Palmaris profundus is a rare cause for carpal tunnel syndrome. This atypically existing muscle is in our presented case mimicking an intraneural mass in the median nerve on ultrasound examination.

CASE REPORT

A female 34-year-old patient presented with 8 months of upper arm and elbow pain, especially on the triceps muscle insertion, which was treated by a general practitioner with physiotherapy. The pain was persistent despite cast immobilization and injections. Due to newly developed paresthesia on the third digit, an electromyography (EMG) and neurological examination were performed. Distal motor latency (dML) of the median nerve was 3.1 ms with an amplitude of 14 mV, showing normal results. The neuro-ultrasound showed an intraneural mass within the median nerve, with low vascularity. A tumor with unknown dignity was suspected proximal to the linea carpi palmaris distalis (rascetta), and the patient was referred to our specialized hospital for identification of the suspected tumor and nerve reconstruction.

An operative procedure was planned with the option of nerve grafting. Intraoperatively, the median nerve was exposed and intraoperative ultrasound was performed on the median nerve to confirm the location of the intraneural mass. A palmaris profundus tendon was found, perforating the median nerve and keeping an intraneural course, before leaving the median nerve within the carpal tunnel to migrate into the distal retinaculum fibers. The resection of the intraneural tendon of the palmaris profundus led to a recovery of the digital paresthesia’s. We discuss the intraoperative findings and review the literature. (Plast Reconstr Surg Glob Open 2018;6:e1995; doi: 10.1097/GOX.0000000000001995; Published online 7 November 2018.)

DISCUSSION

Palmaris profundus is a rare accessory muscle and tendon, inserting into the flexor retinaculum and palmar aponeurosis. The origin of this muscle is variable: the anterior ulna, the common flexor origin, the palmaris longus, the proximal or mid third of the radius, the flexor...
digitatorum superficialis and the epimysium of the flexor pollicis longus. The palmaris profundus shows a close anatomic relationship to the median nerve. Due to an embedding in a common fascial sheath with the median nerve, one group preferred the name “musculus comitans nervi mediani” and describes a frequent accompaniment of a median artery with the palmaris profundus and the median nerve. There are various reports from carpal tunnel syndrome caused by the existence of this accessory muscle. Dynamic ultrasound describes a dynamic interference of the median nerve during active contraction of the flexor tendons in some cases. It has been suggested that the incidental finding of a palmaris profundus in carpal tunnel syndrome should be treated with the resection of the median nerve combined with carpal tunnel release to prevent persistent symptoms. This recommendation is based on reports of revision surgery following carpal tunnel release without the resection of the palmaris profundus. In addition, the existence of palmaris profundus reportedly obstructed the accomplishment of a single portal endoscopic carpal tunnel release, requiring open conversion.

Our case differs to the majority of the described cases, due to the intraneural course of the palmaris profundus tendon. It resembles the anatomic variant, that was described in a cadaveric dissection by Chou et al., with the only difference being the location in the distal part of the forearm close to the carpal tunnel inlet. In both cases, the median nerve was perforated by the palmaris profundus, which was termed as a closed loop by Chou et al.

The onset of the clinical symptoms in our patient might be attributed to the same causes as a regular carpal tunnel syndrome, potentially intensified from the predisposing condition of an intraneural palmaris profundus tendon. Due to the ultrasound examination being done preoperatively, the surgical approach was proximal to the car-

Fig. 1. Eighteen megahertz high-resolution ultrasound image, axial plane at the level of the rascetta. Triangular arrow: hypoechoic intraneural mass. Long arrows: fascicles of the median nerve. Short arrow: flexor carpi radialis tendon.

Fig. 2. Intraoperative view: median nerve with intraneural palmar profundus tendon. Yellow vessel loop guards the palmar branch of the median nerve.

Fig. 3. Intraoperative view: the dissected palmar profundus tendon is exposed with a tendon hook to demonstrate the perforation of the median nerve. The tendon of the palmar profundus migrates to the distal retinaculum.
pal tunnel, directly on the tendinous entry to the median nerve, allowing a complete excision of the palmaris profundus for the adjacent course of the median nerve, which we would suggest, if detected. The distal detachment from the retinaculum within the usual visual field of carpal tunnel release as a sole treatment presents a risk for persistent symptoms in cases like this one, where median nerve perforation with adhesions to the palmaris profundus was found.

The initial suspicion of the ultrasound examination of an intraneural tumor did not prove true during surgical exploration. Therefore, clinicians performing diagnostic ultrasound should be aware of the palmaris profundus as a rare anatomic variant that can either accompany or even perforate the median nerve on different levels of the forearm as in our case. Dynamic ultrasound might be even more helpful, because it can also reveal functional nerve compression during finger flexion. Nonetheless preoperative ultrasound was beneficial in our case, because it helped planning the right localization for the surgical procedure in advance.

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REFERENCES
1. Floyd T, Burger RS, Sciaroni CA. Bilateral palmaris profundus causing bilateral carpal tunnel syndrome. J Hand Surg Am. 1990;15:364–366.
2. Browne KM, Fauzi Z, O’Shaughnessy M. The palmaris profundus, a rare sight during carpal tunnel release. Hand (N Y). 2015;10:559–561.
3. Sánchez Lorenzo J, Cañada M, Díaz L, et al. Compression of the median nerve by an anomalous palmaris longus tendon: a case report. J Hand Surg Am. 1996;21:858–860.
4. Sahinoglu K, Cassell MD, Miyachi R, et al. Musculus comitans nervi mediani (M. palmaris profundus). Ann Anat. 1994;176:229–232.
5. Server F, Miralles RC, Galcerá DC. Carpal tunnel syndrome caused by an anomalous palmaris profundus tendon. J Anat. 1995;187:247–248.
6. Pirola E, Hébert-Blouin MN, Amador N, et al. Palmaris profundus: one name, several subtypes, and a shared potential for nerve compression. Clin Anat. 2009;22:643–648.
7. Cesmebasi A, Spinner RJ, Smith J, et al. Dynamic ultrasonography can demonstrate the mechanism of the palmaris profundus in carpal tunnel syndrome. Clin Anat. 2015;28:428–430.
8. Christos L, Konstantinos N, Evagelos P. Revision of carpal tunnel release due to palmaris longus profundus. Case Rep Orthop. 2015;2015:616651.
9. McClelland WB Jr, Means KR Jr. Palmaris profundus tendon prohibiting endoscopic carpal tunnel release: case report. J Hand Surg Am. 2012;37:695–698.
10. Chou HC, Jeng H, Ko TL, et al. Variant palmaris profundus enclosed by an unusual loop of the median nerve. J Anat. 2001;199:499–500.