

Unusual Course of Median Nerve in the Arm and its Clinical Relevance - A Cadaveric Study

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Abstract: *The median nerve (C5,C6, C7,C8&T1) supplies most of the muscles of flexor compartments of the forearm and the muscles of the thenar eminence in the hand. In the arm, at the level of insertion of coracobrachialis, usually, the median nerve crosses from lateral to medial in front of the brachial artery and accompanies it along the medial side. Here we present this rare and interesting case report of an important variation in the course and relation of the median nerve in the arm. During routine dissection of a 70-year-old male cadaver allotted for the undergraduate students of the 2020- 2021 batch in the department of anatomy, Sree Mookambika Institute of Medical Sciences, Kulasekharam, we found that the formation of the median nerve was normal, but at the level of insertion of coracobrachialis the median nerve crossing the brachial artery from lateral to medial side passing behind the brachial artery and accompanies along the medial side, the remaining course and relation of the median nerve is normal. The opposite upper limb was also dissected to find out any variation in its course and relation but was found to be normal. The unusual course of median nerve passing behind the brachial artery while crossing from lateral to medial side at the level of insertion of coracobrachialis should be kept in mind while performing surgeries, reduction of fractures and nerve block in the middle of the arm.*

Keywords: Median nerve, Brachial artery, Coracobrachialis

1. Introduction

Median nerve C5 C6 C7 C8 T1- innervates most of the muscles of the flexor compartment of the forearm and muscles of the thenar eminence in hand.^[1] It is formed by the union of the medial root (C8&T1) from the medial cord & lateral root (C5,C6 & C7) from the lateral cord of the brachial plexus.^[1] Course: At the level of insertion of coracobrachialis median nerve crosses from lateral to medial in front of the brachial artery.^[1] It then descends into the cubital fossa & then into the flexor compartment of the forearm and palm.^[1]

2. Literature Survey

According to the literature reviewed, the median nerve crossing the brachial artery from the lateral to the medial side and passing behind the brachial artery is extremely rare.

3. Methodology

During routine dissection of about a 70-year-old male cadaver, allotted for the undergraduate student in the Department of Anatomy, Sree Mookambika Institute of Medical Sciences, Kulasekharam. Dissection of the upper limb was carried out according to the instruction given in Cunningham's Manual of Practical Anatomy Volume -1. The variation was found in the course of the median nerve to the brachial artery crossing behind it in the right arm.

4. Results

In the right upper limb: the formation of the median nerve is normal. During its course in the arm at the level of insertion of coracobrachialis, the median nerve crosses the brachial artery from lateral to medial side, behind it. Then the median nerve accompanies along the brachial artery on its medial side. The remaining course & relations are normal. (Fig-1). In the left upper limb: the course and relations of the median nerve are normal.



Figure 1: Picture depicting the course of the median nerve behind the brachial artery
Figure 1 Red arrow - Brachial artery; Yellow arrow - Median nerve

5. Discussion

In the present study, the formation of the median nerve was normal, but it showed varying course in the arm at the level of insertion of coracobrachialis, it is crossing the brachial artery posteriorly from the lateral to the medial side. The median nerve was shown to have two roots emerging from the lateral cord and one root from the medial cord, with its route being located posterior to the brachial artery. In the previous study conducted by Amirta et al. in 2015^[2]. Aviarova et al 2009^[3] found that the median nerve passes behind the brachial artery throughout its course. According to Nayak 2007^[4], the median nerve in the arm crosses the brachial artery from behind rather than in front, demonstrating a difference in the nerve's connection with the brachial artery. Suruchi reported an abnormal right median nerve course, occurring medial to the axillary artery and having two connecting branches with the musculocutaneous nerve (discovered on a 57-year-old male corpse).^[5] In 7% of cases, Pandey, and Shukla (2007) discovered changes in the median nerve formation and course.^[6] Clinical implications of the median nerve's relationship to the brachial artery, particularly during operations and nerve blocks, may exist.^[2] Because symptoms of median nerve compression caused by these variants are sometimes confused with radiculopathy and carpal tunnel syndrome, these variations of the median nerve's origin and relation are clinically significant for physicians, surgeons, and anesthetists. For performing surgical procedures and nerve blocks in the axilla and arm, it is crucial for surgeons and anesthesiologists to be aware of these variations of the median nerve.^[2] Because of the significant relation between these different nerve connections and the arteries in the axilla, certain postural movements of the shoulder joint may cause arterial compression, ischemic discomfort, or variable arterial insufficiency. Goyal et al, 2005.^[7] Singhal et al, 2007.^[8] reported that understanding these variances is crucial when evaluating unexplained sensory or motor loss following upper limb surgery or trauma

6. Conclusion

When doing surgeries on the middle of the arm, reducing fractures at this site, executing nerve blocks, and in median

nerve compression, understanding the remarkable variance in the median nerve's course in the arm is crucial.

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