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CASE REPORT

VARIATION IN THE TERMINATION OF MUSCULOCUTANEOUS NERVE

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ABSTRACT:

A variation of the musculocutaneous nerve was observed during routine dissection for first year medical students, in a 67 year old embalmed male cadaver. The termination of musculocutaneous nerve in left upper limb was variable. After piercing the coracobrachialis muscle, musculocutaneous nerve divided into lateral cutaneous nerve of the forearm and gave an accessory branch that joined with median nerve, lateral to the insertion of the coracobrachialis muscle. Knowledge of these variations is of great importance to surgeons and orthopaedicians who do surgical interventions in that region.

Key Words: musculocutaneous nerve, coracobrachialis muscle, median nerve, variations
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INTRODUCTION:

Brachial plexus is formed by the anterior primary rami of spinal nerves C5, C6, C7, C8 and T1 [1]. The fibers of the plexus may be joined by branches from the fourth cervical and second thoracic nerves forming a prefixed or postfixed plexus. C5 and C6 roots join to form upper trunk. C7 root forms the middle trunk. C8 and T1 roots join to form lower trunk. Each trunk divides into ventral and dorsal divisions. Ventral division of the lower trunk forms medial cord. Dorsal divisions of all the three trunks join to form posterior cord. Ventral divisions of

upper and middle trunk join to form lateral cord. Musculocutaneous nerve (MCN) is the branch from the lateral cord of the brachial plexus. The nerve initially accompanies the axillary artery, pierces the coracobrachialis muscle, and then passes downwards between the biceps brachii and brachialis.

It supplies coracobrachialis, biceps brachii and medial part of brachialis muscles. Below the elbow joint the nerve is continuous as the lateral cutaneous nerve of the forearm [1].

Case presentation:

During routine dissection for first year medical students a variation of the MCN was observed in a 67 year old embalmed male cadaver. The termination of MCN in the left upper limb was variable. After piercing the coracobrachialis muscle, MCN divided into lateral cutaneous

nerve of the forearm and gave an accessory branch that joined with median nerve (MN) lateral to the insertion of the coracobrachialis muscle. The ulnar, radial, axillary and remaining course of the MN remained the same.

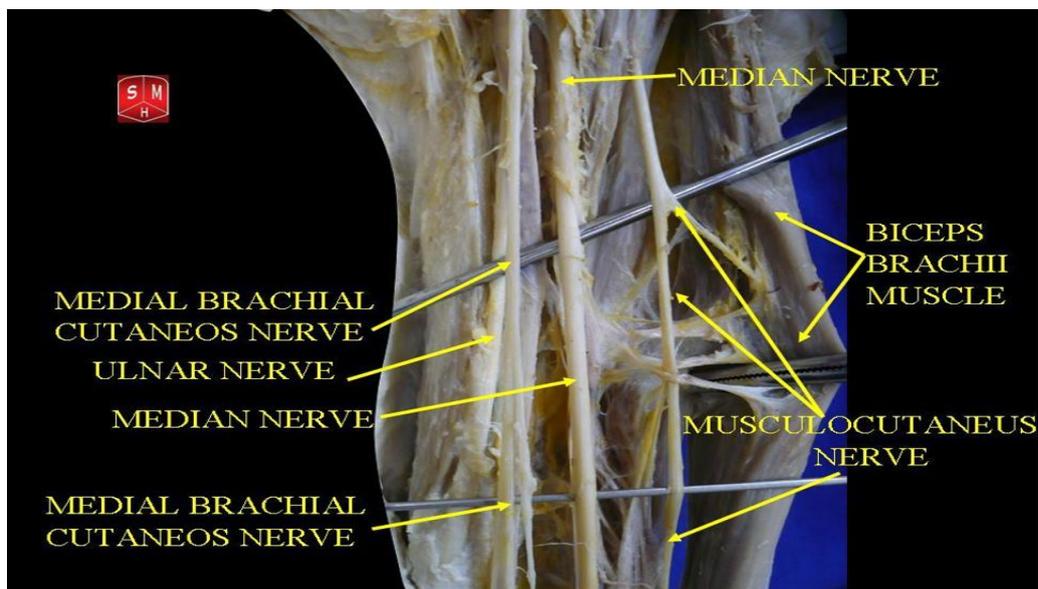


Figure 1: Normal Anatomy of the Arm [With permission:20th edition of *Gray's Anatomy* (1918)]

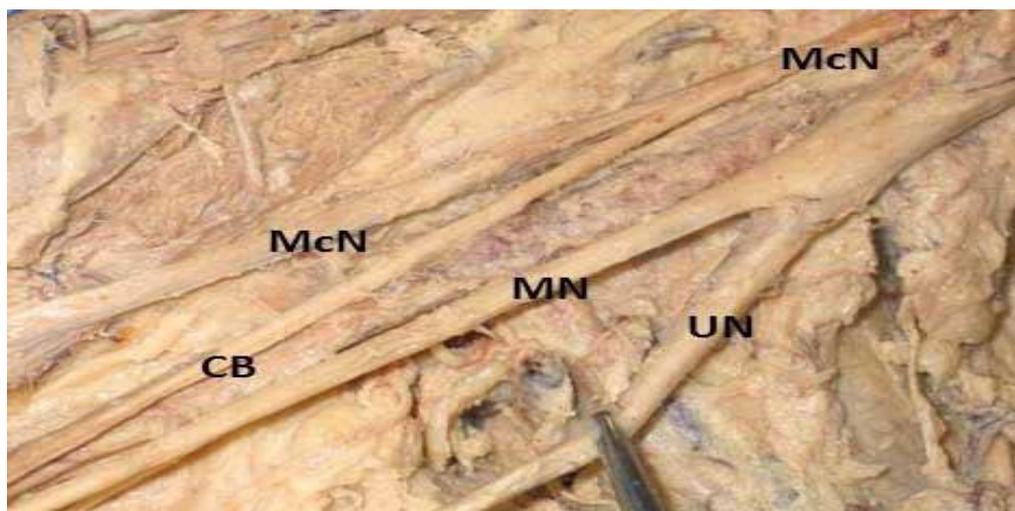


Figure 2: Musculocutaneous nerve (MCN) branch to Median nerve (MN)

DISCUSSION:

The present case reports the anomalous termination of MCN in the left upper limb of a 67 year old male cadaver. Variations of the brachial plexus have been routinely reported in the literature. Venieratos and Anagnostopoulou reported three types of unusual communication between MN and MCN considering the coracobrachialis muscle as the reference point [2]. In type 1, the communication was proximal to the entrance of the MCN into coracobrachialis. In type 2, the communication was distal to the muscle. In type 3, the nerve and the communicating branch did not pierce the muscle. Eglseder and Goldman noticed interconnections between the MCN and MN in 36% of dissections out of 54 cadavers [3]. Loukas and Aqueelah identified 4 different patterns of communication. Out of 129 formaldehyde fixed cadavers 119 communications were found to be present. We were able to identify 4 different patterns of communication. Type I (54 communications, 45%): the communications were proximal to the point of entry of the MCN into the coracobrachialis, Type II (42 communications, 35%): the communications were distal to the point of entry of the MCN into the coracobrachialis, Type III (11 communications, 9%): the MCN did not pierce the coracobrachialis and Type IV (9

communications, 8%): [4]. Venieratos and Anagnostopoulou found types of communications between the MCN and MN based on the sites of communication. Type I: the communication was proximal to the entrance of the musculocutaneous nerve into coracobrachialis; type II: the communication was distal to the muscle; type III: the nerve as well as the communicating branch did not pierce the muscle a study conducted in 79 cadavers [2]. Prasada Rao and Chaudhary reported eight instances of communication from MCN to the MN and bilateral communication in two cadavers [5]. Le Minor classified these variations into five types. Type 1: no communication between the MN and MCN. Type 2: the fibers of medial root of MN pass through the MCN and join the MN in the middle of the arm. Type 3: fibers of the lateral root of the MN pass through the MCN and after some distance leave it to form lateral root of MN. Type 4: the MCN fibers join the lateral root of the MN and after some distance the MCN arise from the MN. Type 5: The MCN is absent and the entire fibers of MCN pass through lateral root of MN and fibers to the muscles supplied by MCN branch out directly from MN [6].

In the present case report some of the fibers of MN could have been carried by the MCN which later on were passed to MN because the nerve

supply to the muscles of the arm remained as mentioned in the standard books. Such variations also have clinical importance especially in post traumatic evaluations and exploratory innervations of the arm for peripheral nerve repair. The knowledge of the variations of this communication between the musculocutaneous and median nerves in the distal third of the arm is important in the anterior approach for the fracture of the humerus. Clinical implication of this could be that injury of MCN proximal to the anastomotic branch between musculocutaneous and median nerve may lead to unexpected presentation of weakness of forearm flexors and thenar muscles [7].

CONCLUSION:

Knowledge of such variation is a must for surgeons performing intervention in the arm because if the branch from MCN gets damaged it may affect the function of the hand, which may be thought as Carpal tunnel syndrome.

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