

Morphological and Morphometric Variations of Thyroid Gland

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| Received: 16.05.2019 | Accepted: 23.05.2019 | Published: 30.05.2019

DOI: [10.36348/sijap.2019.v02i05.005](https://doi.org/10.36348/sijap.2019.v02i05.005)

Abstract

Thyroid gland is a highly vascular endocrine gland consists of two lobes connected by an isthmus present in the anterior midline of the neck against vertebrae C5, C6, C7 and T1. Many study have indicated the morphometric differences of this important gland. This study puts in an effort to study the morphological and morphometric variations of thyroid gland.

Keywords: Morphology, Morphometry, Thyroid Gland.

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INTRODUCTION

Thyroid Gland is one of the most important endocrine gland of the body. Its secretions are considered to be the most important for metabolic activities of the body. Thyroid gland is a highly vascular endocrine gland consists of two lobes connected by an isthmus present in the anterior midline of the neck against vertebrae C5, C6, C7 and T1. A study done by Joshi *et al.*, [1], reported that pyramidal lobe (PL) was present in 34 (37.77%) cases of total 90 male cadavers, while the levator glandulae thyroidea (LGT) was present in 27 (30%) cases and the isthmus was absent in 15 (16.66%) cases. Dixit *et al.*, [2] dissected 41 cadavers to study the morphometric features of the thyroid lobes and isthmus and also to note the variations in neuro vascular relations.

The average length of the right lobe of thyroid gland was 5.29 cm and that of the left lobe was 4.95 cm. The average height of the isthmus was 2.25 cm. The pyramidal lobe and levator thyroidea glandulae were both present in 3 cases (7.3%). Ranade *et al.*, [4] dissected 105 cadavers (88 male & 17 female) to observe morphological features like pyramidal lobe, levator glandulae thyroidea, absence of isthmus and presence of accessory thyroid tissue. The pyramidal lobe was present in 61 (58 %) male cadavers, and 52 (49.5%) cadavers showed the presence of the levator glandulae thyroidea. 33 % of the specimens studied showed agenesis of the isthmus. Kulkarni *et al.*, [3] observed morphological features in 20 cadavers and

found levator glandulae thyroidea was present in 25% of specimens and 10% of specimens had agenesis of isthmus of thyroid gland. Kumar *et al.*, [8] dissected 60 cadavers to observe the morphological, morphometric and variations of superior thyroid artery. Isthmus was absent in 5 (8.3%) of cases, pyramidal lobe was present in 8 (13.3%) of cases and levator glandulae thyroidea was in 3 (5%) of cases. The morphometry of the gland can be different in different races and population [5-7]. This study puts in an effort to study the morphological and morphometric variations of thyroid gland.

Aims and Objectives

To study the morphological and morphometric variations of thyroid gland.

MATERIALS AND METHODS

This descriptive study was done on 120 embalmed adult cadavers collected during a period of 3 years, at the department of anatomy, Yenepoya medical college Mangalore. Observed morphological parameters are presence of pyramidal lobe, levator glandulae thyroidea and absence of isthmus. Morphometric parameters are length, width and thickness of lateral lobes. Measurements were taken using a digital vernier calipers. Photographs were taken and the data was analysed by taking mean and standard deviation the data was collected after getting approval from institutional ethics committee.

RESULTS

Out of 80 cadavers Pyramidal Lobe (PL) was found in 22.5% Levator Glandulae Thyroidea (LGT) was found in 20% specimens.

The mean length of the right lobe was 46.6 ± 5.6 mm and that of the left lobe was 46.1 ± 5.5 . The mean thickness of the right lobe was 9.23 ± 1.7 mm and the left lobe was 9.01 ± 1.6 respectively. The mean width

of the right lobe was 16.5 ± 3.8 mm and that of the left was 16.7 ± 4.3 .

The isthmus was absent in 6.7% cases its mean length width were 15.9 ± 5.9 and 17.6 ± 6.4 respectively Paired t-test was used to compare the measurements of right and left lobes. It is observed that there is significant difference in the measurements of length and thickness between right and left lateral lobes with $p < 0.05$.

Table-1: Morphometric analysis of lobes of thyroid gland in present study

Sl. No	Variables	Side	Mean \pm SD
1.	Length of lateral lobes	Right Left	46.67 ± 5.4 46.14 ± 5.6
2.	Width of lateral lobes	Right Left	14.61 ± 3.04 14.44 ± 1.3
3.	Thickness of lateral lobes	Right Left	8.44 ± 1.1 8.23 ± 1.1
4.	Isthmus length Width	-----	15.09 ± 3.5 16.83 ± 4.02

Table-2: Incidence of morphological features of thyroid gland compared with other studies

Sl. No	Author and year	Pyramidal lobe (%)	Levator glandulae thyroidea (%)	Absence of isthmus (%)	Sample size (N)
1.	Ranade et al., 2008 [4]	58	49.5	33	105
2.	Dixit et al., 2009 [2]	7.3	7.3	14.6	41
3.	Joshi SD et al., 2010 [1]	37.8	30	16.7	90
4.	V. kulkarni 2012 [2]	- - -	30	10	20
5.	Present study	21.6	20	6.7	120

DISCUSSION

The morphological features of thyroid gland found in present study when compared with other studies.

CONCLUSION

We are in agreement with the other studies that we have compared.

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