secondary compression of the ulnar nerve.

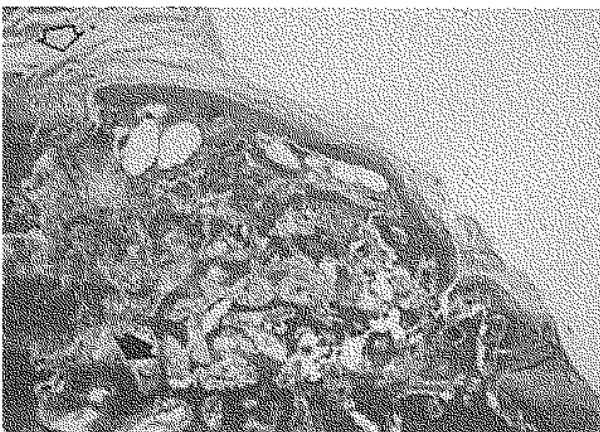


Fig. 3. — Photomicrograph of the excised bone demonstrates actively growing bone in the periphery (closed arrow). The articular surface is partially denuded of cartilage, which is replaced by fibrous tissue (open arrow).

of the wrist (1, 5). Pisotriquetral osteoarthritis and FCU enthesopathy are the most frequent pathologic findings. As in the case reported, degenerative changes are often significantly worse in the pisiform than in the triquetrum. Etiologic factors include acute trauma, pisotriquetral joint instability and chronic repetitive trauma to the ulnar side of the hand. The major symptom of dysfunction is pain in the hypothenar region which can be exacerbated by direct pressure over the pisiform. The pain is increased by resisted flexion of the wrist. Signs and symptoms of ulnar nerve compression may be present, with sensory deficit being predominant. One-third of the patients reported by Carroll and Coyle (1) had symptoms of ulnar neuropathy at the wrist, but the majority of them were secondary to acute trauma to the joint. Ulnar nerve entrapment at the entrance to Guyon's canal by a hypertrophic pisiform is much more uncommon and makes the differential diagnosis with other tumor lesions mandatory.

Excision of the pisiform bone has been reported as a successful treatment for pisotriquetral joint dysfunction syndromes (1, 5). The FCU tendon is preserved, as are the pisometacarpal ligaments. We obtained an excellent result in our patient, and we believe it is the only option available when conservative treatment has failed and the patient continues to have disabling symptoms.

Acknowledgement

The authors thank Dr. J. Garcia Barrio and Dr. M. Seco Navedo for their assistance in the preparation of the histologic specimens.

REFERENCES

1. Carroll R. E., Coyle M. P. Dysfunction of the pisotriquetral joint. Treatment by excision of the pisiform. *J. Hand Surg.*, 1985, 10-A, 703-707.
2. Green D. P. *Operative hand surgery*, 3rd ed. Churchill Livingstone, New York, 1993, 1366-1369.
3. Gross M. S., Gelberman R. H. The anatomy of the distal ulnar tunnel. *Clin. Orthop.*, 1985, 196, 238-247.
4. Kuschner S. H., Gelberman R. H., Jennings C. Ulnar nerve compression at the wrist. *J. Hand Surg.*, 1988, 13-A, 577-580.
5. Paley D., McMurtry R. Y., Cruickshank B. Pathologic conditions of the pisiform and pisotriquetral joint. *J. Hand Surg.*, 1987, 12-A, 110-118.

SAMENVATTING

S. A. ANTUÑA, C. F. GUTIERREZ, J. PAZ JIMENEZ. Compressie van de nervus ulnaris in het kanaal van Guyon door een pseudotumor van het os pisiforme.

De auteurs beschrijven een zeldzaam geval van inklemming van de nervus ulnaris thv. de pols veroorzaakt door een hypertrofisch os pisiforme. De behandeling bestond in extirpatie van het os pisiforme. Daarna werd klachtenvrijheid met volledige functionele recuperatie bekomen.

RÉSUMÉ

S. A. ANTUÑA, C. F. GUTIERREZ, J. PAZ JIMENEZ. Compression du nerf cubital dans le canal de Guyon, provoquée par une pseudotumeur du pisiforme.

Les auteurs présentent un inhabituel cas de compression du nerf cubital au poignet causé par un pisiforme hypertrophique. Le traitement a consisté dans l'excision du pisiforme ce qui a entraîné la disparition complète des symptômes, sans aucun déficit fonctionnel résiduel.