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### Short report

# Anatomical variation-Communication between musculocutaneous nerve and median nerve

S.Lokanadham <sup>a\*</sup> and V.Subhadra Devi <sup>b</sup>

<sup>a</sup>School of Medical Sciences, University of Hyderabad, Central University, Hyderabad-500 046, Andhra Pradesh, India

<sup>b</sup>Department of Anatomy, Sri Venkateswara Medical College, Tirupati-517502, Andhra Pradesh, India

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#### ABSTRACT

Variations of the musculocutaneous nerve and median nerve at the level of brachial plexus are common. During our routine dissection we observed a branch communicating between the musculocutaneous nerve and median nerve in a fifty year old male cadaver right upper limb. The communicating branch arising from the musculocutaneous nerve distal to the coracobrachialis in upper one third of the arm along with normal muscular branches of the nerve. In the same limb we also observed an accessory head of biceps brachii muscle. To prevent unwanted outcomes of operations conducted on musculo cutaneous nerve, it gives clinical consideration during surgical interventions and clinical investigations of the arm.

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### 1. Introduction

Anomalies of the brachial plexus and its terminal branches are not uncommon. Brachial plexus is network of nerves supplying the upper limb. Median nerve arising from the medial and lateral cords of the plexus, where as musculocutaneous nerve from the lateral cord. Variations in the formation and branching of brachial plexus are reported by several investigators [1,2,3].The musculocutaneous nerve is the continuation of the lateral cord and pierces the coracobrachialis and descends laterally between the biceps and brachialis muscles. It is the main nerve of arm by supplying the muscles of the arm [4,5].Musculocutaneous nerve has frequent variations associated with its connection to the median nerve. It may run behind the coracobrachialis muscle or adhere for some distance to the median nerve and pass behind the bicepsbrachii muscle.

### 2. Materials and methods

The upper extremities of 40 cadavers were dissected and observed for this study. All the cadaveric materials were studied in

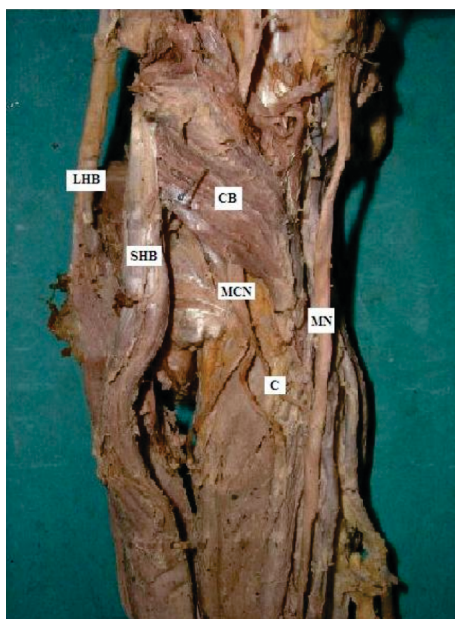
the Department of Anatomy, Sri Venkateswara Medical College, Tirupati.A longitudinal incision was made at the anterior aspect of the arm, from the level of acromion process to a point about 2.5 cm below the elbow joint. A horizontal incision was made bilaterally in both proximal and distal ends of the longitudinal incision. The subcutaneous fat, fascia and coracobrachialis muscle were separated to observe the communication between musculocutaneous nerve and median nerve.

### 3.Results

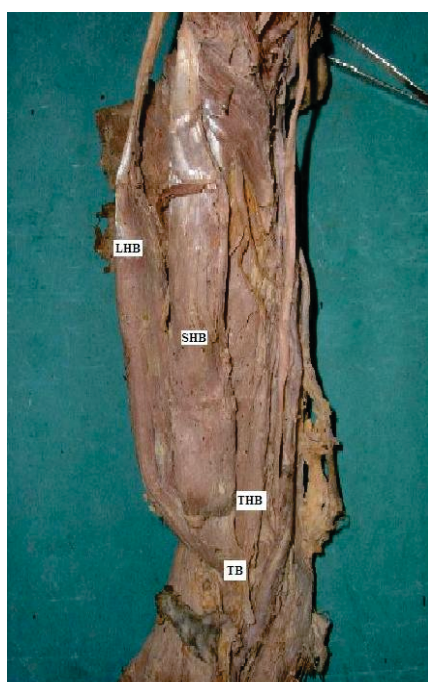
In a fifty years old male cadaver, a communicating branch between musculocutaneous nerve and median nerve were observed in the upper one third of the arm of right upperlimb, but the left upper limb remains normal. The communicating branch is not piercing the coracobrachialis [figure-I] and arises distal to it in the upper one third of the arm. In the same cadaver we also observed the accessory head of the bicepsbrachi muscle [figure-II] which is originating from the humerus on its medial side and fuses with bicipitaltendon. Some of the fibers of the supernumerary third head joined the brachilalis muscle.

\* Corresponding Author : Lokanadham Sadhu  
Assistant Professor in anatomy  
School of medical sciences  
HyderabadCentral University, Hyderabad-500 046  
Andhra Pradesh, India  
Phone no -+91 9573066311  
Email: [loka.anatomy@yahoo.com](mailto:loka.anatomy@yahoo.com)

**Figure I:** Photograph of dissected male cadaver upper limb arm showing communicating branch from musculocutaneous nerve to median nerve (**LHB**: long head of biceps; **SHB**: short head of biceps; **CB**: coracobrachialis; **MCN**: musculocutaneous nerve; **C**: communicating branch; **MN**: median nerve)



**Figure II:** Photograph of dissected male cadaver upper limb arm showing communicating branch along with third head of biceps muscle (**LHB**: long head of biceps; **SHB**: short head of biceps; **CB**: coracobrachialis; **MCN**: musculocutaneous nerve; **C**: communicating branch; along with **THB**: third head of biceps)



#### 4. Discussion

Variations in the communications between median nerve and musculocutaneous nerves have been described by Le Minor [6] in to five types in type I; there is no communication between the median nerve and musculo cutaneous nerve. In type II; the fibers of medial root of median nerve pass through musculocutaneous nerve and join the median nerve in the middle of the arm, where as in type III; the lateral root fibers of the median nerve pass along the musculo cutaneous nerve and after some distance leave it to form the lateral root of median nerve. In type IV; the musculo cutaneous nerve fibers join the lateral root of the median nerve and after some distance the musculo cutaneous nerve arises from median nerve. In type V; musculo cutaneous nerve is absent [7] and entire fibers of musculo cutaneous nerve pass through lateral root and fibers to the muscles supplied by musculo cutaneous nerve branch out directly from median nerve. In our case communication branch observed between musculocutaneous nerve and median nerve which is not piercing the coracobrachialis muscle and passing behind the muscle in the upper third of the arm. Venieratos and Anagnostopoulou [8] described communication between musculo cutaneous nerve and median nerve is proximal to the entrance of the musculo cutaneous nerve to the coracobrachialis, in other type of communication is distal to the muscle. Where as in other type the neither nerve nor its communicating branch pierced the muscle. In our study the communicating branch not piercing the muscle and its communication is distal to the muscle, there fore it's a different type of variation in the communication between musculo cutaneous nerve and median nerve. In the same limb we observed there was humeral head of biceps brachii. Duplicated musculocutaneous nerve associated with three headed biceps brachii muscle was observed in a case study by Abu-hijleh [9,10]. This accessory head of biceps brachii in our study may attribute to the random factors influencing the mechanism of formation of limb muscles and peripheral nerves during embryonic life [11,12].

#### 5. Conclusion

Communication branches between musculocutaneous nerve and median nerve or between median nerve and ulnar nerve have been reported [10,13,14]. Lesions of this communication branch may give rise to difficulty in diagnosis. In diagnostic clinical neurophysiology, variations in connections between musculocutaneous nerve and median nerve may have significance.

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