

Origin of Medial and Lateral Pectoral Nerves from the Supraclavicular Part of Brachial Plexus and its Clinical Importance – A Case Report

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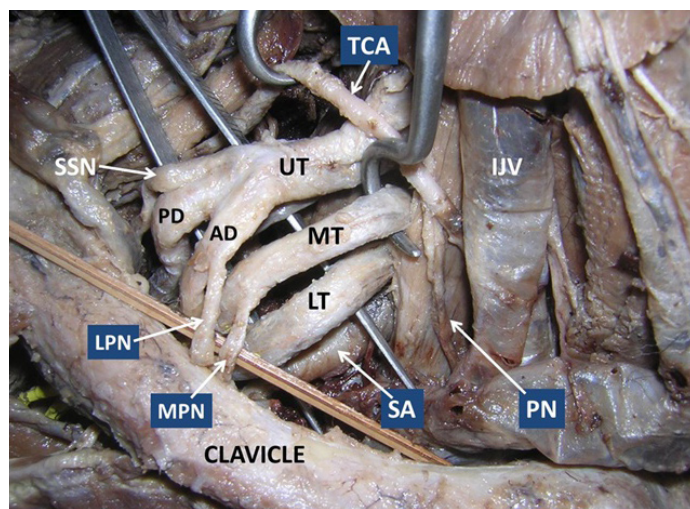
ABSTRACT

Knowledge of normal and anomalous formation of brachial plexus and its branches is of utmost importance to anatomists, clinicians, anesthesiologists and surgeons. Possibility of variations in the origin, course and distribution of branches of brachial plexus must be kept in mind during anesthetizing the brachial plexus, mastectomy and plastic surgery procedures. In the current case, the medial pectoral nerve arose directly from the middle trunk of the brachial plexus and the lateral pectoral nerve arose from the anterior division of the upper trunk of the brachial plexus. The lateral pectoral nerve supplied the pectoralis major and the medial pectoral nerve supplied pectoralis major and pectoralis minor muscles through two separate branches.

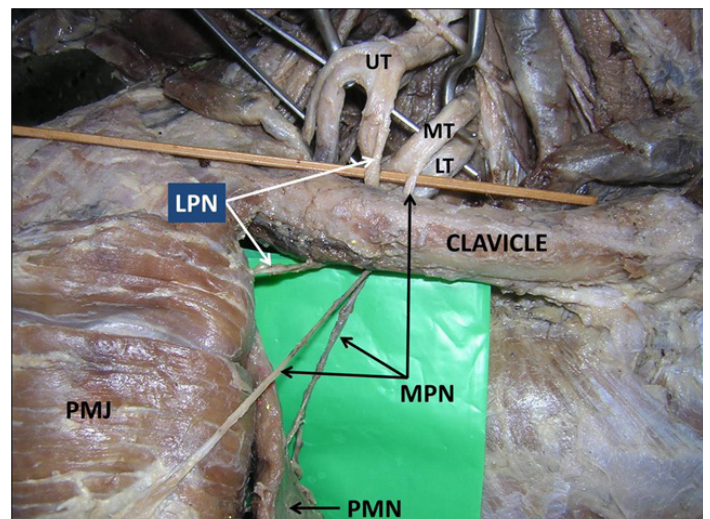
Keywords: Brachial plexus, Medial pectoral nerve, Lateral pectoral nerve, Lateral cord, Medial cord, Axilla

CASE REPORT

During routine dissection classes for medical undergraduates, we observed anomalous branches of supraclavicular part of the brachial plexus. The upper trunk was formed by the union of the C5 and C6 ventral rami; the middle trunk by continuation of C7 ventral ramus and the lower trunk by the union of C8 and T1 ventral rami. Each trunk divided into anterior and posterior divisions. The upper trunk gave its normal branches; suprascapular nerve and nerve to subclavius. The anterior division of the upper trunk gave origin to the lateral pectoral nerve, which ran down behind the middle of the clavicle to reach the pectoral region. In the pectoral region it entered the deeper surface of the pectoralis major muscle and supplied it [Table/Fig-1,2]. The middle trunk gave origin to the medial pectoral nerve which ran down behind the middle of the clavicle to reach the pectoral region. Further, it divided into two branches, one each for pectoralis major and pectoralis minor muscles [Table/Fig-1,2].



[Table/Fig-1]: Dissection of the lower part of the right side of the neck showing the trunks of brachial plexus (UT – upper trunk; MT – middle trunk; LT – lower trunk; SA – subclavian artery; PD – posterior division of the upper trunk; AD – anterior division of the upper trunk; SSN – suprascapular nerve; LPN – lateral pectoral nerve; MPN – medial pectoral nerve; PN – phrenic nerve; IJV – internal jugular vein; TCA – transverse cervical artery)



[Table/Fig-2]: Dissection of the lower part of the right side of the neck and pectoral region showing the anomalous origin of the medial and lateral pectoral nerves

(UT – upper trunk; MT – middle trunk; LT – lower trunk; LPN – lateral pectoral nerve; MPN – medial pectoral nerve; PMJ – pectoralis major; PMN – pectoralis minor)

DISCUSSION

Brachial plexus is the major nerve plexus that supplies the upper limb. It presents roots, trunks, divisions, cords and branches. Its upper trunk gives 2 branches called suprascapular nerve and nerve to subclavius. According to the text book descriptions, neither the middle and lower trunks nor the divisions of any of the three trunks give any branches in the posterior triangle [1]. Many previous studies have reported the variations in the formation and branching pattern of the trunks. Formation of the upper trunk by the union of C5, C6 and C7 roots has been reported by Nayak et al., [2]. In a study by Uysal et al., [3] the upper trunk was absent in 1% of cases and the lower trunk was absent in 9% of cases. Their study also reported the formation of the upper trunk by C4 and C5 roots and the lower trunk by T1 and T2 roots. Matejcek [4] has reported the fusion of upper and middle trunks bilaterally.

Neurovascular blockage of medial and lateral pectoral nerves is done in some clinical procedures such as mastectomy to reduce

post-operative pain and in shoulder dislocations caused by spasm of pectoralis major muscle, to reduce the muscle spasm [5-7]. Knowing the exact topography of these nerves and their possible variations can contribute tremendously to the success of these procedures. The knowledge of variations of pectoral nerves is also important for plastic surgeons and head and neck surgeons because pectoral nerve denervation may be helpful in decreasing the pain and spasm in the head and neck surgery and also the pectoralis major myocutaneous flap is one of the most frequently used flaps in head and neck reconstruction [8]. The lateral pectoral nerve may arise from the lateral cord or from the anterior divisions of the upper and middle trunks [9]. Gupta et al., [10] have reported the origin of two lateral pectoral nerves as two separate branches from the anterior divisions of upper and middle trunks. Its origin from the posterior division of the upper trunk has been reported by Singhal et al., [11]. In the same study, they noted the origin of medial pectoral nerve directly from the C6 root. Origin of three lateral pectoral nerves from lateral cord has been reported by Rai et al., [12]. Solomon et al., [13] have reported a case where the lateral pectoral nerve supplied the deltoid muscle bilaterally. Medial pectoral nerve variations are less frequent than the lateral pectoral nerve and reports on its variations are scanty. Union of intercostobrachial nerve with the medial pectoral nerve has been reported by Loukas et al., [14]. Mehta et al., [15] have reported the multiple branches of medial pectoral nerve piercing the pectoralis minor and supplying the pectoralis major muscle. Medial pectoral nerve was a direct branch of the anterior division of the middle trunk in a study by Fazan et al., [16]. The origin of medial pectoral nerve directly from the middle trunk of brachial plexus has not been reported hitherto.

CONCLUSION

The origin of the lateral and medial pectoral nerves from the suprascapular part of brachial plexus is very rare and is clinically important. Knowledge of the same may be very useful in repairing the fractures of the clavicle, raising a pectoralis major flap in plastic surgeries, dealing with the spasmodic dislocation of the shoulder and while performing mastectomy.

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