

## Case Report

# RARE UNILATERAL VARIATION OF MEDIAL CORD OF BRACHIAL PLEXUS

Shelly Divyadarshan \*<sup>1</sup>, Hinduja P S <sup>2</sup>, Alka Jayavanth Kumar <sup>3</sup>.

\*<sup>1</sup> Associate Professor, Department of Shareera Rachana, JSS Ayurveda Medical College, Mysore, Karnataka, India.

<sup>2</sup> Assistant Professor, Department of Shareera Rachana, JSS Ayurveda Medical College, Mysore, Karnataka, India.

<sup>3</sup> Professor, Department of Shareera Rachana, JSS Ayurveda Medical College, Mysore, Karnataka, India.

## ABSTRACT

Wide range of variations are observed concerned to formation of distribution of brachial plexus, but rarely variation in formation of cords are observed. One such observation surfaced during routine undergraduate dissection at JSS Ayurveda Medical College, Mysore. Brachial plexus are the result of branching from cones of amalgamated nerves, in some cases due to improper bifurcation results in absence of medial cord and making it appear as only posterior and lateral cord are present. The main branches like ulnar, radial, median nerve appear to be arising from only these two cords.

As axilla is common approach to various surgical procedures, this region becomes point of interest for anaesthesiologist, surgeon, plastic surgeon and orthopaedic surgeons. As smallest of variations during surgical procedures may mislead and cause major complications during and after surgery.

**KEY WORDS:** Brachial plexus, Medial Cord, Axilla

**Address for Correspondence:** Dr. Shelly Divyadarshan, Associate Professor, Department of Shareera Rachana, JSS Ayurveda Medical College, Mysore, Karnataka, India. Contact number- 9448035414; E-Mail: [ethron1724@gmail.com](mailto:ethron1724@gmail.com)

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## INTRODUCTION

The spinal nerves C5, C6, C7, of cervical region along with T1 i.e. thoracic one contribute in forming brachial plexus which in turn further gives origin to many minor and major nerves of shoulder, axilla and upper limb, like radial, ulnar, and median nerve and many minor nerve like, suprascapular, subscapular, axillary etc. These nerves are responsible for overall sensory and motor function of upper limb on both sides[1].

The knowledge of brachial plexus is of prime importance for both clinicians and academicians

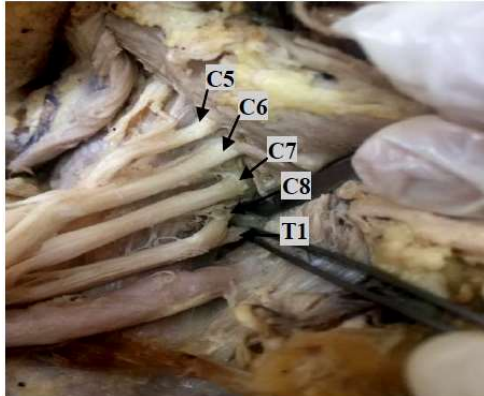
as any functional i.e. motor or sensory deficit at periphery will defiantly take us to the roots of the cause at the roots, trunk, divisions and cords in brachial plexus. The presence of these variations makes the nerves vulnerable during routine neural repair and other surgical interventions in the pectoral and axillaries region.

## CASE REPORT

During routine UG dissection of 60 year old cadaver in JSS Ayurveda Medical College- Mysore, Gross variation in cords of brachial plexuses, and change in their course was

noticed, same is being reported here. Ulnar nerve which has to arise from medial cord and continue further on the medial side, is seen coming from lateral chord and the medial chord is absent.

**Fig. 1:** Right axillary region showing roots of brachial plexus.

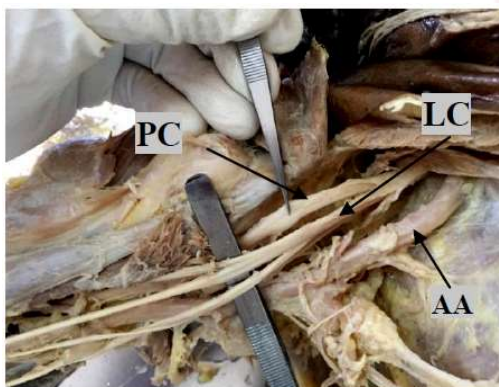


**Fig. 2:** LC- Lateral cord; MCN-Musculocutaneous nerve; MN- Median nerve; UN- Ulnar nerve.



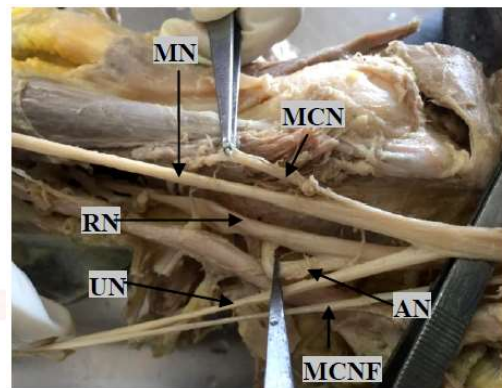
On further deeper dissection in axillary and cervical region along with the axillary artery it was observed that median cord had fused with the lateral cord hence change in normal course of lateral cord is also noticed as it travelled postero lateral to axillary artery instead of travelling superolateral to it. But no changed in the course of ulnar nerve at the level of arm or elbow was seen.

**Fig. 3:** ST- Superior Trunk; MT- Middle Trunk; IT- Inferior Trunk; AA- Axillary Artery



The other branches of the medial cord like medial cutaneous nerve of arm and forearm were present and took their normal course. No variations in the branches or course of the lateral chords were observed. This rare phenomenon increased curiosity during dissection which ultimately led to this reporting.

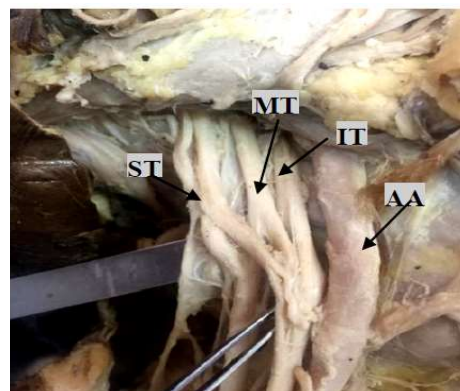
**Fig.4:** MN- Median nerve; RN- Radial Nerve; UN- Ulnar nerve; MCN-Musculocutaneous nerve; AN- Axillary Nerve; MCNF- Medial Cutaneous Nerve of Forearm



### DISCUSSION

Brachial plexus formed by C5, C6, C7, C8, T1, spinal nerve, normal is understood in the form of root, trunk, divisions, cords and Branches. Cords are formed by union of anterior and posterior divisions, embryological here the medial cord is fused with lateral chord, according to past research studies, any communication between two nerves is result of neurobiotaxis occurring during foetal development, significant variation in nerve pattern may also be result of altered signalling between mesenchymal cells and neuronal growth cones or circulars factors at time of fusion brachial plexus cords[2].

**Fig. 5:** ST- Superior Trunk; MT- Middle Trunk; IT- Inferior Trunk; AA- Axillary Artery



According some other study conducted by Abhaya et al in 2003 on variation in brachial plexus, the human brachial plexus appears as

single radicular cone in the appear limb bud, which divides longitudinally into ventral and dorsal segment. The ventral segments gives root to the median and the ulnar nerve with musculocutaneous nerve arising from the median nerve .the possibility of failure of the differentiation or abnormal bifurcation is a cause for some of the variations like fusing of chords or fibre staking an aberrant course as a communicating branch[3,4].

## CONCLUSION

Significant variations in the nerve patterns may be a result of altered signalling between mesenchymal cells and neuronal growth cones or circulatory factors at the time of fusion of brachial plexus cords[5]. Once formed, any developmental differences persist postnatally. The presence of Intercordal neural communications between medial and lateral cord of brachial plexus are uncommon[6]. Surgeons dealing with neoplasm or trauma repair need to be aware of these variations when they handle cases involving axillary artery and brachial plexus cords. The close course of the unusual intercordal communications, with the axillary artery, may compress the vessel and affect the blood supply of upper limb[7].

As this region is common approach for various problems by various specialities, Lack of knowledge of these neural variations of brachial plexus may also lead to intraoperative and post operative complications resulting in sensory, motor and trophic signs and symptoms. Additionally, adequate knowledge of neural and vascular variations may prove helpful in interpreting various clinical signs and symptoms with precision.

**Conflicts of Interests: None**

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