ABERRANT ABDUCTOR DIGITI MINIMI MUSCLE FOUND DURING OPEN SURGICAL DECOMPRESSION OF THE CARPAL TUNNEL: CASE REPORT

Svetoslav A. Slavchev, Georgi P. Georgiev

University Hospital of Orthopaedics “Prof. B. Boychev”, Medical University, Sofia, Bulgaria

INTRODUCTION

The variations of the hypothenar muscles are numerous, many of them described during anatomical rather than surgical dissection (Macalister, 1875; Le Double, 1897; Saadeh and Bergman, 1988; Jeffery, 1971; Pribyl and Moneim, 1994; Spinner et al, 1996; Georgiev and Jelev, 2007; Georgiev et al, 2007; Georgiev and Jelev, 2009; Georgiev and Jelev, 2011). In livings, most of the aberrant muscles are usually asymptomatic or may occasionally simulate a soft-tissue tumor (Simodynes and Cochran, 1981). Other variant hypothenar muscles may cause ulnar nerve and artery compression at the wrist, as described in some clinical reports (Jeffery, 1971; Simodynes and Cochran, 1981; Pribyl and Moneim, 1994; Spinner et al, 1996). Herein, we present an unusual case of an aberrant hypothenar muscle and emphasize its potential clinical importance.

* Correspondence to: Georgi P. Georgiev, MD, University Hospital of Orthopaedics, Medical University, 56 Nikola Petkov Blvd., BG 1614 Sofia, Bulgaria. georgievgp@yahoo.com

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Figure 1: Intraoperative photograph presenting the aberrant abductor digiti minimi muscle (asterisk).
CASE REPORT

An 81-years old Caucasian male was admitted to our institution for surgical decompression of the carpal tunnel of the non-dominant left hand for slowly aggravating bilateral carpal tunnel syndrome and distal ulnar tunnel syndrome over the past ten years on the basis of chronic tenosynovitis of the flexor tendons of the wrist and fingers. During surgery, which was performed through a modified Inglis incision for wider exposure and partial synovectomy of the tendons in the distal forearm, an aberrant muscle was found arising from the volarodial antebrachial fascia and coursing distally and ulnarward over the flexor tendons of the carpal tunnel and over the ulnar artery and nerve in the Guyon canal, and inserting into the ulnar aspect of the hypothenar (Fig. 1). The variant muscle belly was fusiform, 5 mm wide, 2 mm thick, and at least 40 mm long as reasonable surgical dissection could reveal. Tension on the muscle belly provided slight abduction of the fifth metacarpophalangeal joint, which confirmed it to be an aberrant abductor digiti minimi muscle. After the muscle was divided in line with the incision, surgery was continued as planned. There was complete resolution of symptoms in all digits in the early postoperative period followed by uneventful wound healing.

DISCUSSION

Compression neuropathies at the wrist are frequent and have been well described. They can be provoked by ganglia, neoplastic masses, vascular abnormalities, ligamentous attachments, and also different anomalous muscles (Shea and McClain, 1968; Santoro et al, 2000). The reported muscular variations most commonly involved in the compression neuropathies at the wrist included those of abductor digiti minimi, flexor digiti minimi brevis manus, and palmaris longus muscles (Jeffery, 1971; Pribyl and Moneim, 1994; Spinner et al, 1996; Santoro et al, 2000; Harvie et al, 2004). According to Dodds et al (1990) the most common aberrant muscle in Guyon’s canal is the abductor digiti minimi, with an incidence of 22.4%. The reported variations of the abductor digiti minimi muscle are absence, presence of a second head, variant origin (from the pisiform bone, forearm fascia, palmaris longus tendon, reversed palmaris longus, fascia of the flexor carpi radialis, intermuscular fascia, flexor carpi ulnaris, flexor retinaculum, both from the flexor retinaculum and antebrachial fascia), fusion with the flexor digiti minimi brevis, presence of “deep abductor-flexor”, and also triple origin (Macalister, 1875; Le Double, 1897; Saadeh and Bergman, 1988; Jeffery, 1971; De Smet, 2002; Al-Qattan, 2004; Georgiev et al, 2007; Georgiev and Jelev, 2009). Usually, the accessory abductor digiti minimi muscle is innervated by a separate branch of the ulnar nerve and supplied by ulnar artery muscular branches (Dimitriou and Natsis, 2007). Although such an aberrant muscle is usually asymptomatic, an injury or muscle hypertrophy due to overuse in manual workers may be the causative factor for developing symptoms of nerve compression (Turner and Caird, 1977). Despite its uncertain clinical significance in this case, involvement of aberrant muscles of the hypothenar in compression neuropathies of the wrist has been reported on some occasions (Jeffery, 1971; Simodynes and Cochran, 1981; Spinner et al, 1996; Al-Qattan, 2004). This could be of special consideration in distal ulnar tunnel syndrome when the variant muscles insert in the medial aspect of the hypothenar because the ulnar nerve normally lies medial to the artery in Guyon’s canal (Hoppenfeld and deBoer, 1994). In the cases of ulnar nerve and artery compression, ultrasound scanning and/or MRI could be used as imaging techniques which clearly identify the variant muscle around Guyon’s canal (Zeiss et al, 1992; Ruocco al, 1998; Harvie et al, 2004). Resection of the anomalous muscle results in long-lasting resolution of symptoms. (Dimitriou and Natsis, 2007).

In conclusion, knowledge of this anatomical variant of the abductor digiti minimi muscle should be born in mind by clinicians in relation to compression neuropathies, tendon harvests, or muscle transpositions.

REFERENCES

Aberrant abductor digit minimi muscle


