

## Thenar muscles may not be involved in median nerve injury in arm

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### Abstract

Abnormal communication was seen between median nerve (MN) and musculocutaneous nerve (MCN) in a well-built 55 years male cadaver. Communicating fibers from MCN to MN were separated till their destination. It was observed that these fibers were supplying thenar muscles. In addition to this, fibers were supplying cutaneous supply to index finger and thumb. So clinicians should be aware of such communications. Physiologists should also have knowledge about such communications as nerve conduction studied can show different results in cases with such anomalies.

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### Introduction

The nerves of limbs are vulnerable to injuries because of their length and often their close relation with bones. Variations in the formation and branching pattern of the brachial plexus are an important anatomical and clinical entity and have been reported by several workers.<sup>[1,2]</sup> The median, musculocutaneous and ulnar nerves after their origin from the brachial plexus, pass through the anterior compartment of the arm without receiving any branch from any nerve in the neighbourhood.<sup>[3]</sup> Although the communications between the different nerves in the arm are rare, communications between the median nerve (MN) and musculocutaneous nerve (MCN) have been described in nineteenth century.<sup>4</sup>

Several anomalous branches between the musculocutaneous nerve and median nerve had been reported by Eglseder et al, Prasada Rao et al, Chauhan et al., Kerr<sup>5,6,7,8</sup> reported a branch from the musculocutaneous nerve to the median nerve in 8.1% to 36.19% of different series. Venieratos et al<sup>9</sup> had classified the communications between musculocutaneous and median nerves in to three types. The communication between median and musculocutaneous nerves may prove important in axilla resection in carcinoma breast and fracture humerus. Many authors have mentioned about presence of such communication. But to the best of our knowledge no one has cited fate of such communicating fibers until their destination.



**Fig. 1: Showing communication between the musculocutaneous nerve and median nerve**

### Case report

During the routine dissection, we encountered anomalous communication between musculocutaneous and median nerve in right upper limb of a 55 years well built male cadaver from collection in Department of Anatomy, PGIMS, Rohtak. The communicating branch arose from musculocutaneous nerve 22cm from tip of coracoid process and joined median nerve. Further course and relations of both nerves were found without any anomaly. We separated the communicating fibers by dissection and trace their fate. These fibers were forming palmar cutaneous nerve near lower end of forearm. In hand, the communicating fibers were supplying thenar muscles, first lumbrical, and there were two cutaneous branches to supply thumb on both sides and radial side of index finger. Median nerve was not giving palmar cutaneous branch in forearm but was giving additional branch to one of the thenar muscle i.e. flexor pollicis longus in hand.



**Fig. 2: Median nerve giving additional branch to flexor pollicis longus in hand**

### Discussion

Different workers have described different types of communications between two nerves. Shukla has described different types of communications according to which, this communication falls into type II in which some fibers of median nerve run in musculocutaneous nerve for some distance.<sup>10</sup> Then after covering some distance in arm, these fibers again join median nerve. However, none of them has separated communicating fibers and described fate of such fibers. The distribution pattern of communicating branch is important in surgical approaches of arm and implantation of clinical findings. In such cases, if musculocutaneous nerve is injured in axilla, structures supplied by musculocutaneous nerve will be affected along with the thenar muscles and will present with clinical symptoms. In addition to this, cutaneous supply to radial side of palm, thumb and radial side of index finger will be affected.

People have described unexplained paresis of flexor musculature of elbow and hypoesthesia of lateral side of forearm in musculocutaneous nerve injury. This unexplained paresis can be explained by knowing such communications. Injury to musculocutaneous nerve will exhibit symptoms similar to median nerve neuropathy as in carpal tunnel syndrome. In cases with above anomaly, if median nerve is injured in middle of arm, thenar muscles will be spared and cutaneous supply of radial side of forearm distal part of thumb and radial side of index finger will not be affected. All above proves the importance of present case report.

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