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Abnormal disposition of a branch of the ulnar nerve in the flexor retinaculum

The most frequent disposition of the structures within the ulnar tunnel is for the ulnar nerve to be located medial or posteromedial to the ulnar artery. The structures within the ulnar tunnel are closely related to the medial part of the flexor retinaculum. Lesions of the ulnar nerve and artery during endoscopic decompression of the carpal tunnel have been reported (Agee et al. 1992; Lee et al. 1992; Nath et al. 1993; De Smets & Fabry, 1995). An adequate anatomical knowledge of such structures and their variations is therefore important. During a study of the palmar region, we found that a special branch originated from the ulnar nerve in relation to the flexor retinaculum. Documentation of this variation will contribute to the knowledge of the anatomy of the ulnar nerve and its distal branches.

The variation was detected in the right hand of a 63-y-old white female. In the distal part of the forearm the ulnar nerve lay in its normal position. In the ulnar tunnel, the deep branch arose from the medial part of the ulnar nerve and supplied the hypothenar, medial lumbricals and dorsal and palmar interosseous muscles, as well as adductor pollicis and deep head of flexor pollicis brevis. The abnormal branch originated from the lateral part of the ulnar nerve at the level of origin of the deep branch, 5.9 mm distal to the distal wrist crease (Fig. 1). This branch entered and ran through the flexor retinaculum extending towards its distal margin. The point of entrance of the branch was located 15.7 mm distal to the distal wrist crease, passing between the fibres of the retinaculum for a distance of 4.6 mm and reappearing 3.9 mm proximal to the distal margin of the retinaculum. This branch then ran distally to join the common palmar digital nerve of the 4th interosseous space. This junction was located 24.4 mm distal to the distal wrist crease. The nerve passed through this tunnel in the flexor retinaculum at the level of the axial line of the 4th metacarpal bone (Fig. 2).

The ulnar nerve is situated medial or posteromedial to the artery in the ulnar tunnel (Williams et al. 1995). This nerve bifurcates in the middle portion of the tunnel in almost all cases (Zeiss et al. 1992). Several variations of the ulnar nerve or of branches originating from its main trunk have been described. Kaplan (1963) found an anomalous branch arising from the dorsal branch of the ulnar nerve, 2.0 cm
proximal to the ulnar styloid process, running on the ulnar side of the pisiform bone to join the superficial branch of the nerve distal to this bone. Another report described the ulnar nerve dividing into 3 branches before entering the ulnar tunnel; one of these branches ran beneath the flexor retinaculum (König et al. 1994). These authors found this arrangement in 3 of 23 studied cases. Recently, Olave et al. (1997) reported a case in which the ulnar nerve divided into 2 components in the forearm, one lying lateral the ulnar artery and passing over the flexor retinaculum. This disposition exposes the branch to surgical damage during procedures involving the flexor retinaculum.

The variation described in this communication has not previously been reported. From its position this anomalous branch could be damaged during carpal tunnel decompression. It is necessary to consider the possible presence of abnormal nerve branches related to the carpal tunnel, especially during the performance of endoscopic surgical procedures.

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