

Case Report

Musculocutaneous Nerve Variations in a Male Cadaver: A Case Report



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ABSTRACT

Introduction: The clinical anatomical knowledge of the brachial plexus of the upper limb and its variants is essential for many upper extremity surgical procedures following hand injuries.

Case Report: An unreported anatomical variation was observed during training surgery of the right upper limb of a male cadaver. The musculocutaneous nerve originates in the lateral cord and extends outwards, passing beneath the coracobrachialis muscle before proceeding to its initial branch, leading to the biceps brachialis muscle. The abnormal origination of the musculocutaneous nerve in the cadaver was in the midpoint of the arm from the median nerve. A thin nerve branch also innervated the coracobrachialis muscle, originated in the lateral cord, and continued laterally.

Conclusion: Since no accurate similarity was reported, we consider this variation unusual and useful, especially for surgical purposes.

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Introduction

The brachial plexus variations are found in a third of dissected cadavers. The upper limbs' muscles, joints, and skin are innervated by the brachial plexus. The brachial plexus roots emerge at five different levels, based on the normal pattern: C5, C6, C7, C8, and T1. The middle trunk is continuously formed by C7, the lower trunk is established by C8 and T1, and the upper trunk is formed by the merger of C5 and C6. The musculocutaneous nerve, axillary nerve, radial nerve, median nerve, and ulnar nerve are the terminal branches. The musculocutaneous nerve and the median nerve are closely related since they both emerge from the lateral cord. Even more evidence linking the two nerves is the musculocutaneous nerve's branching off to the median nerve. Although there have been a few documented variations in the branching pattern, these are very rare [1].

The flexor musculature aspect of the forearm is innervated by the musculocutaneous nerve and continues as the sensitive branch of the forearm skin. The musculocutaneous nerve has frequent variations. It may be absent in some individuals. The real prevalence of this issue has not been approved. This case report focuses on an unusual pattern of musculocutaneous nerve in the brachial plexus [2].

Case Report

During the standard dissection of a male cadaver's right upper limb in the dissection hall of the anatomy department of Iran University of Medical Sciences, a variation of the musculocutaneous nerve and a different pattern of brachial plexus were observed.

The musculocutaneous nerve originates in the lateral cord and extends outwards, passing beneath the coracobrachialis muscle before proceeding to its initial branch, leading to the biceps brachialis muscle. The unusual origination of the musculocutaneous nerve in this cadaver was in the midpoint of the arm from the median nerve. There was also a thin branch of the nerve that innervated the coracobrachialis muscle, originated in the lateral cord, and continued laterally.

To better understand this specific feature of this unusual nervous pattern of muscles in the anterior aspect of the arm, this part was painted with different colors (Nerve: Yellow, Artery: Red, Vein: Blue) (Figure 1), and a schematic figure was plotted (Figure 2).

Discussion

The musculocutaneous nerve comes from motor-sensory fibers of primary ventral branches (C5 to C7 spinal nerves). The nerve emanates from the lateral fasciculus and then moves toward the coracobrachialis muscle by deeply penetrating the brachialis and biceps brachii muscles to innervate them. The nerve appears on the surface laterally to the biceps brachii muscle and anteriorly to the brachialis muscle as it gets close to the cubital fossa. Therefore, it gets the name "lateral antebrachial cutaneous nerve", which descends along the lateral margin of the forearm and the cutaneous branches to become the lateral surface of the forearm [1].

Two other case report articles by Prasada Rao showed the absence of musculocutaneous nerve driven from the lateral cord of the brachial plexus and demonstrated that musculocutaneous nerve can be absent for innervating muscles of the anterior side of arms [3]. The number of branches derived from the median nerve for muscles of the arm was four in Ihunwo's study [4], while in our study, exactly three branches were derived from the median nerve. No sign of paralysis of the flexor musculature of the elbow and hypoesthesia of the lateral surface of the forearm have been reported, because the motor and sensitive fibers can be derived from other nerves [5]. Most likely, its fibers are driven from the median nerve. It is also possible that it comes from the lateral root of the median nerve or from the lateral fasciculus of the brachial plexus [6, 7]. Thus, this anatomical variation has no clinical expression and is not diagnosed until some of the nerves mentioned above have dysfunction.

The present study is consistent with Nayak's study. They revealed that the musculocutaneous nerve was derived at a lower point from the nerve, and there was no penetration of coracobrachialis [8].

Conclusion

This feature helps students in medical sciences and all relevant majors better understand the structure of the brachial plexus. This variation is also important during shoulder surgery for identifying the musculocutaneous nerve in conditions like coracoid process grafting, shoulder dislocations, and frequent arthroscopies, in which the muscle and nerve can be damaged.

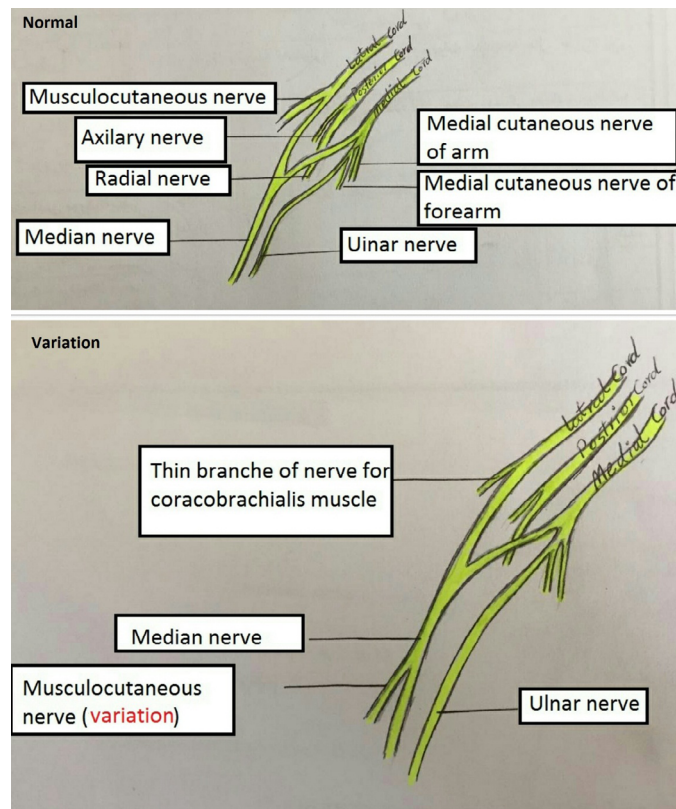


Figure 1. Variation in the branching patterns in the right arm of the cadaver, shown by painting

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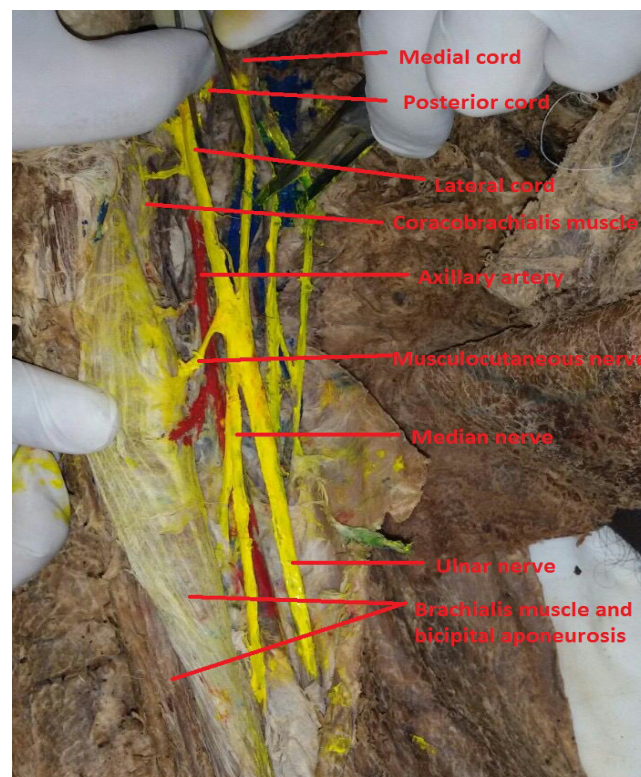


Figure 2. A schematic view of variation in the branching pattern

Notes: The yellow part that showed brachial nervous branches and the variation of the musculocutaneous nerve was depicted.

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Ethical Considerations

Compliance with ethical guidelines

All ethical principles are considered in this article.

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Authors' contributions

Conceptualization and Supervision: Sajed Khaledi and Shahrzad Zhaeentan; Methodology: Sajed Khaledi and Shahrzad Zhaeentan; Investigation, Writing – original draft, and Writing – review & editing: All authors; Data collection: Sajed Khaledi and Shahrzad Zhaeentan, ; Data analysis: Sajed Khaledi and Shahrzad Zhaeentan; Funding acquisition and Resources: Sajed Khaledi and Shahrzad Zhaeentan and Mehrdad Bakhtiari.

Conflict of interest

The authors declared no conflict of interest.

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