

Agensis of The Thyroid Isthmus

Tiroid Isthmus Agenezisi

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The thyroid gland is an endocrine gland with high vascularise. It is formed of right and left two side lobes and of isthmus lobe joining the two lobes and this resemble the letter H. Morphological variation and developmental abnormalities of the thyroid gland has been reported in the literature in a wide range. In our report, total thyroidectomy was performed to a 30 year old woman. During the operation it was seen that the right and left thyroid lobe was independent from each other and isthmus lobe was absent. We will present a case of thyroid isthmus agensis and discuss the clinical importance and the incidence of this case.

Key Words: *Thyroid, Isthmus, Agensis*

Tiroid, vasküleritesi yüksek bir endokrin bezdir. Sağ ve solda birer adet lobdan oluşur ve isthmus lobu her iki lobu birbirine bağlar ve H şeklini andırır. Tiroid bezinin morfolojik varyasyonları ve gelişimsel anormallikleri literatürde geniş bir yelpazede tanımlanmıştır. Sunumumuzda, 30 yaşında kadın hastaya total tiroidektomi yapıldı. Operasyon süresince tiroidin sağ ve sol lobunun birbirinden bağımsız olduğu ve isthmusun olmadığı görüldü. Tiroid isthmus agenezisi olan bir vakayı sunacağız ve klinik önemi ve sıklığını tartışacağız.

Anahtar Sözcükler: *Tiroid, Isthmus, Agenezi*

The thyroid gland is brownish, red and a highly vascular endocrine gland at the anterior region of the neck and placed between the fifth cervical and first thoracic vertebrae. The gland consists of two lobes connected by a narrow isthmus and protected by infrathyroid muscles. During embryological development of the thyroid gland some anomalies may present. Thyroglossal duct cyst and pyramidal lobe abnormalities are common. However hemi-agenesis of thyroid and thyroid isthmus agensis have been seen rare (1). The exact prevalence of thyroid agensis is unknown, it is reported to be about 0.02% in studies. The thyroid gland is first endocrine gland seen in embryological development and takes its final shape and position at the end of the 7th week in front of the trachea (2). It is thought that the defect responsible for the thyroid hemiagenesis is failure of descending of the gland or from defects in lobulation. The absence of a compensatory growth can explain

that lobulation defect is the cause. 80% of cases are left lobe agensis, and 44 to 50% of are isthmus agensis (3,4). The female / male prevalence ratio is 3: 1. Our case is an isolated isthmus agensis. In this report we present a case of absence of the thyroid isthmus and review the literature.

CASE REPORT

A 30- year old female patient admitted to the clinic with complaints of swelling in the neck, weakness and fatigue and she had complaints for the few months. On physical examination, there was no significant peripheral lymphadenopathy and thyroid gland was palpable. Parathyroid hormone levels and thyroid function tests were within normal limits. In thyroid ultrasonography (USG), multiple solid nodules were detected with degenerative cystic areas; the largest of 30 mm in diameter in the right thyroid lobe and 28mm in the left lobe. However, there was no information written about the

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isthmus. Fine-needle aspiration biopsy was considered as benign. In thyroid scintigraphy there was no uptake in the isthmus (figure-1). The patient underwent total thyroidectomy. The surgery was uncomplicated but thyroid isthmus could not find. (Figure 2,3)Gross appearance was evaluated biggest hemorrhagic colloid-rich nodules from place to place, which is about 3,5-4cm in each lobe, and total pathology specimens were reported as nodular hyperplasia. The patient was discharged on second day after surgery with healing.



Figure 3: The appearance of the right and left thyroid lobe without isthmus after total thyroidectomy.

DISCUSSION

Thyroidectomy is one of the most common surgical process in otolaryngology and general surgery clinic. The main indications for thyroidectomy are recognized or suspicious malignancy, airway compression, aesthetic considerations, hyperthyroidism, benign multinodular goiter, toxic multinodular goiter and Graves-Basedow disease (5,6).

Thyroid isthmus agenesis is an embryological development anomaly (1). As described by Pastor et al.(7) it is a complete and congenital absence of the thyroid isthmus. In studies the prevalence of the thyroid hemiagenesis ranged between 00.5-0.2%. Most commonly seen in women and as left lobe agenesis (8-10). Identification of patients in studies in the literature usually with USG or scintigraphy.

Braun et al.(11) in their study isthmus agenesis was detected in 4 of the 58 cadavers. Ranade et al(12)in their study on 105 cadavers (8 cadaver was women); they have reported that the isthmus was absent in 35 (33%) of them. Won and Chung (13) determined that the side lobe of

thyroid was separate and there was not isthmus lobe in 3% of the cases. In the study of Mirkosch et. al.(4) for 9 years on 715 cases; they reported that isthmus lobe was absent in 10 cases. This embryological developmental anomaly is seen more often in patients with normal thyroid function test levels. Usually the isthmus absence arises when patients are investigated due to other thyroid diseases. Autonomous thyroid nodules, thyroiditis, primary carcinoma, metastatic neoplastic or infiltrative diseases such as sarcoidosis should be evaluated in patients with thyroid isthmus agenesis(3).

The thyroid isthmus agenesis is uncommon and we recognized the absence of isthmus incidentally during surgery. Operations memories are presented in figure 2 and figure 3. Although preoperatively we were unaware of the thyroid isthmus agenesis there were no complications. However, when the team fails to mind this possibility complications may increase slightly. Thyroid isthmus agenesis is not a situation where surgeons often encounter. When USG looked carefully, isthmus agenesis can be seen and this can help in surgery(8).

In clinical practice isthmus agenesis should be remembered for safe surgery to avoid complications during thyroidectomy and it rarely accompanies with Graves disease that also has a thyroid nodule (15).

Isolated thyroid isthmus agenesis is uncommon. USG, scintigraphy, CT, MRI imaging methods can identify highly the isthmus agenesis. Thyroid scintigraphy was usefull in this case. Preoperative aware of thyroid isthmus agenesis; so the surgeon may be prepared against surprise that may occur during surgery.

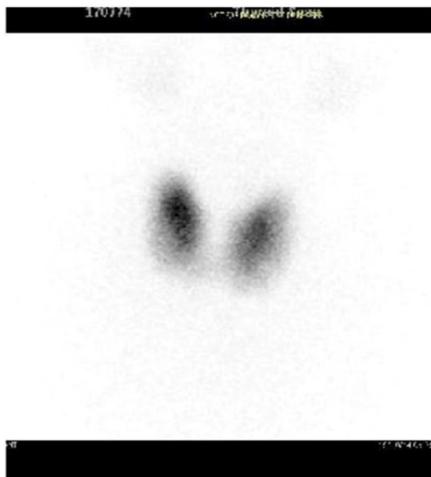


Figure 1: Thyroid scintigraphy imaging of the patient. There was no uptake in the isthmus.

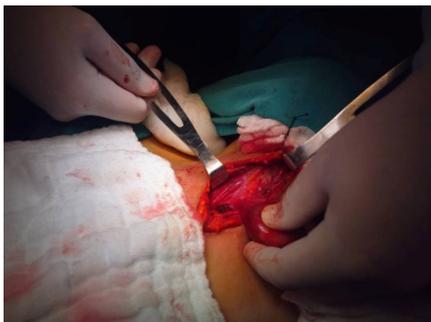


Figure 2: The absence of the connection of the left lobe and the right thyroid lobe with the isthmus agenesis seen during the operation

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