IATROGENIC POSTERIOR INTEROSSEOUS NERVE PALSY FOLLOWING AN ELBOW FRACTURE

J. P. VAN GEERTRUYDEN, P. G. VICO

Posterior interosseous nerve palsy following elbow surgery is not uncommon. Nevertheless, precise etiology of the palsy is rarely described in the literature. In this paper the possible causes of the posterior interosseous nerve palsy are reviewed and an uncommon iatrogenic lesion after surgical treatment of an elbow fracture is reported.

Keywords: posterior interosseous nerve; nerve palsy; iatrogenic lesion.

Mots-clés: nerf interosseux postérieur; paralysie; lésion iatrogène.

Posterior interosseous nerve syndrome is a well-described clinical entity. It causes weakness or paralysis of the extensor muscles of the fingers and thumb. Extensor carpi ulnaris muscle is also involved but extensor carpi radialis longus muscle is not because it is innervated by the radial nerve before it divides into its two terminal branches (the posterior interosseous and the superficial sensory branches). Therefore wrist extension is maintained but is in radial deviation. There is no sensory involvement.

This case report describes a posterior interosseus nerve palsy due to nerve constriction caused by two silk knots after surgical treatment of an elbow fracture. To the best of our knowledge such an iatrogenic cause of posterior interosseous nerve palsy has not been described in the literature.

CASE REPORT

A 42-year old female with a bilateral elbow fracture was treated by bilateral radial head resection, open reduction and internal fixation of the olecranon with plate and screws. The material was removed one year later. Both operations were performed under tourniquet. After the second operation, the patient developed a transient radial nerve palsy on the right side which resolved spontaneously within 6 months. Four years later, the patient complained of a progressive lack of force and difficulty in extending the fingers and thumb of her right hand. Clinical examination revealed a typical right posterior interosseous nerve paresis.

The motor power of the brachioradialis, extensor carpi radialis longus and extensor carpi radialis brevis muscles was rated 5/5 and all other extensor muscles rated 3/5 according to the British Medical Council classification (1). Testing of the left hand was normal. Electrophysiological examination showed denervation of forearm and finger extensor muscles, except for the extensor carpi radialis longus, and increased distal motor latency.

The nerve was explored through a posterior muscle splitting approach exposing the supinator muscle between the extensor carpi radialis brevis and the extensor digitorum communis muscles. The radial nerve was identified and the supinator muscle was split longitudinally to expose the posterior interosseous nerve. Dissection of fibrous tissue revealed two silk knots strangling the poste-

1 Department of Plastic Surgery, University Hospital Erasme, 808 route de Lennik, B-1070 Brussels, Belgium.
2 Department of Plastic Surgery, Institut Bonté, Brussels, Belgium.

Correspondence and reprints: J. P. Van Geertruyden, Department of Plastic Surgery, University Hospital Erasme, 808 route de Lennik, B-1070 Brussels, Belgium.

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The knots were excised and, as there was not complete paralysis, only an epineural neurolysis was performed (fig. 1).

Postoperative physical therapy was undertaken. One year after the neurolysis, active extension of the fingers and thumb was normal (rated 5/5).

DISCUSSION

Many factors causing posterior interosseous nerve compression have been documented. Anatomic structures have been identified as causing compression, the most common of which is the arcade of Frohse (3). Other sites include fibrous bands at the radial head, the extensor carpi radialis brevis arch, constricting blood vessels, and the distal border of the supinator muscle. Other causes of compression are related to trauma and various masses such as lipomas, ganglion, rheumatoid arthritis, fibroma, synovial cyst, and bursa as well as arteriovenous malformation. Chronic repeated trauma related to stressful supination and pronation has been reported in swimmers, tennis players, tennis players, violin players, and orchestra conductors.

Posterior interosseous nerve paralysis following a surgical procedure at the elbow is not uncommon. Young et al. (5) reported 16 cases of iatrogenic palsies following radial head resection, release for lateral epicondylitis, resection of osteochondroma, lipoma or radioulnar synostosis. They were treated by surgery when no recovery was observed three months after the trauma. Surgery included neurolysis, nerve suture, nerve graft and tendon transfer. Excellent or good results were documented except in three cases. In a clinical and electromyographical study of 37 posterior interosseous neuropathies, Fardin et al. (2) reported four iatrogenic cases following reduction of radial fracture, transposition of the ulnar nerve and excision of a lipoma. One of those four cases recovered after 18 months of medical therapy but no details are given about the other three cases. Lesions of the posterior interosseous nerve have also been reported after elbow arthroscopy (4). In none of these cases was the precise anatomical cause of the palsy described.

The current case report documents an iatrogenic lesion to the posterior interosseous nerve. To the best of our knowledge this etiology of posterior interosseous nerve compression has not been documented in the literature. The reason why four years elapsed between a first episode of paralysis (which resolved spontaneously) and the second episode of paralysis which required a surgical procedure remains unexplained.

REFERENCES

SAMENVATTING

J. P. VAN GEERTRUYDEN, P. G. VICO. Intrageen paralyse van de n. interosseus posterior na elleboog fractuur.

Letsel ter hoogte van de n. interosseus posterior zijn geen uitzondering na een chirurgische ingreep ter hoogte van de elleboog. In de literatuur vindt men zelden uiting over de exacte etiologie van deze leestes. De auteurs bespreken de verschillende oorzaken van paralyse van de n. interosseus posterior en beschrijven één geval van een intrageen leestes na chirurgische behandeling van een elleboog fractuur.

RÉSUMÉ

J. P. VAN GEERTRUYDEN, P. G. VICO. Paralysie intragène de la branche postérieure du n. radial après fracture du coude.

Les lésions du n. interosseus postérieur (branche postérieure du n. radial) ne sont pas rares après intervention chirurgicale au niveau du coude. L'étiologie précise des lésions est cependant rarement décrite dans la littérature. Les auteurs passent en revue les différentes causes de paralysie du n. interosseus postérieur et décrivent un cas de lésion intragène suite au traitement chirurgical d'une fracture du coude.