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Original Article

ANATOMICAL VARIATIONS IN THE ANSA CERVICALIS AND INNERVATION OF INFRAHYOID MUSCLES

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ABSTRACT

Background: – Infrahyoid muscles are supplied by the ansa cervicalis. The present study aimed to study the variations in the ansa cervicalis and the innervation of infrahyoid muscles. **Methods:** The study was conducted on 40 cadaveric hemi-necks. **Results:** Out of the 40 hemi-necks, high level of ansa cervicalis was observed in 2 hemi-necks, intermediate level of ansa was observed in 35 hemi-necks and low level of ansa was observed in 3 hemi-necks. Additionally, dual ansa with absence of inferior root was seen in 4 hemi-necks, dual ansa with absence of inferior root and inter-communication between C2 and C3 was seen in 2 hemi-necks, common trunk supplying all infrahyoid muscles including superior belly of omohyoid was seen in 2 hemi-necks, nerve to inferior belly of omohyoid from inferior root was seen on 1 side. In one specimen unilaterally, superior belly of omohyoid was innervated by a branch from hypoglossal nerve, two superior roots arising from hypoglossal nerve and the inferior root formed only by C3 was seen in the same specimen. **Discussion:** The knowledge of the possible variations of ansa in relation to the great vessels of the neck prevents the inadvertent injury to those vessels. Any injury can result to phonation disability in professional voice users. In case of infrahyoid muscles palsy, patients have no serious voice problems in their normal speech but the pitch of their voice and also prosody in their singing are lost dramatically. **Conclusion:** These variations are of clinical importance for the reconstructive surgeries which involve the infrahyoid muscles.

KEY WORDS: ANSA CERVICALIS; DUAL ANSA; INFRAHYOID MUSCLES; RECONSTRUCTIVE SURGERIES.

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BACKGROUND

Infrahyoid muscles namely, the sternohyoid, sternothyroid, thyrohyoid and omohyoid usually depress the hyoid bone during deglutition and during phonation [1]. These strap muscles are usually found in pairs. They are innervated by the branches arising from the ansa cervicalis. Although variations in their absence, presence of accessory bellies, presence of additional tendons, duplication of muscles are reported, studies regarding their innervation are limited.

Variations in the formation of ansa cervicalis has been well documented in the literature. Ansa cervicalis is a loop of nerves found in the neck. It is formed by the ventral rami of upper three cervical spinal nerves, thereby forming a part of the cervical plexus. It has two roots, namely the superior and the inferior roots. The superior root is formed by the ventral ramus of first cervical spinal nerve. These fibers join the hypoglossal nerve. A few of these fibers descend down to form the superior root (descendens hypoglossi). The remaining C1 fibers supply the thyrohyoid and geniohyoid muscles. A branch is given off from the superior root to supply the superior belly of omohyoid muscle. The inferior root is formed by the ventral rami of second and third cervical spinal nerves.