Unusual looping pattern of ansa cervicalis: case report

SS Ravindra, N Kumar*, SB Nayak, KGM Rao, P Jyothsna, G Anitha

Abstract

Introduction
The course and location of ansa cervicalis of the neck often vary. Because of its closeness with the major vessels and nerves of the neck, any variation in its pattern is of great clinical and surgical importance. This paper reports a case of an unusual looping pattern of ansa cervicalis.

Case report
We report here an unusual looping pattern of ansa cervicalis. The inferior root of ansa cervicalis, instead of joining the superior root as a single nerve, had both the C2 and C3 components of it joined to the superior root separately without uniting each other. Due to this, two loops of AC were formed superior and inferior.

Conclusion
Since the branches of ansa cervicalis are often chosen for nerve-muscle transplantation in the treatment of paralysed larynx, and some of the branches arise from the loop of the AC, an abnormal looping pattern may hinder such surgical procedures. Therefore, it is essential to the surgeons to be familiar with its unusual variations.

Introduction
Ansa cervicalis (AC) is a thin nerve loop of cervical plexus, formed in the side of the neck by the union of superior and inferior roots. Its superior root is the continuation of the descending branch of the hypoglossal nerve conveying the fibres of the first cervical nerve. It descends over the internal carotid artery. The inferior root of AC is derived from the union of ventral rami of C2 and C3 spinal nerves. Superior root courses downwards, winds around the internal jugular vein and joins with the inferior root in front of the common carotid artery. AC supplies all the infrahyoid muscles, except thyrohyoid.

The formation of the lower root (descendens cervicis) varies greatly when compared with that of the upper root owing to the various cervical root contributions possible in its formation. Though the variation in the formation and distribution of AC is not uncommon, unusual pattern of AC is seldom reported. This paper reports a case of an unusual looping pattern of AC in the neck.

Case report
During routine dissection for the undergraduate medical students, we came across a variation in AC. AC in the left side of the neck presented a double loop pattern. There were two separate components of inferior roots of AC, one from C2 and another from C3 ventral rami. The component from C2 joined with the superior root of AC and formed a smaller superior loop, while nerve components from the C3 root joined with AC at a lower level and formed a larger inferior loop (Figure 1 and Figure 2). Both the loops appeared to be Y-shaped and a combined apex of AC descended downwards to supply the infrahyoid muscles. AC, in this case, was present lateral to the internal jugular vein.

Discussion
Variation in ansa cervicalis has been encountered earlier. AC frequently shows variation in its origin and distribution. Jyothi et al. reported a variation in which the superior root of AC received nerve fibres from hypoglossal and vagus nerves. Babu reported the absence of the inferior root of AC. Studies have reported incidences of variant origin of both its superior and inferior roots. Contribution by the spinal accessory nerve plexus to the formation of AC was reported by Khaki et al. A case with bilateral absence of AC, which was replaced by a vagocervical plexus, has been reported by Abu et al. In this case, the infrahyoid muscles were supplied by the branches arising directly from the C2 and C3 ventral rami. The nerve to the thyrohyoid may arise as a branch of the ramus descendens hypoglossi. The phrenic nerve may also receive contribution from the descendens hypoglossi, as reported by Ramesh et al.

Department of Anatomy, Melaka Manipal Medical College (Manipal campus), Manipal University, Manipal, Karnataka, India

* Corresponding Author
E-mail: naveentonse@gmail.com

Licensee OA Publishing London 2013. Creative Commons Attribution License (CC-BY)

reported that in 75% of the cases, AC is present on the lateral side of the internal jugular vein, i.e., lateral type, in such cases; the inferior root nerve components formed a common trunk which then joined the superior root. In the medial type of AC, 74.8% of the nerve components of the inferior root joined the superior root independently. In the present case, the AC is of lateral type and had separate nerve components of C2 and C3 forming two separate inferior roots, which join with the superior root of AC forming double loops.

AC is useful in the treatment of hemiatrophy of the tongue after facial–hypoglossal anastomosis, and is also considered to be the nerve of choice in nerve–muscle transplantation in treating paralysed larynx. It is suggested that the branch of AC supplying sternothyroid muscle can safely be transplanted in the place of the recurrent laryngeal nerve as it lies very close to the larynx. Since this branch usually derives from the looped part of AC, existence of unusual looping patterns or duplex loop as encountered in the present case may mislead such surgical approaches. Further, iatrogenic injuries to the AC may happen during surgical procedures such as in thyroplasty, arytenoid adduction, Teflon injection, and nerve–muscle pedicle implantation. In order to avoid these injuries, it is important for surgeons to understand the course and morphological variations of AC.

Conclusion
Prior knowledge of variant looping pattern of AC is handy for surgeons who perform nerve reconstructive surgery. Surgeons should also be aware of AC relations with carotid artery and internal jugular vein to avoid injury to these vessels during surgical procedures of the neck.

References