



A Cadaveric Study of the Communications Between Median And Musculocutaneous Nerve In The Infraclavicular Part Of The Brachial Plexus

KEYWORDS

Median nerve, Musculocutaneous nerve, communication, Coracobrachialis

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ABSTRACT Awareness of the communication between the median and Musculocutaneous nerves is necessary for neurologists, traumatology of the shoulder joints and anesthetists. The axilla and arm were dissected and the various communications between the median and Musculocutaneous nerve were observed. Communications at the level of the upper one third of the arm was present in 3 specimens. The Musculocutaneous nerve after piercing the Coracobrachialis fused with the median nerve in one specimen. The Musculocutaneous nerve was absent and branches were arising directly from the median nerve in 3 specimens. There were two communicating branches between median and Musculocutaneous nerves in one specimen. Communication between median nerve and ulnar nerve was present in one specimen.

INTRODUCTION

From nineteenth century communications between median nerve and Musculocutaneous nerve has been reported.^(1, 2) The median nerve and Musculocutaneous nerve originates from the brachial plexus and without receiving any communication runs its course in the arm.⁽³⁾ Treatment of peripheral nerve injuries and during various surgical approaches in the axilla understanding the communications between median and Musculocutaneous nerves are important .⁽⁴⁾ This study is done to explore the various types of communications between median and Musculocutaneous nerves and its clinical significance.

MATERIALS AND METHODS

Upper limbs of twenty five cadavers were dissected on both sides during routine dissection for undergraduate students. The axilla was dissected and the cords and branches of the infraclavicular part of the brachial plexus were explored. Variations in the communications between median nerve and Musculocutaneous were observed.

RESULTS

In the present study, Musculocutaneous nerve was absent in three specimens and the branches were arising directly from the median nerve. (Figure 1)

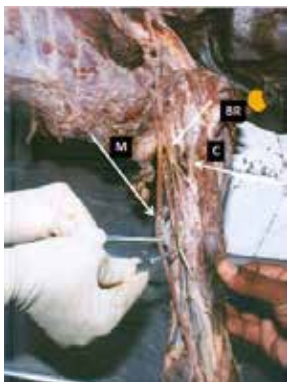


Figure 1 shows absence of Musculocutaneous nerve: M-Median nerve; C-Coracobrachialis; BR-Communicating branch

The Musculocutaneous nerve was fusing with the median nerve after piercing the Coracobrachialis in one specimen. (Figure 2)

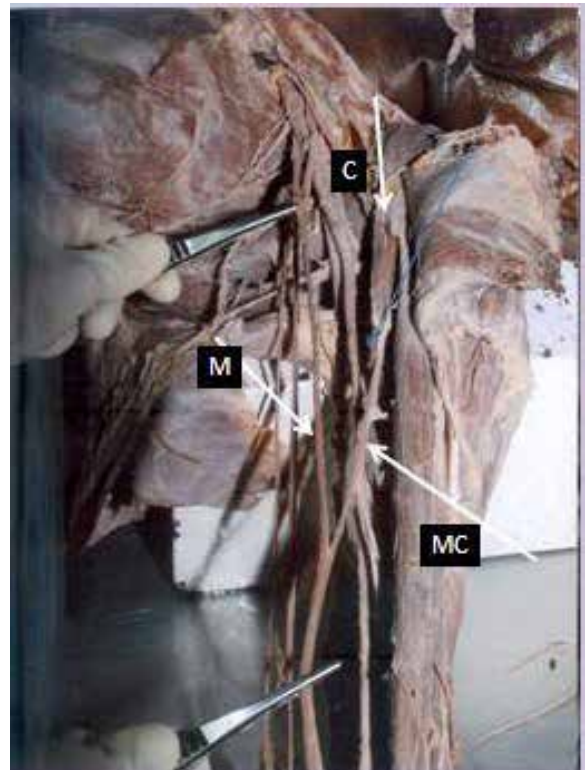


Figure 2 shows Fusion of Median and Musculocutaneous nerve: MC-Musculocutaneous nerve; M-Median nerve; C-Coracobrachialis

There were two communicating branches between the median and Musculocutaneous nerve in one specimen and the Musculocutaneous nerve was not piercing the Coracobrachialis in that specimen.(Figure 3)

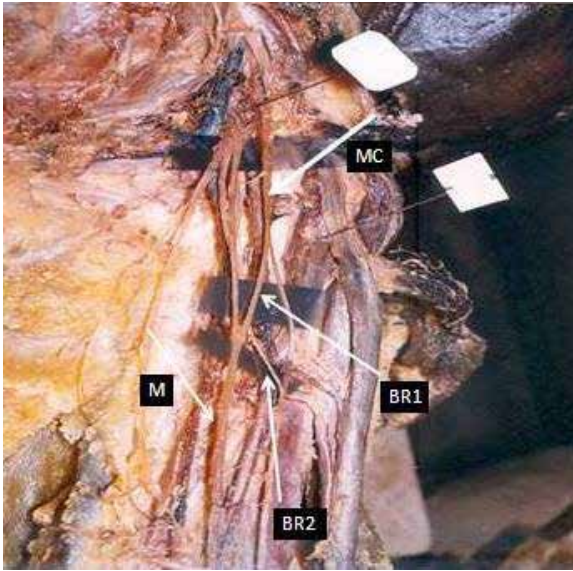


Figure 3 shows two communicating branches: MC-Musculocutaneous nerve; M-Median nerve; BR1-First Communicating branch; BR2-Second Communicating branch;

The communicating branch was present in the upper one third of the arm in three specimens. (Figure 4)

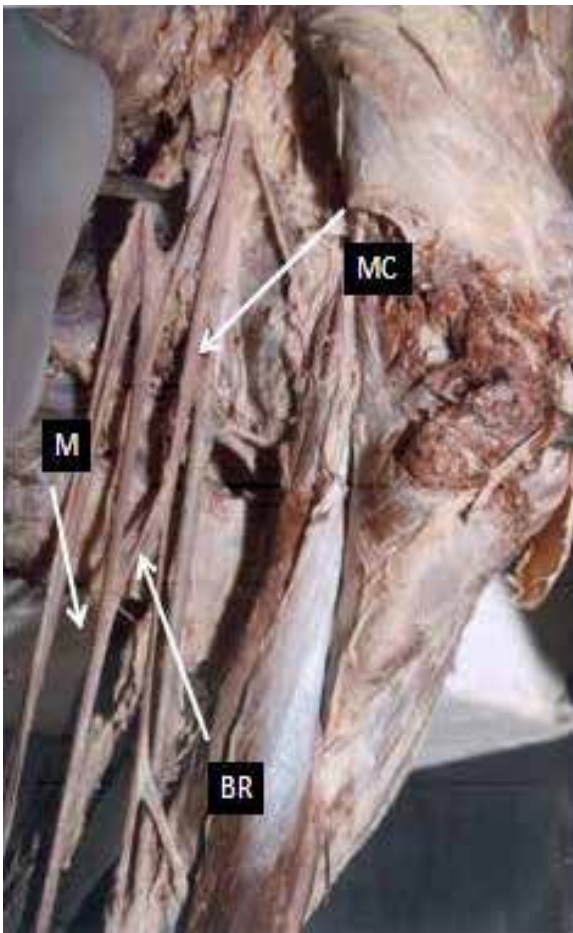


Figure 4 shows communicating branch at the upper one third of the arm: MC-Musculocutaneous nerve; M-Median nerve; BR-Communicating branch

In one specimen there was communication between medial root of median nerve and ulnar nerve. (Figure 5)

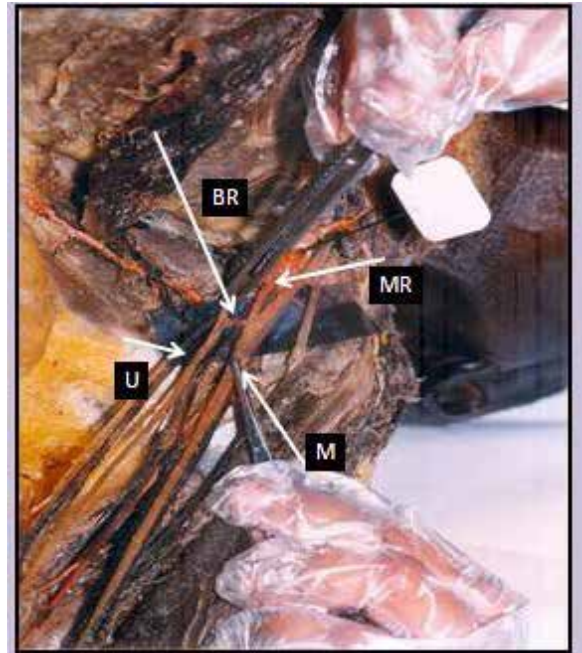


Figure 5 shows communication between Median nerve and Ulnar nerve: MR-Medial root; M-Median nerve; U-Ulnar nerve; BR-Communicating branch

The communicating branch joined the median nerve in middle of the arm in two specimens.

DISCUSSION

According to Li.Minor's⁽⁵⁾ classification of communication between Musculocutaneous nerve and median nerve, Absence of communication between median nerve and musculocutaneous nerve belonged to type I, the lateral root fibres joined the median nerve in the middle of the arm after passing through the musculocutaneous nerve in type II, the communicating branch joined the median nerve as lateral root after traversing through the musculocutaneous nerve in type III, the musculocutaneous nerve originates from the median nerve after passing through the lateral root of median nerve in type IV, Absence of Musculocutaneous nerve and the muscles to be supplied by musculocutaneous nerve will be supplied by branches arising directly from median nerve, after passing through the lateral root, in type V.

In our study 2 specimens belonged to type II, three specimens belonged to type V, three specimens belonged to type III. None of the specimens belonged to type IV of Li Minor classification.

Venierators and Anagnostopoulou⁽⁶⁾ described in type I of his classification of communication between musculocutaneous nerve and median nerve, the communicating branch originated proximal to the entrance of musculocutaneous nerve into the coracobrachialis in type I, origin of communicating branch distal to the coracobrachialis muscle from the musculocutaneous nerve in type II and neither the communicating branch nor the musculocutaneous nerve pierced the coracobrachialis muscle in type III.

In the present study three specimens belonged to Type I of the study reported above where the communicating

branch was present in the upper third of the arm proximal to the entrance of Musculocutaneous nerve into the Coracobrachialis. Two specimens belonged to Type II where the communicating branch joined the median nerve in the middle of the arm distal to the entry of Musculocutaneous nerve into Coracobrachialis and one specimen coincides with Type III where the Musculocutaneous nerve and the two communicating branches present between the median and Musculocutaneous nerve did not pierce the Coracobrachialis muscle. Fusion of median nerves and musculocutaneous nerves very reported by many authors.⁽⁷⁻⁹⁾ In one specimen, similar to the study reported above, the musculocutaneous nerve was found to fuse with the median nerve after piercing coracobrachialis muscle.

Bergmann⁽¹⁰⁾ described the communicating branch joined the median nerve in the lower third of the arm. It is considered as an additional root of median nerve if it joins in the upper third of the arm. In 2 specimens, median nerve was observed to receive communicating branch in the middle of the arm and three specimens were observed to have communicating branch in the upper third of the arm, which can be considered as additional root of median nerve. Sachdeva K and Singla RK⁽¹¹⁾ reported in one case, that the musculocutaneous nerve joined the median nerve without piercing the coracobrachialis. But in the present study in one specimen, the musculocutaneous nerve was joining the median nerve after piercing coracobrachialis. Lovesh Shukla et al.⁽¹²⁾ reported a case where there were four communicating branches between median and Musculocutaneous nerve, but in the present study only two communicating branches were observed between median and Musculocutaneous nerve in one specimen. In one case, communicating branch was observed in the upper third of the arm as reported by Lokanadham⁽¹³⁾ which is similar to three cases in the present study where the communicating branch joined the median nerve in the upper third of the arm. Chauhan and Roy⁽¹⁴⁾ reported a third root joining the median nerve from Musculocutaneous nerve and a communicating branch joined the third root from the Musculocutaneous nerve. There were no such observations in the present study. Communication between medial root of median nerve and ulnar nerve has not been reported previously in the literature. But in the present study, in one specimen communication between medial root of median nerve and ulnar nerve was observed.

CONCLUSIONS

In peripheral nerve injuries and nerve transfer surgeries involving recovery of elbow flexion where the Musculocutaneous nerve acts as a good receiver good knowledge of communications between median and Musculocutaneous nerve is necessary.⁽¹⁵⁾ The motor branch of Musculocutaneous nerve acts as an efficient donor to anterior and posterior interosseous nerves in lower brachial plexus injuries.⁽¹⁶⁾ In tetraplegic patients also, Musculocutaneous nerve acts as an effective donor in peripheral nerve injuries.⁽¹⁷⁾

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