Case Report

Indian Journal of Anatomy
Volume 10 Number 1, January – March 2021
DOI: http://dx.doi.org/10.21088/ija.2320.0022.10121.4

Thyroideaima Artery a Rare Variation - Case Report

Sunita Bharati[1], N.Sujatha[2], Manisha Nakhate[3]

How to cite this article:
Sunita Bharati, N.Sujatha, Manisha Nakhate/Thyroideaima Artery a Rare Variation Case Report/Indian J Anat. 2021;10(1):23-25.

Author's Affiliation: [1]Associate Professor, [3]Professor and Head, Dr. D.Y. Patil Medical College, Navi Mumbai, Maharashtra 400706, India. [2]Assistant Professor, NRI Medical College, Vizag, Andhra Pradesh 531162, India.

Corresponding Author: Sunita Bharati, Associate Professor, Department of Anatomy, Dr. D.Y. Patil Medical College and Hospital, Nerul, Navi Mumbai 400706, Maharashtra, India

E-mail: drsunitagiri@gmail.com

Abstract

Introduction: The thyroideaima artery is an inconstant vessel with a highly variable rate of occurrence and origin. Its course in the superior mediastinum and lower neck is hazardous in median surgical approaches to these areas. Thyroideaima is a rare anomalous artery supplying the thyroid gland apart from the superior and inferior thyroid arteries.

Case Report: During routine dissection of embalmed male cadaver approximately 65 yearsold in the department of the Anatomy at Shri Sathya Sai Medical College & Research Institute, Ammapettai, Chennai, this variation was found in thorax region. Thyroideaima artery arising from arch of aorta.

Clinical importance: It is of surgical importance in thyroid, parathyroid, tracheal and mediastinal surgeries.

Conclusion: Thyroideaima artery, although a rare arterial variation, a thorough regional anatomic knowledge and meticulous dissection will not only help us in identifying such a vascular variation, also help us in preventing an accidental injury.

Key words: Thyroideaima; Thyroidectomy; Anomalous blood vessels.

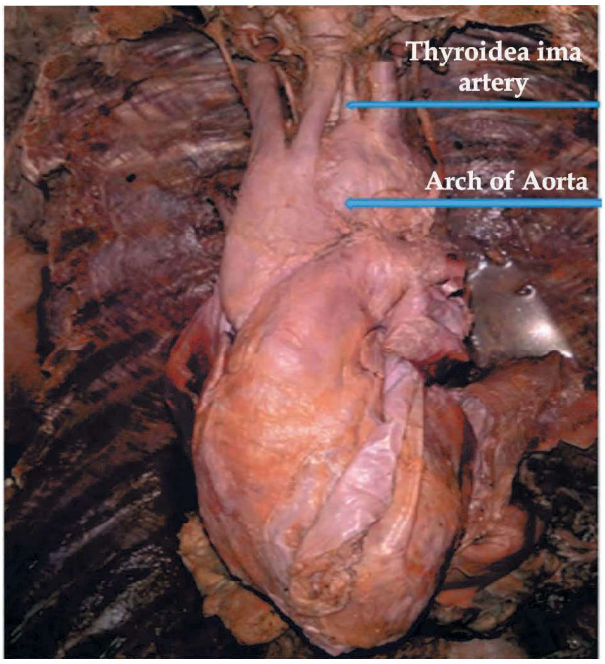

Fig. 1: Thyroideaima artery arising from arch of aorta.

Introduction

The Thyroideaima artery is an inconstant vessel with a highly variable rate of occurrence and origin. Its course in the superior mediastinum and lower neck is hazardous in median surgical approaches to these areas. Thyroideaima is a rare anomalous artery supplying the thyroid gland apart from the superior and inferior thyroid arteries. The thyroideaima artery (TIA) is an anatomical anomaly that commonly functions as an accessory blood supply for the isthmus and inferior aspect of the thyroid. They most commonly arise from the innominate, aortic arch, right common carotid or

© Red Flower Publication Pvt. Ltd.

subclavian artery. The presence of this artery is of surgical significance in thyroid, parathyroid and tracheal surgeries.[1,2]

Case Report

During a routine dissection of a male cadaver,we observed a rare variation in branches of arch of aorta in thorax region. We observed three branches of arch of aorta along with one extra branch. The extra branch is thyroidema artery which was going upwards towards the thyroid gland to supply isthmus and inferior aspect of thyroid.

Discussion

The Thyroideaima artery can originate from large arteries, such as the aortic arch, common carotid arteries, and subclavian arteries, brachiocepahalicartryor from smaller vessels, such as the pericardiophrenic artery and thyrocervical trunk[3]. It is considered as a compensatory artery when the other thyroidal vessels showed deficiencies[4]. With varied mediastinal origins, lengths, and termination points, the embryological origin of the TIA has been hypothesized to be related to the descent of the thyroid and variable arterial differentiation during the fetal period[5,6]. Bilateral thyroideaima arteries have been reported by Gruber . Gruber has also reported the origin of thyroideaima artery from between the brachiocephalic and left carotid, from between the right subclavian and right carotid, from between the left carotid and subclavian, from the internal thoracic artery, right subclavian artery, in one from the right inferior thyroid, and in one from the transverse scapular artery.[4] Depending on arterial course and length, the TIA can also supply the trachea, parathyroid glands, and thymus as a single branch or as multiple branched anastomoses.[7,8] The thyroid gland is typically supplied by the superior and inferior thyroid arteries which arise from the external carotid artery and thyrocervical trunk, respectively.

Identification and dissection of these vessels are critical in head and neck surgeries, such as hemi-/ total thyroidectomies and parathyroidectomies, as these arteries are important landmarks for structures such asthe recurrent laryngeal nerve.[9] Ligation of these arteries are standard procedures to decrease blood loss during surgery and to improve patient outcomes.[10] The presence of a TIA can complicate such surgeries as physicians may fail to recognize it due to its unpredictable location, morphology, and relative rarity, as well as variations in nomenclature.[11] The TIA is considered a small arterial vessel, with an average diameter of 3 to 5 millimetres. Its origin is often a high-pressure large artery in which severe haemorrhage and blood loss can occur if prompt haemostasis Due to its general relation to the trachea, the TIA can be damaged in emergency airway interventions such as cricoidectomies and tracheostomies.[12] In such situations, the emergent nature and potential complications in treatment delay may preclude radiological identification of the TIA.[13] In addition to frank haemorrhage, there may also be dissection of the artery in surgical settings, which can result in retraction into the superior mediastinum and creation of blood clots within the thoracic cavity that are difficult to access.[14,15]

Conclusion

The thyroideaima artery is a rare vascular variant that is present in 3-10% of the general population. The origin, course, and termination of the TIA is variable, which contributes to the difficulty in its identification. Emergency and surgical considerations of the TIA are critical in haemostasis and preventing haemorrhage into the mediastinal cavity. Limited research has been performed to investigate the relative prevalence and clinical implications of the TIA.

References

1. Sagaya Raj, AzeemMohiyuddin, Shuaib Merchant, Rijo M Jayaraju, Beauty Sasidharan. Thyroideaima Artery: A Report of Two Cases, International Journal of Head and Neck Surgery, May-August 2014;5(2):89-90
2. Justin Chin, YaQunZhou , Peter J. Wan , Christine M. Lomiguen. The prevalence of thyroid ima artery and its clinical signifInternational Journal of Otorhinolaryngology and Head and Neck Surgery Chin J et al. Int J Otorhinolaryngol Head Neck Surg. 2019 Jul;5(4):845-849icance,
3. Fujimoto Y, Suwa F, Kimura K. A case of the left superior thyroid artery arising from the left common carotid artery and the A. thyroideaima. Okajimas Folia AnatJpn. 1974;51(5):219-30.
4. Gruber W. Ueber die thyroideaima Archives of pathology Anatomic und physiologie u Klin medicine. 1872; 54: 445- 484.
5. Vasovic L, Arsic S, Vlajkovic S, Zdravković D. Morphological aspect of the thyroid ima artery in human fetuses. Ital J AnatEmbryol. 2004;109(4):189-97.
6. Kau T, Sinzig M, Gasser J, Lesnik G, Rabitsch E, Celedin S, et al. Aortic development and anomalies. SeminInterventRadiol. 2007;24(2):141-52.

7. Krudy AG, Doppman JL, Brennan MF. The significance of the thyroideaima artery in arteriographic localization of parathyroid adenomas. Radiology. 1980;136(1):51-45.
8. Ngo Nyeki AR, Peloni G, Karenovics W, Triponez F, Sadowski SM. Aberrant origin of the inferior thyroid artery from the common carotid artery: a rare anatomical variation. Gland Surg. 2016;5(6):644-46.
9. Ozguner G, Sulak O. Arterial supply to the thyroid gland and the relationship between the recurrent laryngeal nerve and the inferior thyroid artery in human fetal cadavers. Clin Anat. 2014;27(8):1185- 92.
10. Bliss RD, Gauger PG, Delbridge LW. Surgeon's approach to the thyroid gland: surgical anatomy and the importance of technique. World J Surg. 2000;24(8):891-7.
11. Mizrachi A, Swartzwelder CE, Shaha AR. Proposal for anatomical classification of the superior pole in thyroid surgery. J SurgOncol. 2015;112(1):15-7.
12. Kamparoudi P, Paliouras D, Gogakos AS, Rallis T, Schizas NC, Lazopoulos A, et al. Percutaneous tracheostomy-beware of the thyroidea-ima artery. Ann Transl Med. 2016;4(22):449.
13. Simon M, Metschke M, Braune SA, De Napoli L, Frustaci G, Matteucci V, et al. Death after percutaneous dilatational tracheostomy: a systematic review and analysis of risk factors. Crit Care. 2013;17(5):R258.
14. McKenzie GA, Rook W. Is it possible to predict the need for sternotomy in patientsundergoingthyroidectomy with retrosternal extension? Interact CardiovascThorac Surg. 2014;19(1):139-43.
15. Shlugman D, Satya-Krishna R, Loh L. Acute fatal haemorrhage during percutaneous dilatational tracheostomy. Br J Anaesth. 2003;90(4):517-20.