

A Case Study of Aberrant Thenar Motor Branch of the Median Nerve Discovered During Carpal Tunnel Release

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Abstract

Introduction: Carpal tunnel syndrome (CTS), caused by compression of the median nerve as it travels through the carpal tunnel, is a common entrapment neuropathy, affecting 1-3/1,000 patients per year in the United States.[1][2] Carpal tunnel release (CTR) is a surgical procedure utilized for treatment of refractory cases of CTS. On rare occasions, aberrant positioning of the thenar motor branch (TMB) of the median nerve is observed during these procedures, in which the branch originates from the ulnar side of the median nerve as opposed to the more commonly documented radial origin. We present a case of a patient with an aberrant TMB of the median nerve that was discovered intraoperatively during a carpal tunnel release.

Case Presentation: A 54-year-old male undergoing median nerve decompression at the left transverse carpal ligament for treatment of carpal tunnel syndrome secondary to highly comminuted displaced left distal radius fracture. To begin, a proximal palmar longitudinal incision was marked, remaining ulnar to the insertion of the palmaris longus tendon into the superficial palmar fascia to avoid injury to the palmar cutaneous branch of the median nerve. Skin incision was made followed by utilization of blunt dissection. The palmar cutaneous branch of the median nerve was protected and a portion of the superficial palmar fascia and palmaris longus tendons were divided before dissection continued. The palmaris brevis musculature was identified. Dissection continued. A subligamentous ulnar takeoff of the motor branch was identified and released from the ulnar leaf of the transverse carpal ligament. The median nerve was then released from the radial leaf of the transverse carpal ligament to complete full decompression of the median nerve. The palmar incision was closed and dressings were applied. A left long-arm sugar-tong type splint was applied prior to the patient being transferred to the recovery room in stable condition.

Discussion: Proper visibility of the carpal canal and understanding of various anatomical possibilities within this space are crucial in avoiding complications during CTR. Aberrant origin of the TMB of the median nerve is an uncommon variation that has been scarcely documented.[3][4] In the Lanz Classification system, Group IV classification includes a variation of the median nerve in which the TMB originates from an ulnar location on the median nerve, bridging the nerve as it approaches the thenar musculature for motor innervation.[5] As the majority of median nerve variations include the TMB originating from the radial side, it is important to record the rare instances of Lanz Classification Group IV to maintain awareness of this possibility and avoid accidental transection of the motor branch. The case presented here exemplifies the rare variation of median nerve anatomy and calls attention to the importance in recognizing the diverse anatomical variations found within the carpal tunnel.

Learning Objectives

1. Obtain base knowledge of carpal tunnel syndrome and carpal tunnel release
2. Obtain basic understanding of median nerve anatomical variations and their importance