Upper Trunk Emerging From the Sixth and Seventh Cervical Roots - Case Report of an Incidental Finding of a Rare Anomaly of the Brachial Plexus

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Dear sir,

The brachial plexus is prone to exploration by the peripheral nerve surgeons for several pathologies of the upper extremity. Obstetric brachial plexus palsy, traumatic brachial plexus palsy and thoracic outlet syndrome are among the most frequent etiologies that yield to exploration. Surgeons should be aware of the possible aberrant neurological formations and variations at this anatomic site.

A 45 years old female patient was referred to our hand surgery clinic because of gradual weakness in her right hand and an ongoing dull pain at her right upper extremity. The patient had these complaints for 2 years and she stated that her clinical condition was getting worse every day. During her physical examination, we found that there was a thenar atrophy on her right hand. The electrodiagnostic studies showed chronic axonal degeneration of the medial cord coming out of the lateral trunk, resembling neurogenic thoracic outlet syndrome. There were not any clues about the variations in the brachial plexus anatomy during the preoperative magnetic resonance imaging and the electrodiagnostic studies. The patient was informed about her pathology and a surgical repair was proposed. During the operation, the right brachial plexus was decompressed by the anterior scalenectomy and all the nerves were dissected free from all peripheral soft tissue attachments. There were overt signs of lower trunk entrapment and the rest of the plexus was free of any compressive signs. At the end of the dissection, it was found that there was an anatomic variation at the right upper trunk (Figure 1). The fifth root was not involved in the formation of the upper trunk. The

suprascapular nerve emerged directly from the fifth cervical root. There was not any variation regarding the long thoracic nerve and the phrenic nerve. The subclavian artery was found to pass between the sixth and seventh cervical roots. The fifth cervical root was located between the anterior and middle scalene muscles. On the other hand, the sixth and the seventh cervical roots were located between the middle and posterior scalene muscles. The middle trunk was absent. The anatomy distal to this variation was in normal limits and no other variations were found distal to this point.

The variations of the brachial plexus may be either asymptomatic, or they may be the reason of several pathologies of the upper extremity. In an anatomical dissection study, Yıldız et al. stressed that although there were major variations in the

Fig. 1 The peroperative photograph of the right brachial plexus of the patient after anterior scalenectomy. The fifth cervical root is isolated and shown alone. The upper trunk is formed by the anterior branches of the sixth and the seventh cervical roots. Note that the suprascapular nerve comes directly out of the fifth cervical root, before its cooperation with the upper trunk. The edge of the subclavian artery is shown under the sixth and the seventh cervical roots.

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brachial plexi in some of the cadavers, the neural structures did not show any signs of deformation and the patients' past medical records did not include any complaints about the upper extremity [1]. It can be concluded that it is not obligatory even for the most proximal and complex variations to be symptomatic and clinical. On the other hand, such patients would be a cause of frustration and failure for the anesthesiologists who try to perform regional nerve blocks [2]. If an ultrasound guided interscalene block is attempted in a patient like our one, this confounded relation between the trunks and the scalene muscles would lead to an incomplete anesthesia, making any upper extremity operation very difficult [3].

In conclusion, every peripheral nerve surgeon should be aware of the variations of the brachial plexus besides the classical anatomy of this precious area.

Conflict of Interest None.

References

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