CASE REPORT

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A RARE VARIANT BRANCH FROM THE LATERAL CORD AND A COMMUNICATING BRANCH BETWEEN THE MUSCULOCUTANEOUS AND MEDIAN NERVE

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ABSTRACT

During routine educational gross anatomy dissections of the upper extremities, one right upper limb was observed to have an unusual branch from the lateral cord that pierced coracobrachialis towards its origin. This variant branch emerged from the lateral cord before it branched to give its contribution to the median nerve and musculocutaneous nerve in the axilla. The same limb also had a communicating branch between the musculocutaneous nerve to the median nerve at the mid arm level. These variations may be of interest to neurologists, anatomists and surgeons operating in the upper limb region.

Key words: Lateral cord variation, median nerve and musculocutaneous nerve communications
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INTRODUCTION

As per standard textbook anatomy, the lateral cord is the part of the brachial plexus formed by the anterior divisions of the upper trunk (C5-C6) and the middle trunk (C7). It is located lateral to the axillary artery and it usually gives the following branches; lateral pectoral nerve (C5-C7), lateral pectoral (C5-C7), a contribution to the median nerve (C5-C7) and the musculocutaneous nerve which is its terminal branch (C5-C7) (Padur et al., 2016).

The musculocutaneous nerve leaves the axilla and pierces coracobrachialis muscle. It then passes between biceps brachii and brachialis muscle in the arm. The nerve then pierces the deep fascia lateral to biceps brachii to emerge lateral to the biceps tendon and continues as the lateral cutaneous nerve of the forearm (Desai and Varacallo, 2022). The median nerve (C5-T1) is one of the terminal branches of the brachial plexus and it's formed by the convergence of contributions from the lateral and medial cord in the axilla. As it descends the arm, the median nerve does not typically give any branches (Murphy and Morrisonponce, 2022). Anatomical variations from this textbook anatomy exist and it is important that they are recognized in order to reduce the risk of iatrogenic injury and to aid in diagnosis of neuropathies.

CASE DESCRIPTION AND DISCUSSION

During routine educational gross anatomy dissections of the upper extremities at the Department of Human Anatomy, University of Nairobi, one right upper limb was observed to have an unusual branch from the lateral cord that pierced coracobrachialis near its origin. This variant branch emerged from the lateral cord before it branched to give its contribution to the median nerve and musculocutaneous nerve in the axilla (Figure 1). The same limb also had a communicating branch between the musculocutaneous nerve and the median nerve at mid-arm level (Figure 2). This dissection was done in accordance with the protocol described in

Mungai's manual of topographic anatomy (volume one).

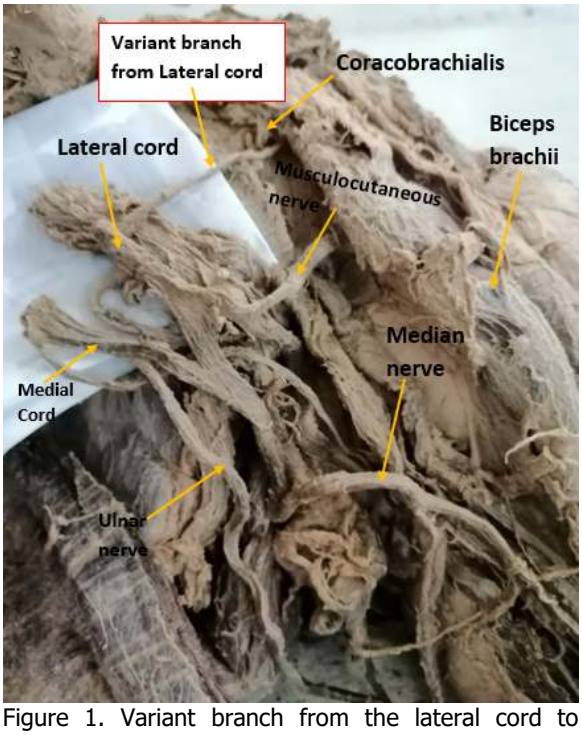

Figure 1. Variant branch from the lateral cord to coracobrachialis. Part of the coracobrachialis muscle has been dissected out for ease of visibility.

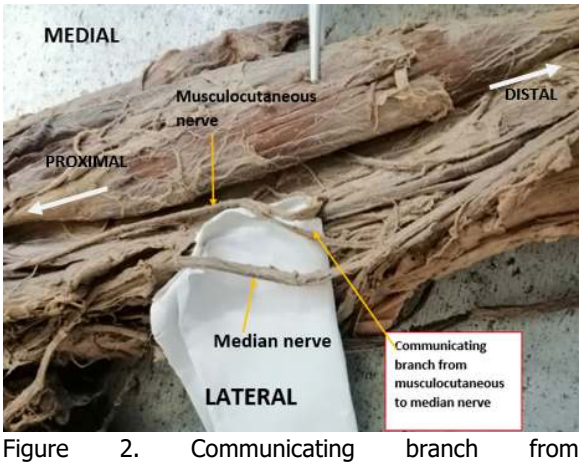

Figure 2. Communicating branch from musculocutaneous nerve to median nerve.

As per standard textbook anatomy, the coracobrachialis muscle is only innervated by the musculocutaneous nerve (El-Naggar, 2001). The median nerve and musculocutaneous nerves do not communicate in majority of the cases. The present study describes a case of the lateral cord giving a branch to coracobrachialis muscle towards its origin. This is event has only been reported twice after doing our literature review. Siri, A.M et al., (2013) reported a case were two accessory nerve twigs arising from lateral cord of brachial plexus supplied the coracobrachialis muscle. Padur et al., (2016) also reported a case of a branch coming directly from the lateral cord to supply the coracobrachialis muscle.

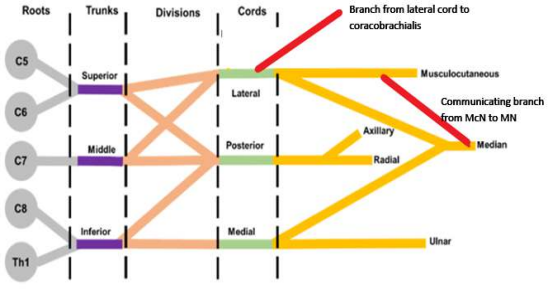

Figure 3. Diagrammatic representation of the brachial plexus illustrating the variations observed in the cadaver. Nerve roots (grey), trunks (purple), divisions (orange), cords (green), major terminal nerves (yellow), variant nerves (red).

Anastomosis between the musculocutaneous nerve and median nerve is well recognized. Maeda et al., (2009) found that the communicating branch was present in 41.5% of cases. In the Venieratos and Anagnostopolou classification, communication between the musculocutaneous and median nerve has been described as type I to III, where type I involves proximal communication to the entrance of the musculocutaneous nerve into coracobrachialis, type II involves communication distal to coracobrachialis, and type III is a communication where the communicating branch did not pierce coracobrachialis (Chandrika et al. 2019, Vinieratos et al. 1998). The communication observed in this case report was classified type II according to Vinieratos et al., (1998) because the communication was distal to coracobrachialis muscle.

CONCLUSION

The axillary region is commonly approached for various diagnostic and interventional procedures. These variations in brachial plexus anatomy may be of interest to neurologists, anesthesiologists, radiologists, anatomists and surgeons operating in the upper limb region.

CONFLICTS OF INTEREST

The authors affirmed that there are not any conflicts of interest.

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