

# An Innominate Branch from an Unusual Superior Thyroid Artery

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**Abstract:** The Superior thyroid artery is usually the 1<sup>st</sup> branch of external carotid artery. It originates from the ventral surface of the external carotid artery just below the level of greater cornu of hyoid bone. Knowledge of the variation of superior thyroid artery has crucial role in head and neck surgeries. Any variation carries immense importance for prevention of any alarming haemorrhage. To mention it is important to know the location and variation related to it in order to identify the external laryngeal nerve.

**Key Words:** superior thyroid artery, external laryngeal nerve, common carotid artery

## INTRODUCTION

The Superior thyroid artery is usually the 1<sup>st</sup> branch of external carotid artery. It originates from the ventral surface of the external carotid artery just below the level of greater cornu of hyoid bone. Then it descends downward, forward and medially. At this stage, it is accompanied by external laryngeal nerve arising from the vagus nerve. The artery lies over the inferior constrictor of pharynx. Here it lies deep to the superior belly of omohyoid, sternohyoid muscle. After that it reaches the upper pole of the pyramidal lobe of thyroid gland. It gives off the infrahyoid branch, superior laryngeal artery, sternomastoid artery, cricothyroid and terminates into the thyroid gland.

Knowledge of the variation of superior thyroid artery has crucial role in head and neck surgeries. This artery is used in microvascular free tissue grafting. It is often used for selective embolization of thyroid gland. It is used in catheterisation for diagnostic and therapeutic purposes. Any variation carries immense importance for prevention of any alarming haemorrhage. To mention it is important to know the location and variation related to it in order to identify the external laryngeal nerve. The external

laryngeal nerve takes origin from the vagus nerve which is present inside the carotid sheath, the nerve here supplies the cricothyroid muscle and the gland. Variation of the relation of external laryngeal nerve and superior thyroid artery is well documented in the textbooks as well in various studies.

## FINDINGS

The current variation was found during routine dissection under the medical curriculum. In order to dissect the triangles of neck following the steps in Cunningham's Practical Manual of Anatomy, we reflected the skin, superficial fascia, platysma muscle, external jugular vein, deep to it we reflected the sternocleidomastoid muscle which divides the neck region into two triangles: anterior and posterior triangles. Now in the anterior, carotid triangle, we reflected the carotid sheath anterior wall preserving the Ansa cervicalis, the common facial vein and other tributaries of internal jugular vein. The morphology of the superior thyroid artery was found to be normal in the right side, whereas in left side, the superior thyroid artery arose from the anteromedial surface of common carotid artery just below the greater cornu of hyoid bone. It has given off the sternomastoid branch to sternocleidomastoid muscle here, infrahyoid branch ascending medially, superior laryngeal branch, one cricothyroid branch to the muscle, one branch is given off to the superior border of the left lateral lobe, one more terminating branch to the apex of the left lobe of the gland and one more branch it gives off to the levator glandulae thyroideae from the left side which is innominate. The nerve is passing deep and below the artery and supplying the gland from the posterolateral surface. On the right side, the calibre of the artery is normal. As compared to the right side, the calibre of the artery is much thicker on the left side.

PICTURES:



FIGURE I: showing the different branches of left superior thyroid artery



FIGURE II: showing the innominate branch to levator glandulae thyroideae





FIGURE III: showing the external laryngeal nerve, Thyrohyoid muscle



FIGURE IV: showing the superior thyroid artery, branch to the superior border of thyroid gland.



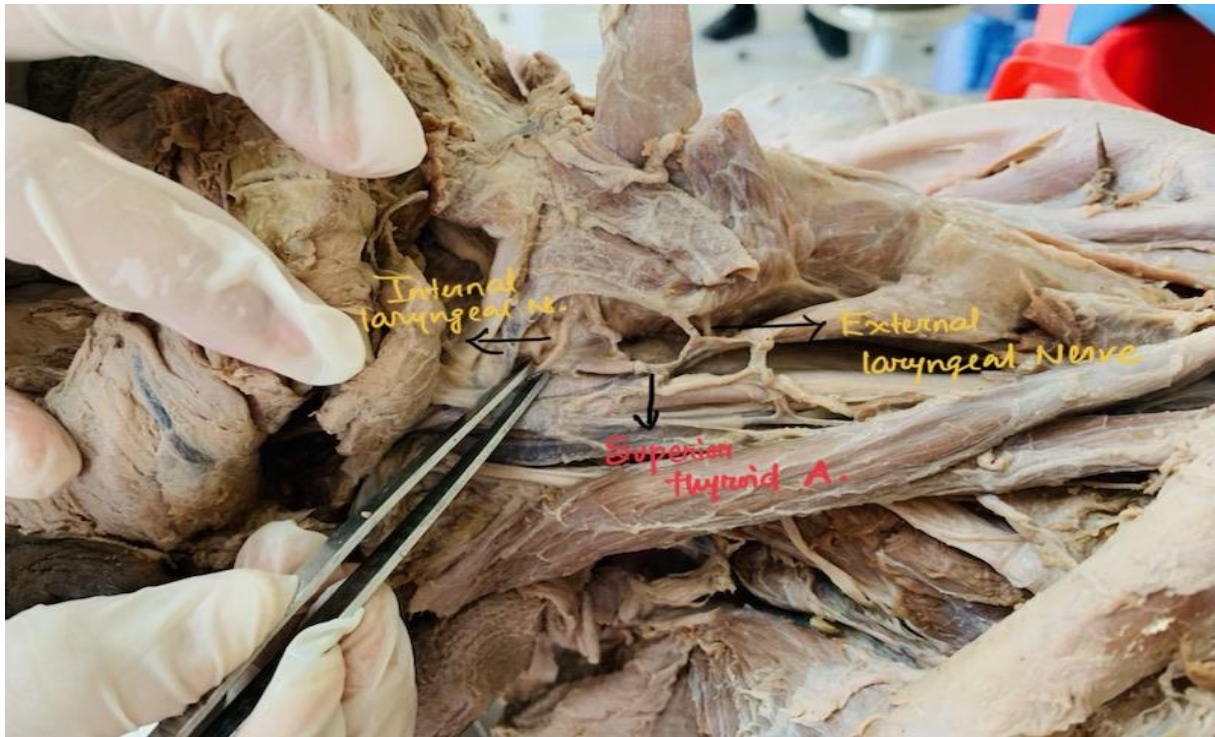


FIGURE IV: showing the right superior thyroid artery, external laryngeal nerve, internal laryngeal nerve (normal side)

#### DISCUSSION

Embryologically, carotid artery and its branches are formed following a process of angiogenesis. The different stages of angiogenesis include annexation and regression. Any disturbance in the normal process leads to different types of anomalies. Various studies are reported regarding the anomalous origin of the superior thyroid artery.

A meta-analysis by Toni R et al (2004) about the presence, origin, and numerical variations influenced by superior thyroid artery has been reported. They concluded in Caucasoids the superior thyroid artery took origin from the external carotid artery. In European Caucasoids, they found the asymmetry in the calibre of the artery.

Gupta P et al (2014) conducted an angiographic study in over 25 patients. They reported that the variation in the origin of the superior thyroid artery is variable in different ethnic groups. They also reported the high incidence in the Indian population. They have categorised the branching pattern as type-I, type-II and Type III. Type I is bifurcation type, type II is trifurcation type and type III non-bifurcation type. They found the type III branching pattern as commonest.

Motwani R et al (2015) reported a case on the right side the origin of superior thyroid artery from the ventral surface of external carotid artery above the bifurcation of common carotid artery and as a

common trunk pattern from where all the five branches took origin. They also reported the calibre of the artery was thinner as compared to normal anatomy.

Another Fakoya AO et al (2021) reported the origin of superior thyroid artery from the internal carotid artery.

In our study, we report the Innominate branch from the left superior thyroid artery to supply the levator glandulae thyroideae, the calibre of the artery is much thicker than the normal anatomy.

#### CONFLICTS

There is no conflicts of the study to be found.

#### ACKNOWLEDGEMENT

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