Superior Thyroid Artery and it's measurements in Human Foetuses

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INTRODUCTION

The thyroid gland is supplied by two paired thyroid arteries and some accessory arteries. The principal arterial trunks ramify on the surface of the gland with in the true capsule and anastomosis freely with one another. Anastomosis occurs between those of opposite sides, although there was a well marked branches of communication through the isthmus.

The present study carried out, which superior thyroid artery supplies more blood to the thyroid gland on the basis of length and diameter of the artery, particularly on the right side.

MATERIALS & METHODS

The thyroid glands from 25 full term dead fetuses were collected and they are perfused with normal saline at a temperature of about 40° c for a period of 30 minutes. The barium - carmine & gelatin mixture was heated on a water bath to temperature of about 60° c and injected into the common carotid artery with a 10 cubic centimeter syringe under enough pressure to fill capillaries. When primary injection was made, the injected material could be seen in superior thyroid artery of the opposite side in 80% of the cases, but all the vessels in 20% cases.

OBSERVATIONS

The superior thyroid artery arises from external carotid artery just above the bifurcation of common carotid artery. It passes downwards anteriorly to reach the upper pole of the thyroid gland. In part of this course the artery is parallel to the superior laryngeal nerve. The superior thyroid artery generally divides into 3 branches. The anterior branch is largest which descends downwards over anterior surface of the gland, sending branches in all direction, some of these ramified over the surface of the gland, some supplies parenchyma of the gland.

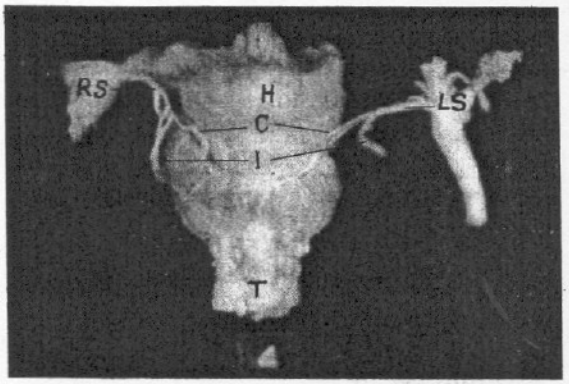
The superior thyroid artery anastomosis with the opposite side artery above the isthmus. The posterior branch

descends along the posterior border of the gland and anastomosed with inferior thyroid artery of the same side, sending branches to the parenchyma of the thyroid gland and to the pharynx & trachea. From the posterior branch a small para thyroid artery may pass to the superior para thyroid gland. The third branch called lateral branch descends along the lateral margin of thyroid gland.

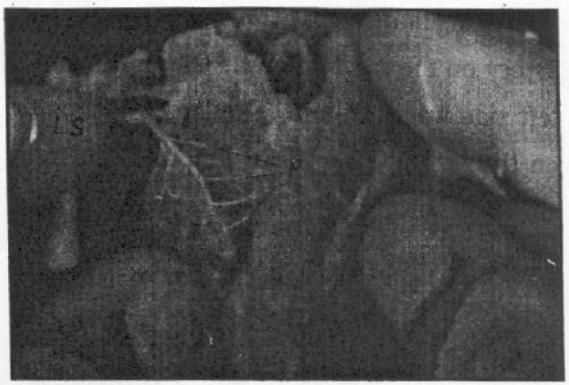
The superior thyroid artery varies in its course, termination and branches from one specimen to another specimen. The superior thyroid artery gives the following branches

1. The Sternocleidomastoid
2. The infrahyoid
3. The superior laryngeal
4. The pharyngeal
5. Branches to infrahyoid muscles
6. The glandular Branches to thyroid gland

The pharyngeal branches which arise from the posterior division of superior thyroid artery supply to the pharynx on the posterior aspect. (Figure.2). These branches are not described by any other authors. These branches are constant vary from one to.many. Zuckerman (1961) stated that the superior thyroid artery supplies lower end of pharynx but he has not described.



Anterior view of thyroid gland. injected with barium carmin and gelatin preparation into the superior thyroid arteries. Showing the right (RS) and left (LS) superior thyroid arteries anastomosis and segmental type of arterial pattern. Showing branches to infrahyoid muscle (I) and cricothyroid (C)



Posterior view of a dissected thyroid gland, injected with a barium - carmin and gelatin preparation into the superior thyroi artery. Showing the phyryngeal (P) branches from the posterior division of left superior thyroid (LS) artery supplying the pharynx.

MEASUREMENTS OF SUPERIOR THYROID ARTERY

The author measured the length of superior thyroid artery in human foetus from its origin (External carotid artery) to the bifurcation of the artery near the superior pole of the thyroid gland. The maximum

length on the right side was found 1.8 mm and minimum 0.6 milli meters and the average 1.54 mm (table 1), on the left side the maximum length measured 2.1 mm and minimum 1.0 mm and the average 1.6 mm (Table 1), on the average superior thyroid artery on the left side was longer than the one on the right side.

The author also measured the diameter of the superior thyroid artery near its origin from. the external carotid artery. The average diameter of the superior thyroid artery on the right side was 0.16 mm; on the left side was 0.15 mm. The largest diameter on the left side was 0.20 mm and the right side 0.21 mm; The smallest diameter on the left side was 0.10 mm, on the right side was 0.10 mm (Table 2) , on the average the diameter of the superior thyroid artery on the right side was more prominent than the one on the left side.

In some cases the left superior thyroid artery larger than the right superior thyroid artery Ieft lobe of thyroid gland is larger than the right lobe of thyroid gland

Tabel-I

Length of the Superior Thyroid artery (from origin to bifurcation) in Foetus.

Foetus No.	Right Side	Left Side
1	1.50 mm	1.60 mm
2	1.80 mm	1.50 mm
3	1.50 mm	2.10 mm
4	1.80 mm	1.50 mm
5	1.80 mm	2.00 mm
6	1.80 mm	1.80 mm
7	1.30 mm	1.20 mm
8	1.60 mm	1.00 mm
9	1.50 mm	1.50 mm
10	1.60 mm	1.80 mm
11	1.60 mm	1.30 mm
12	1.80 mm	1.60 mm
13	1.50 mm	1.70 mm
14	1.60 mm	2.00 mm
15	0.60 mm	1.40 mm
16	1.50 mm	1.20 mm
17	1.00 mm	1.00 mm
18	1.70 mm	1.50 mm
19	1.50 mm	1.50 mm
20	1.80 mm	1.00 mm
21	1.40 mm	1.60 mm
22	1.50 mm	1.50 mm
23	1.80 mm	1.70 mm
24	1.60 mm	1.50 mm
25	1.30 mm	1.80 mm
	Average 38.4/25 = 1.54 mm	Average 38.4/25 = 1.56 mm

Table II

Diameter of the Superior Thyroid Artery (near it's origin).

Foetus No.	Right Side	Left Side
1	0.15 mm	0.15 mm
2	0.16 mm	0.14 mm

3	0.16 mm	0.20 mm
4	0.10 mm	0.14 mm
5	0.20 mm	0.20 mm
6	0.16 mm	0.15 mm
7	0.15 mm	0.20 mm
8	0.16 mm	0.16 mm
9	0.15 mm	0.10 mm
10	0.16 mm	0.14 mm
11	0.20 mm	0.16 mm
12	0.20 mm	0.20 mm
13	0.21 mm	0.20 mm
14	0.15 mm	0.20 mm
15	0.20 mm	0.15 mm
16	0.16 mm	0.16 mm
17	0.16 mm	0.16 mm
18	0.16 mm	0.14 mm
19	0.16 mm	0.16 mm
20	0.10 mm	0.10 mm
21	0.15 mm	0.10 mm
22	0.18 mm	0.15 mm
23	0.15 mm	0.18 mm
24	0.16 mm	0.15 mm
25	0.15 mm	0.14 mm

DISCUSSION

It was found that the superior thyroid artery is more important artery of the thyroid gland. The caliber course and mode. of division of the superior thyroid artery found to be much more constant than from the inferior thyroid artery. The right and left superior thyroid arteries supply blood to the upper 2/3 . of the thyroid gland (fig 1). The lower 1/3 of the thyroid gland is supplied by right & left inferior thyroid arteries. Johnson. N. (1953) was also of the opinion that the superior thyroid artery was the main artery of the thyroid gland.

By seeing the measurements of right and left superior thyroid arteries (table 1 & 2) the author concluded that the right superior thyroid artery was more prominent than the left superior thyroid artery. This indicates that blood flow through the right superior thyroid artery was greater than the left superior thyroid artery, which indirectly helps the more growth of the right lobe of thyroid gland and more secretion thyroxine hormone from the right lobe of thyroid gland, so the right lobe is more prominent tllan left lobe thyroid gland. There are many organs in the body which shows predominant on the right side, now the right lobe of thyroid gland could also be added up for the right sided predominant.

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