



VARIATION IN THE BRANCHING PATTERN OF LATERAL CORD OF BRACHIAL PLEXUSES IN TELANGANA REGION.

Anatomy

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ABSTRACT

Introduction: The lateral cord of the brachial plexus is formed by the anterior divisions of upper and middle trunks of the brachial plexus. It is lateral to the second part of axillary artery and gives three branches, namely musculocutaneous nerve, lateral root of median nerve and lateral pectoral nerve.

Aim And Objective: To study the variation in branching pattern of the lateral cord of brachial plexus as knowledge of such variations is important in clinical practice for evaluation of injuries and misinterpretation of clinical symptoms and to prevent accidental injury to the nerves during diagnostic, prognostic, and surgical treatment.

Materials And Methods: This study was conducted in Department of Anatomy of Osmania Medical College, Koti, Hyderabad. During routine Dissection on 22 formalin fixed Human Cadavers 20 males & 2 female (44 upper limbs); were dissected for the study. The cadavers with visible trauma, pathology or prior surgeries were excluded from the study. Routine dissection of the Axilla and upper limb was followed. During the dissection of the axilla the formation of brachial plexus and its branches were identified and traced down. Any variations found were noted and photographed. The results were analysed and compared to previous studies.

Results: A branch from Lateral cord of the brachial plexus which is communicating with the medial root of median nerve was identified in one cadaver on left side. The median nerve thus formed was related medially to the axillary artery (instead of the normal position i.e., of being anterolateral). The percentage of such a communication between the lateral cord and medial root of median nerve is 2% among 44 upper limbs.

Conclusion: The presence of such an additional branch from the lateral cord passing above axillary artery and contributing to the formation of median nerve which is related medially to the axillary artery (instead of the normal position of being anterolateral). Hence this may be of immense clinical interest to neurologists diagnosing nerve lesions and surgeons who are exposed to the topographical anatomy of the neural structures during radical neck dissection. Anomalous branches of lateral cord crossing the artery anteriorly may cause compression symptoms producing ischemia. Detailed knowledge of such variations is necessary for orthopedicians, traumatologist, neurosurgeons as well as anaesthetists to avoid complications.

KEYWORDS

BRACHIAL PLEXUS, LATERAL CORD, MEDIAL ROOT OF MEDIAN NERVE, COMMUNICATING BRANCH.

INTRODUCTION:

The brachial plexus is a complex network of nerves, situated in the posterior triangle of neck and the axilla. The roots of C5, C6, C7, C8 and T1 joins to form the upper, middle, and lower trunks. The cords are formed from the trunks.

The lateral cord of the brachial plexus is formed from the anterior divisions of upper and middle trunks of the brachial plexus and is formed from the roots of C5, C6, C7^[1]. It is lateral to the second part of axillary artery and gives 3 branches, namely musculocutaneous nerve, lateral root of median nerve and lateral pectoral nerve. The musculocutaneous nerve pierces the coracobrachialis, supplies biceps brachii and medial part of brachialis muscle and continues as the lateral cutaneous nerve of arm. In front of the 3rd part of axillary artery, the lateral root of median nerve from the lateral cord unites with the medial root of median nerve which is a branch from the medial cord to form the median nerve. The lateral pectoral nerve supplies the pectoralis major and minor muscles.

Anatomical variations in the branching patterns of the components of brachial plexus may be responsible for unusual findings in patients such as vascular compression. The variations may also pose difficulties while performing regional blocks or even during surgical procedures.

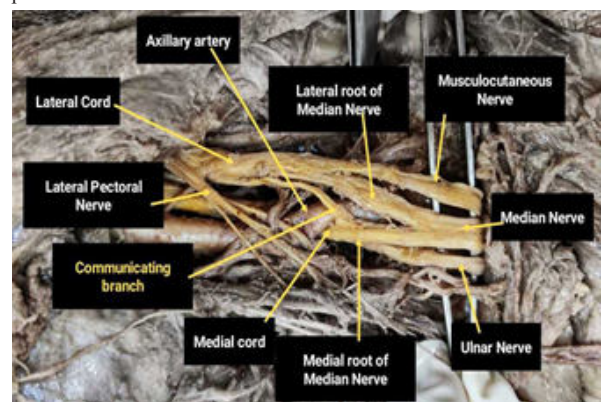
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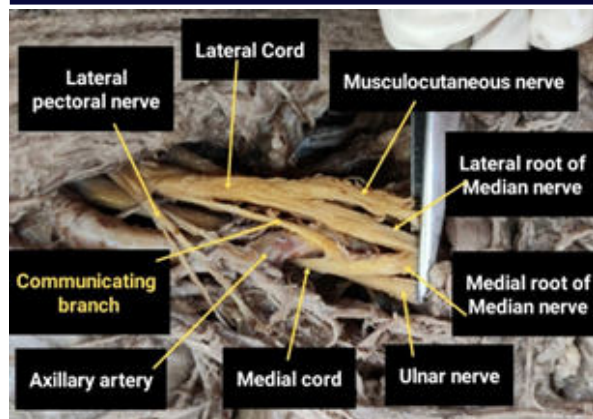


Fig 1 & Fig 2: Shows Communicating Branch Between Lateral Cord And Medial Root Of Median Nerve.

RESULTS:

A branch from Lateral cord of the brachial plexus which is passing above axillary artery and communicating with the medial root of median nerve was identified in one cadaver on left side. The median nerve thus formed was related medially to the axillary artery (instead of the normal position of being anterolateral). The percentage of such a communication between the lateral and medial cords of brachial plexus is 2% among 44 upper limbs.

DISCUSSION:

Anatomical variations in the peripheral nerves forms an important clinical as well as surgical issue. In present study a branch from Lateral cord of the brachial plexus which is passing above axillary artery and communicating with the medial root of median nerve was identified in one cadaver on left side. The percentage of such a communication between the lateral and medial cords of brachial plexus is 2% among 44 upper limbs. The present anomaly was found on the left side with the right side being perfectly normal.

There are several case reports in variation in branching pattern of lateral cord. A communicating branch from the lateral cord to the medial root of median nerve was found in 3 limbs in a study conducted by P Chaudary et al., in 2014^[2]. Based on the study, they concluded that the lateral cord of brachial plexus depicted more variations in the form of origin as compared with those of medial & posterior cords.

A similar study was done by Srijit Das and Shipra paul in 2005^[3] and found a similar anomaly while dissecting a 55-year-old male cadaver, but on the right side with the left side being perfectly normal. Four branches were detected from the lateral cord on the right side in the cadaver, namely the musculocutaneous nerve, lateral pectoral nerve, lateral root of median nerve and a communicating branch to the medial root of median nerve.

In a similar study by Saeed et al. in 2003^[4], the median nerve was seen to be formed by the fusion of 3 roots, two from the lateral and one from the medial cord of the brachial plexus. The variant lateral root of the median nerve followed an anomalous course, crossing anterior to the distal part of the axillary artery.

Another study done by N Goyal et al. in 2005^[5] found that in a particular cadaver, the median nerve was formed by the union of three roots. There was an additional lateral root on both sides. On the right side it was a contribution from the lateral cord and on the left it arose from the anterior division of the middle trunk. On the left side the lateral cord was formed distal than usual in relation to the second part of the axillary artery.

In another study by A Uzun and LL Seelig Jr in 2004^[6], the median nerve was formed by fusion of four branches, three of them coming from the lateral cord and one from the medial cord. These kinds of variations are vulnerable to damage in radical neck dissection and other surgical operations of the axilla and upper arm.

The communicating branch can be explained on the basis of its embryologic development and also ought to be distinguished from the other nerve variations in the upper extremity.

Embryological reasons of such anomalous branching pattern may be due to the role of random factors influencing the mechanism of formation of limb muscles and peripheral nerves^[4]. Past research study has also described any communication between two nerves as a result of neurobiotaxis occurring during fetal development^[4].

CONCLUSION:

The presence of such an additional branch from the lateral cord passing above axillary artery and contributing to the formation of median nerve. The median nerve thus formed was related medially to the axillary artery (instead of the normal position of being anterolateral). Hence this may be of immense clinical interest to neurologists diagnosing nerve lesions and surgeons who are exposed to the topographical anatomy of the neural structures during radical neck dissection. The additional branch of the lateral cord may compress upon the axillary artery to cause vascular insufficiency. Detailed knowledge of such variations is necessary for orthopedicians, traumatologist, neurosurgeons as well as anaesthetists to avoid complications.

Conflict Of Interest: None.

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