



**A STUDY ON VARIATION OF ORIGIN OF SUPERIOR THYROID ARTERY
ORIGINAL ARTICLE**

Anatomy

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ABSTRACT

The thyroid gland is considered to be a highly vascular organ as it receives the highest quantity of blood by volume (ie) five milliliter of blood per gram of tissue. A midline structure, it is closely related to critical structures of the neck. Among the endocrine glands, the thyroid gland has a unique exceptional feature, of temporarily storing its secretions before emptying into the blood stream¹. It is also the most common endocrine organ to undergo enlargement from a normal physiological goiter to a pathological goiter. Thyroid surgeries are most common neck surgeries; hence thorough knowledge of the blood supply of this gland to the surgeons is of immense importance to prevent any alarming haemorrhage² So a sound and precise knowledge of the arterial supply of thyroid, is a prerequisite for surgical and interventional procedures of neck. Though, there are innumerable recent advances in head and neck reconstruction, a number of challenges are encountered by the reconstructive surgeon. These challenges are mainly encountered because of the visibility of this region and with presence of several structures, which have specialized functions and anatomic distinctiveness, defects are difficult to be concealed there by, indirectly increasing the demands of the surgeons' s reconstructive skills with greater emphasis on cosmesis³. The surgical procedures of head and neck that involve superior thyroid artery include, radical neck dissection, cricothyroidotomy, thyroidectomy, reconstruction of an aneurysm, carotid endarterectomy treatments for cancer, diagnostic and therapeutic catheterization and plastic surgery. The aim of the present study, is to study the possible variation in origin of superior thyroid artery. This study was conducted for a period of 12 months in the department of Anatomy, Government Medical College, Omandurar Government Estate, Chennai-2, between October 2016 - October 2017 by dissection method in 10 adult cadavers(10- right & 10- left sides). Then results were noted, tabulated and interpreted.

KEYWORDS

Thyroid gland, common carotid artery, external carotid artery, common carotid bifurcation, superior thyroid artery.

INTRODUCTION:

Superior thyroid artery, arises as one of the anterior branches of external carotid artery, just below the level of greater cornu of the hyoid bone, it then runs upwards and forward for a short distance in the carotid triangle . It descends to the superior pole of thyroid along with external laryngeal branch of superior laryngeal nerve. And finally ends in the thyroid gland by giving one large branch, anterior division, which principally supplies the anterior surface and on the isthmus of the gland, it anastomosis with corresponding artery of the opposite side. It also gives another second branch the posterior division, which descends on the posterior surface of the gland which eventually anastomoses with branches of the inferior thyroid artery.⁴

OBJECTIVES:

The aim of the study was to asses any anatomical variation in the origin of superior thyroid arteries.

MATERIALS AND METHODS:

After complete approval from Institutional Ethical Committee for the research protocol. About ten adult cadavers (8 males and 2 females) aged between 50 - 75 years, were dissected in the department of Anatomy, Government Medical College , Omandurar Government Estate, Chennai-2. The adult cadavers were received from body donation after written informed consent. The cadavers were embalmed through femoral artery perfusion.

The methodology prescribed by Cunningham's Manual of dissection⁵ was carried out for the exposure of superior thyroid arteries.

OBSERVATIONS:

TABLE :1 SITE OF ORIGIN OF SUPERIOR THYROID ARTERY (STA) IN ADULT CADAVERS

Level of origin of STA	Right side (n=10)	Left side(n=10)	Total (n=20)
External Carotid Artery	8 (80%)	9 (90%)	17 (85%)
Carotid bulb	2(20%)	-	2 (10 %)
Common Carotid Artery	--	1(10%)	1 (5%)

In adults cadavers, the superior thyroid artery arose from the anterior surface of external carotid artery in 85% (17/20), from the carotid bulb in 10% (2/20) and in 5% (1/20) from the common carotid artery.

FIG 1- shows origin of STA from ECA

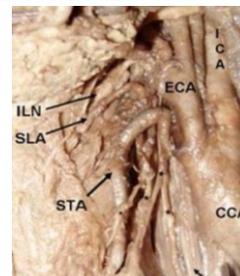


FIG2- shows origin of STA from Carotid Bulb



FIG-3 shows origin of STA from Common Carotid Artery.



DISCUSSION:

Table :2 shows prevalence of the variation in origin of STA in Adult Cadavers:

Quoting Authors	Site and Prevalence
	EXTERNAL CAROTID ARTERY
Natsis .,K et al ⁶	39 %
Joshi A ,et al ⁷	66.67%
Shivaleela C, et al ⁸	76.20%
Manjunath CS., et al ⁹	60%
Present Study	85%
	CAROTID BIFURCATION
Natsis .,K et al ⁶	12 %
Joshi A, et al ⁷	31.81%
Shivaleela C,et al ⁸	21.43%
Manjunath CS., et al ⁹	23.34%
Present Study	10%
	COMMON CAROTID ARTERY
Natsis .,K et al ⁶	49%
Joshi A, et al ⁷	2.51%
Shivaleela ., et al ⁸	2.38%
Manjunath CS., et al ⁹	16.66%
Present study	5%

Thus, superior thyroid artery, originated more frequently from the external carotid artery, however, less frequently, it can also emerge from bifurcation of the common carotid artery / common carotid artery itself.

CONCLUSION:

The superior thyroid artery is a donor for STAP perforator, a fasciocutaneous flap as it well suited for reconstruction of broad range of head and neck defects¹⁰. Recently, the microvascular basis of the superior thyroid artery perforator flap is the preferred technique for reconstruction of lateral face and temporal soft tissue defects as it provides a thin pliable hair bearing tissue with minimal donor morbidity¹¹. Thus superior thyroid artery, is of immense importance for clinicians in planning surgeries in this region so as to avoid iatrogenic injuries and to minimize postoperative complications in various procedures of head and neck surgeries such as radical neck dissection, thyroidectomy reconstruction of aneurysm and intervention radiology².

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