

# Thyroidea ima Artery a Rare Variation - Case Report

## Abstract

**Introduction:** The thyroidea ima 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. Thyroidea ima is a rare anomalous artery supplying the thyroid gland apart from the superior and inferior thyroid arteries.

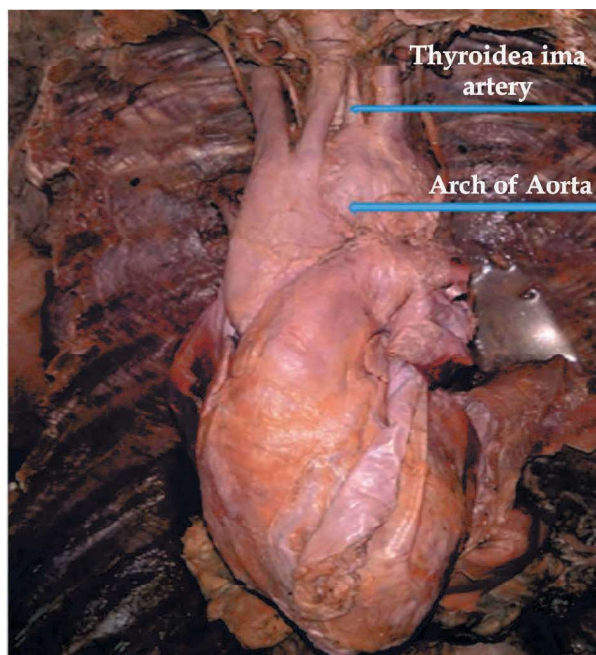


Fig. 1: Thyroidea ima artery arising from arch of aorta.

**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. Thyroidea ima artery arising from arch of aorta.

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

**Conclusion:** Thyroidea ima 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:** Thyroidea ima; Thyroidectomy; Anomalous blood vessels.

## Introduction

The Thyroidea ima 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. Thyroidea ima is a rare anomalous artery supplying the thyroid gland apart from the superior and inferior thyroid arteries. The thyroidea ima 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

subclavian artery. The presence of this artery is of surgical significance in thyroid, parathyroid and tracheal surgeries.<sup>1,2</sup>

### 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 Thyroideaia artery can originate from large arteries, such as the aortic arch, common carotid arteries, and subclavian arteries, brachiocephalic artery or from smaller vessels, such as the pericardiophrenic artery and thyrocervical trunk<sup>3</sup>. It is considered as a compensatory artery when the other thyroidal vessels showed deficiencies<sup>4</sup>. 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<sup>5,6</sup>. Bilateral thyroideaia arteries have been reported by Gruber. Gruber has also reported the origin of thyroideaia 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.<sup>4</sup> 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.<sup>7,8</sup> 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 as the recurrent laryngeal nerve.<sup>9</sup> Ligation of these arteries are standard procedures to decrease blood loss during surgery and to improve patient outcomes.<sup>10</sup> 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.<sup>11</sup> 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.<sup>12</sup> In such situations, the emergent nature and potential complications in treatment delay may preclude radiological identification of the TIA.<sup>13</sup> 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.<sup>14,15</sup>

### Conclusion

The thyroideaia 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.

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