A variant topography of levator glandulae thyroideae: A case report

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Due to the numerous surgical procedures involving the thyroid gland and the importance of avoiding complications - bleeding, neural damage - during such procedures, the knowledge of anatomical variations involving this structure is fundamental. The aim of the present study was to describe the anatomical structure of case of a variation in levator glandulae thyroideae encountered at routine anatomical dissection. This study is an approach that aims, with the knowledge acquired, to implement the knowledge about the morphology of levator glandulae thyroideae, aiming at medical care, both in the surgical and radiological area.

Key Words: *Anatomic variation; Thyroid gland; Anatomy; Regional; Neck; Surgery*

INTRODUCTION

The knowledge of anatomical variations of the neck is essential for surgeons in performing a more efficient and safe preoperative evaluation, besides avoiding possible risks of iatrogenic lesions in surgical procedures in the anterior neck [1,2]. The thyroid gland is closely related to vital structures of the neck, such as the cervical esophagus, recurrent laryngeal nerve, upper laryngeal nerve, parathyroid glands and large vessels [3]. It is consisted of two lateral lobes that are united by an isthmus. And in some cases, an additional lobe is present, the pyramidal lobe. It forms a small pyramid that is attached by its base to the upper border of the isthmus, usually to the left of the isthmus midline [4]. The apex is attached to the body of the hyoid bone by a fibrous band that develop from remains of the thyroglossal duct which sometimes acquires muscle fibers forming the levator glandulae thyroideae [5]. The presence of this muscle may lead to changes not only in the vascularization as well as in its innervation, which may lead to possible bleeding and neural damage during invasive thyroid procedures [6-8]. The present study aimed to report a case of levator glandulae thyroideae in human cadaver.

CASE REPORT

During the routine of dissection of the neck in the anatomy laboratory from Federal University of Pernambuco (UFPE), the pyramidal lobe of the thyroid gland as well as the levator glandulae thyroideae was located deep to the sterno-thyroid muscle and medially to the thyrohyoid muscle (Figure 1). The levator glandulae thyroideae is originated from the body of the hyoid bone and had two muscle bundles, a short one of 26.37 mm long and inserted into the cricoid cartilage arch and a long bundle of 53.37 mm in length with a descending path and slightly oblique set at the apex of the pyramidal lobe of the thyroid gland at 11.22 mm to the right of the median line (Figure 2).

DISCUSSION

The knowledge of the anatomical variations in the muscles around the thyroid gland it is of great importance for head and neck surgeons in the planning of safe and effective surgeries, as well as in the differential diagnosis of several anomalies, thus avoiding iatrogenic lesions during surgical procedures in the cervical region and thyroid. These anomalies during the development of the thyroid gland distort its morphology being able to cause functional disorders and various diseases of the thyroid [9,10].

Levator glandulae thyroideae is considered a rare accessory accessory muscle, and may be glandular or fibromuscular, and is closely related to the pyramidal lobe of the thyroid gland and the remaining thyroglossal duct, and can be classified into 5 types: hyopyramidalis, thyreopyramidalis, thyreoglandularis, hyoglandularis and tracheoglandularis [8,11-13]. Normally levator glandulae thyroideae extends from the left most pyramidal lobe of the median line of the isthmus or the upper border of the isthmus of the thyroid gland to the body of the hyoid bone [14]. In this report, the levator glandulae thyroideae was of the hyo-pyramidal type and extended from the hyoid bone to the apex of the pyramidal lobe, to the right of the isthmus midline, which were also verified in other studies [15,16]. However, for several authors the pyramidal lobe usually lies to the left of the midline [4,7,12,17-19]. The levator glandulae

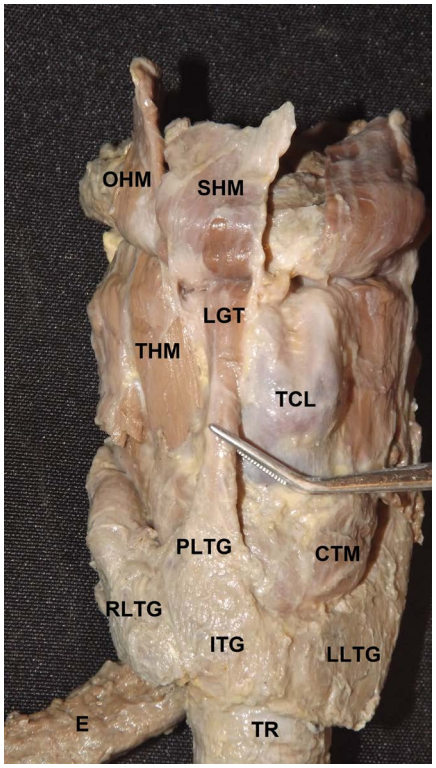

Figure 1) *Levator glandulae thyroideae-Previous view.*
RLTG: Right Lobe of the Thyroid Gland; LLTG: Left Lobe of the Thyroid Gland; ITG: Isthmus of the Thyroid Gland; PLTG: Pyramidal Lobe of the Thyroid Gland; LGT: Levator Glandulae Thyroideae; TCL: Thyroid Cartilage of the Larynx; TR: Tracheal Ring; CTM: Cricothyroid Muscle; SHM: Sternohyoid Muscle; OHM: Omohyoid Muscle; THM: Thyrohyoid Muscle; E: Esophagus

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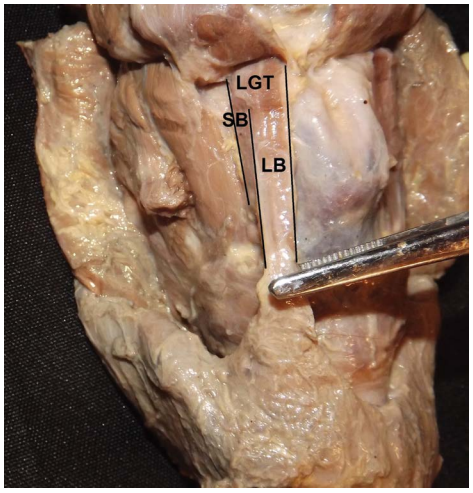

Figure 2) *Muscle bundles of levator glandulae thyroideae-Previous view. LGT: Levator Glandulae Thyroideae; LB: Long Bundle; SB: Short Bundle.*

thyroideae had two muscle bundles; one being short that was fixed in the arch of the cricoid cartilage and the other at the apex of the pyramidal lobe, but not yet described in the literature. In 2008, a study reported a very rare variation of levator glandulae thyroideae with three bundles in an 83-year-old Caucasian woman [17]. Some studies also reported the appearance of two levator glandulae thyroideae with fixation at the apexes of both pyramidal lobes with isthmus agenesis [6,20].

CONCLUSION

The knowledge of the anatomy of the thyroid and associated anatomical variations is important to avoid iatrogenic injuries while performing surgeries or in the examination of the neck region, due the increasing in the number of endoscopic surgeries, as well as clinically in the development of the diagnosis through images. Although, the presence of pyramidal lobes and levator glandulae thyroideae are not uncommon findings, a strong understanding of thyroid morphology may reduce unwarranted results in thyroid surgeries.

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