

Thyrolingual trunk – significance in head and neck surgery

Abstract

Objective: This paper reports the case of anomalous vascular origin of thyrolingual trunk.

Case report: A 69 year old gentleman presented with recurrence of malignancy, following chemoradiation for Stage 4 squamous cell carcinoma of the hypopharynx for which he underwent Salvage total laryngectomy. During surgery, the thyrolingual trunk was identified on both sides and traced distally. The superior thyroid was ligated and divided after identifying it separately. Inadvertent injury to the thyrolingual trunk, due to lack of knowledge about its anomalous origins, would have caused vascular compromise of the tongue post surgery, due to its bilateral presentation. The exceptional significance of this case report lies in it highlighting the relevance of the unusual origin of the thyrolingual trunk.

Conclusion: It is imperative to always trace the thyrolingual trunk distally and do selective ligation of the thyroid vessel/ branch instead of the common trunk during surgeries of the head and neck.

Keywords: thyrolingual trunk, anomalous origin, head and neck surgery

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Introduction

The surgical aspect of practicing medicine is challenging and rewarding. No amount of book reading can ever encompass every situation or replace the insight and professional judgment of on table experience. In the era where medico legalities are at the forefront, doctors are compelled to justify their actions and hence, in depth knowledge and awareness on the anomalous origins and course of various nerves and vessels of the surgical field will go a long way in the safe practice of surgery.

The exceptional clinical significance of this case report lies in it highlighting the relevance of the unusual origin of the lingual artery which is of prime interest to head and neck surgeons. Generally, the common carotid artery does not give any branches except external and internal carotid arteries. Therefore proficient insight about anomalous variations of vascular anatomy is indispensable for the exact identification of the neck vessels during surgery and for understanding and interpretation of diagnostic and interventional vascular procedures.

Case report

A 69 year old gentleman presented to the Department of Head and neck surgical oncology at Regional Cancer Centre (RCC), at Trivandrum, India, with a diagnosis of recurrent carcinoma of the hypopharynx Post chemoradiation in June 2013. He was taken up for surgery in view of recurrence of the malignancy along with dysfunctional larynx and chondronecrosis. Hence underwent salvage total laryngectomy with partial pharyngectomy in April 2015. With hemithyroidectomy. During this surgery, the thyrolingual trunk was identified on both sides. It was traced distally and superior thyroid was selectively ligated and divided after identifying the lingual artery branch.

Discussion

Anomalous origins of thyrolingual trunk have been reported from

mostly cadaveric dissections and few angiographic studies.¹ Ours maybe perhaps, the first case report encountered on a live patient, on-table during head and neck surgery.

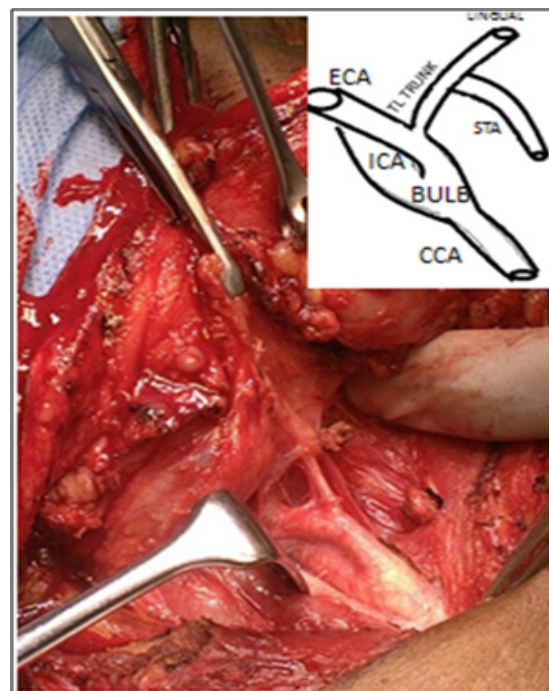


Figure 1 Intra operative picture showing carotid system dissected on right side with selective ligation of superior thyroid artery from thyrolingual trunk during skeletonisation of larynx prior to laryngectomy. Inset- Schematic representation of the anatomy in the inset with labelling.

Abbreviations: CCA, common carotid artery; ICA, internal carotid artery; ECA, external carotid artery; STA, superior thyroid artery; LINGUAL, lingual artery; TL, trunk thyrolingual trunk.

While operating for bleeding malignancies of anterior and lateralised oral cancers involving tongue, it is highly imperative to ligate the external carotid above origin of superior thyroid artery trunk, in order to curtail the blood flow to the tongue.

But the exact opposite is important when it comes to other head and neck surgeries like thyroidectomy and laryngectomy, wherein vascular supply to tongue should be preserved.

The importance of thyrolingual trunk identification in our case study was that, lack of knowledge of existence such an entity would have compromised the vascularity of the tongue following surgery due to its bilateral presentation if not properly traced distally and selective ligation of the thyroid vessel/ branch than the common trunk. Another scenario would be in an emergency ECA ligation for lateralized oral cavity like tongue bleed where the classical teaching is to identify the first branch ie Superior Thyroid artery and ligate the ECA above it, which in such a situation would have been a failure as the lingual artery would have been spared.

The common carotid artery divides into external carotid artery and internal carotid artery at the level of superior border of thyroid cartilage in the carotid triangle,² and as per classical teaching no branches arise from common carotid artery usually.

Variations in branching pattern of carotid system include superior thyroid, lingual and facial arteries arising from the common carotid artery and posterior auricular, maxillary and superficial temporal arteries originating from the common carotid artery by a common trunk. The occipital and ascending pharyngeal arteries can also arise from the internal carotid artery. In some cases, no specific external carotid artery has been observed.³ Occasionally, lingual artery may arise from superior thyroid artery and rarely from facial artery, naming the common trunks as thyrolingual or faciolingual trunks 2-10% respectively or thyrolinguofacial trunks 2.5%.^{2,4,5}

Thyrolingual trunk may arise from external carotid artery or rarely from common carotid artery within 1-3cm from the carotid bifurcation (<0.1%).^{3,4,6-8} In this study, the thyrolingual trunk originated 18mm and 19mm above the carotid bifurcation on right and left side respectively.

During selective angiography guided intra-arterial embolisation for the treatment of bleeding tongue cancers and harvesting of musculomucosal island flaps like infrahyoid or submental flap for orofacial reconstructions, the surgeon needs to be familiar with such deviant anatomy.^{4,5,9-11} This will prevent surprises during surgery as mentioned above and also avoid angiographic misinterpretations.¹²

Conclusion

Thyrolingual trunk, though a rarity is a significant anatomical variation that head and neck surgeons should be aware of, for

successful External carotid artery ligation in emergencies and avoid vascular compromise of tongue, during laryngectomies as in our case report.

Acknowledgments

None.

Conflicts of interest

The author declares there is no conflict of interest.

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