

CASE REPORT

## Atypical Levator Glandulae Thyroideae: A Case Report

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### Abstract

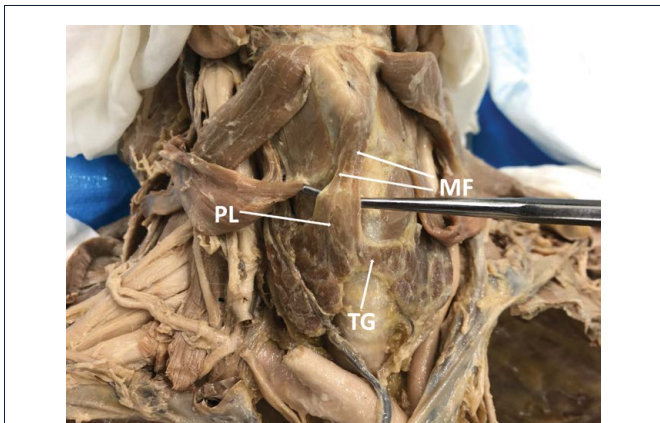
During careful dissection of a 70-year-old African American male, an accessory fibromuscular band was noted in the anterior neck. After examination and literature review, this accessory fibromuscular band was noted to be the levator glandulae thyroideae. The levator glandulae thyroideae is most commonly noted to originate from the hyoid bone and insert onto the pyramidal lobe of the thyroid gland, most often on the left side. This variant levator glandulae thyroideae originated on the left side of the hyoid bone and crossed the midline to insert onto the right side of the thyroid gland, surrounding the pyramidal lobe. The levator glandulae thyroideae is an embryological remnant of contested origin and functions to elevate the thyroid gland. This case report serves to further the body of knowledge surrounding the levator glandulae thyroideae and to inform surgeons and clinicians of a possible anatomic variant they should be acutely aware of.

**Keywords:** Levator Glandulae Thyroideae, Thyroid Elevation, Anatomic Variation, Thyroid, Hyoid

### Case Information

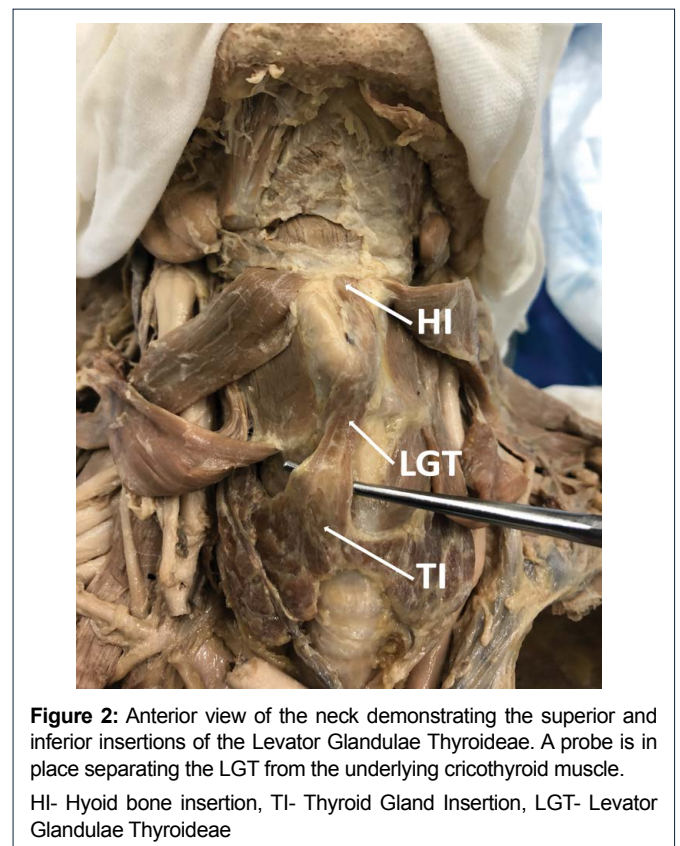
During routine dissection of a 70-year-old African American male cadaver a para-midline levator glandulae thyroideae (LGT) muscular band was discovered, which contained glandular tissue of the pyramidal lobe of the thyroid. Careful dissection superiorly revealed muscle fibers originating from the left side of the hyoid bone. Inferiorly the fibromuscular band was noted to pass superficially over the superior laryngeal prominence of the thyroid cartilage to insert into the right side of the thyroid gland, surrounding the pyramidal lobe. Upon deeper dissection, it was noted that the LGT created a permanent depression within the left aspect of the superior laryngeal prominence. The dimensions of the LGT were noted to be 49mm in length and an average of 8mm in width. This cadaver had an additional anatomical variation in his neck, where the left external jugular vein coursed superficial to the clavicle. The cause of death is suspected to be

unrelated and was noted to be metastatic esophageal carcinoma (Figures 1, 2, 3 & 4).



**Figure 1:** Anterior view of neck demonstrating the fibromusculoglandular nature of the Levator Glandulae Thyroideae.

PL- Pyramidal Lobe, MF- Muscular Fibers of LGT, TG- Thyroid Gland



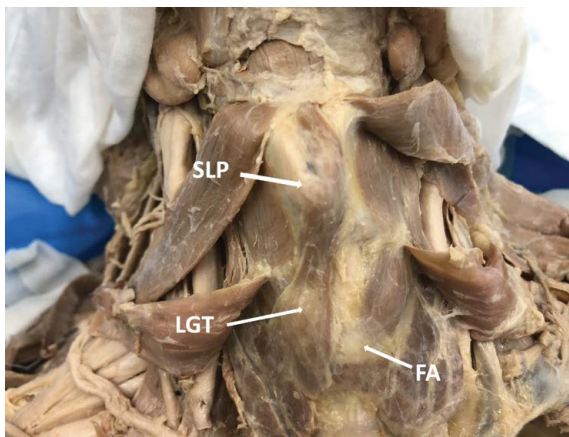
**Figure 2:** Anterior view of the neck demonstrating the superior and inferior insertions of the Levator Glandulae Thyroideae. A probe is in place separating the LGT from the underlying cricothyroid muscle.

HI- Hyoid bone insertion, TI- Thyroid Gland Insertion, LGT- Levator Glandulae Thyroideae

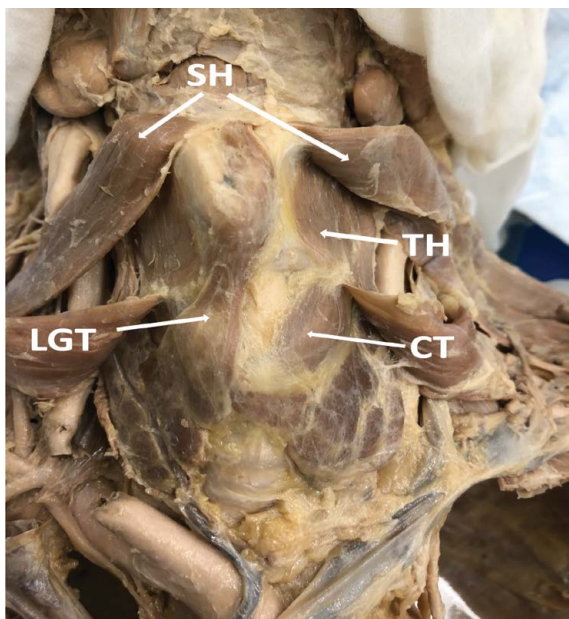
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**Figure 3:** Close up anterior view demonstrating the course of the LGT in situ. The superior laryngeal prominence is clearly shown demonstrating the notching discussed. The fibrous adhesions are also clearly visible.  
 SLP-Superior laryngeal prominence, LGT-Levator Glandulae Thyroideae, FA- Fibrous Adhesions



**Figure 4:** Anterior view of the neck clearly demonstrating the other muscles present in the neck.  
 SH- Sternohyoid muscle, TH- Thyrohyoid muscle, CT- Cricothyroid muscle, LGT- Levator Glandulae Thyroideae muscle

**Discussion**

Variations in head and neck anatomy are common and knowledge of these variants is critical for surgeons to achieve quality patient outcomes. Clinicians and surgeons are aware of the pyramidal lobe, however, given the low incidence of levator glandule thyroideae, we postulate there is a relative deficiency of knowledge surrounding this accessory band. It is most common to find this fibromuscular band inserting onto the left side of the thyroid gland at the pyramidal lobe. In this case, the band crossed the midline and inserted onto the right isthmus of the thyroid gland. Two muscular bands

were noted to lie medial and lateral to the glandular tissue of the pyramidal lobe and were covered with fascia connecting them as a unit. The muscular bands function in elevating both the pyramidal lobe glandular tissue and the thyroid gland as a single unit. In his landmark 1964 paper, Mori classified the levator glandulae thyroideae into five categories including: 1) Hyopyramidalis, 2) Thyreopyramidalis, 3) Thyreoglandularis, 4) Hyoglandularis, and 5) Tracheoglandularis [1]. Using this classification system, the presented case would fit into category one, Hyopyramidalis, given its connections to the hyoid bone and pyramidal lobe.

It is commonly accepted that the levator glandule thyroideae is an embryological remnant due to a disturbance in organogenesis [2]. By approximately seven weeks in utero, the thyroid gland has assumed its native shape and position and the thyroglossal duct has typically been involuted [3]. It is commonly presumed that the levator glandulae thyroideae is a failure of complete involution of the thyroglossal duct and the muscular component is a detached part of the infrahyoid muscles [4]. The LGT reported at present, demonstrated an indentation within the left aspect of the superior laryngeal prominence of the thyroid cartilage, which we postulate may be due to the failure to involute in utero.

The levator glandulae thyroideae has been noted to receive innervation from a small branch of the external laryngeal nerve. However, more recent case studies have also shown innervation from a branch off of the ansa cervicalis [5]. The innervation for this case was unable to be elucidated as we suspect the nerve providing innervation was cut incidentally during dissection of the neck musculature. Chaudhary et al. [5] reported a case similar to the present in which the LGT was made up of fibrous, muscular and glandular portions [5]. This is significant, as there have been many case reports on the LGT that have described it as having only glandular or only muscular portions [6, 7]. Sreekanth et. al [8] reported in their case report that the LGT receives vascular supply through an anterior branch of the superior laryngeal artery [8]. However, a case report by Loukas, Merbs et al. [9] describes the muscular branches receiving vascular supply through the superior thyroid artery [9].

It is important for surgeons to be acutely aware of the common anatomical variations of the thyroid gland to avoid potential iatrogenic injuries. Additionally, it is important for clinicians to understand the common variations so as to avoid any potential delays in diagnosis or treatment. It has been noted that the LGT has often been misdiagnosed as numerous other pathologic diagnoses based off imaging. Clinicians using ultrasonography and CT imaging should be aware of the LGT to prevent a misdiagnosis of tumor or thyroglossal duct infection.

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