

## VARIATION IN THE COURSE OF MEDIAN NERVE IN THE ARM

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### ABSTRACT

The median nerve in its normal course in the arm crosses the brachial artery from lateral to medial side. It then passes superficial to brachialis muscle and then enters cubital fossa. During routine dissection class, median nerve was found passing between two branches of superficial brachial artery, in the middle of arm. This knowledge of variation could be helpful to general surgeons, vascular surgeons, and orthopaedicians in preventing iatrogenic injuries.

**KEYWORDS:** Median Nerve, Brachial Artery, Superficial Brachial Artery

### INTRODUCTION

Median nerve is formed by joining of medial and lateral root from medial and lateral cord of brachial plexus respectively. It lies anterior or lateral to third part of axillary artery. In the arm, the nerve passes at first lateral to brachial artery (near the insertion of coracobrachialis muscle), then crosses in front of the artery, descending medial to it in the cubital fossa where it passes posterior to the bicipital aponeurosis and anterior to the brachialis muscle. In the forearm, it passes between the two heads of pronator teres muscle.

### MATERIALS AND METHODS

The case was reported during routine 1<sup>st</sup> MBBS dissection in Department of Anatomy, MGM Medical College, Kamothe, Navi Mumbai, on right upper limb of 62-year-old male cadaver. The arm and cubital fossa were dissected to expose brachial artery and median nerve as per Cunningham's manual of practical Anatomy. The relation of median nerve to brachial artery was noted down.



Figure 1

## RESULTS

There was a variation observed in the relation of median nerve with the brachial artery in the arm. The median nerve in the middle of arm passed between two divisions of brachial artery. However, the course and distribution of the median nerve was normal in axilla forearm and palm. In this case the opposite upper limb was also dissected completely to exclude bilateral abnormality. The anomaly was unilateral. Photographs of abnormality were taken for proper documentation of the variation.

## DISCUSSIONS

Zora Haviarova et al (2009) found formation median nerve behind axillary artery and latter its continuation behind brachial artery in arm (1).

Channabasanagouda et al (2009) on its study on 50 specimens observed formation of median nerve lateral to axillary artery in 42(82 %) cases, anterior to artery in 5(10 %) cases and medial to artery in 3(6%) cases. In middle of the arm they found median nerve lateral to brachial artery in 47(94%) cases and medial to artery in 3 (6%) cases. In one specimen they found high division of brachial artery in the middle of the arm along with formation of median nerve at the same level. (2)

Ajay Ratnakarrao Nene et al (2010) observed formation of median nerve behind third part of auxiliary artery and its course in the arm entirely behind the brachial artery. (3)

V.Budhiraja et al (2011) in there study on 87 cadavers observed median nerve formation medial to axillary artery in 10.3 % (18/174) upper limbs.

Citra, Satyanaryana et al, and Singhal et al. observed cases in which the median nerve was formed medial to the axillary artery. Pandey and Shukla reported median nerve formation medial to the third part of the axillary artery in 4.7% of cases. (4)

Melanie et al (2012) observed median nerve in the arm crossed the brachial artery from medial to lateral side and passed deep to the brachialis muscle.(5)

The brachial artery coursing in front of rather than behind the median nerve is called as superficial brachial artery (SBA) (6). Sudarshan Babu K G et al studied 95 upper limbs. When the relation of median nerve to brachial artery was observed, it coursed superficial to artery in 88.42% of the limbs (45 right & 39 left) and deep to the artery i.e., SBA was seen in 11.57% of limbs (6 right & 5 left). No significant association was found when this was compared between the two sides ( $\chi^2=0.004$ ,  $P = 0.951$ ) Statistically no significant difference ( $P>0.05$ ) was found when the mean levels of median nerve crossing superficial or deep to brachial artery were compared on the two sides. When the arm segment was considered, in 82 limbs (86.31%) median nerve crossed brachial artery in the middle 1/3rd of the arm, in 9 limbs (9.47%) at the junction of middle and lower 1/3rd and in 4 limbs (4.21%) in the lower 1/3rd of the arm. Out of the 11 limbs with SBA, crossing occurred in the middle 1/3rd of the arm in 9 of the limbs (81.81%) and in the remaining 2 (18.18%) at the junction of middle and lower 1/3rd of the arm. In all the 4 limbs, where crossing took place in the lower 1/3rd of the arm, the median nerve was superficial to the artery. When the crossing in relation to arm segment was compared between the two types of crossing (superficial & deep), it was found that there was no significant association ( $\chi^2=1.549$ ,  $P = 0.461$ ) (6).

Amrita Bharti et al (2015) in their study on 10 carvers noted in one cadaver medial nerve crossing brachial artery in the arm behind instead of coming in front. (7)

In present case study we found course, distribution and relation of median nerve normal in axilla, forearm and hand on both sides. On right side we found median nerve passing between two divisions of brachial artery which divided abnormally in the middle of the arm.

## CONCLUSIONS

The knowledge about anatomical variations is of utmost importance to surgeons, vascular surgeons, Orthopaedicians when performing therapeutic and diagnostic procedures on upper limb. Present case study will be helpful for them to prevent iatrogenic injuries during procedures.

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