ARTICLE INFO

**Article History:**
Received 14th August, 2019
Received in revised form 18th September, 2019
Accepted 24th October, 2019
Published online 30th November, 2019

**Key Words:**
Agenesis, Isthmus, Thyroid Gland.

ABSTRACT

**Introduction:** Thyroid gland, brownish red and highly vascular endocrine gland, is placed anteriorly in the neck, extending from 5th cervical to 2nd thoracic vertebra. In present case the isthmus of thyroid gland was absent. It’s a developmental anomaly of thyroid gland. **Observations:** The two lobes of thyroid gland were separate from each other. There was agenesis of thyroid isthmus. **Discussion:** The agenesis of thyroid isthmus is the complete and congenital absence of the thyroid isthmus. The absence of isthmus can be associated with other types of dysorganogenesis, such as the absence of a lobe or the presence of ectopic thyroid tissue autonomous thyroid nodule ; thyroiditis; primary carcinoma; neoplastic metastases; and infiltrative diseases such as amyloidosis Knowledge regarding thyroid anomalies as agenesis of isthmus of thyroid gland can help the surgeon for surgical interventions.

INTRODUCTION

Thyroid gland, brownish red and highly vascular endocrine gland, is placed anteriorly in the neck, extending from 5th cervical to 2nd thoracic vertebra. The gland is composed of two lateral lobes connected by isthmus. The normal size of each lobe of the thyroid gland has been described to be 5cm long, its transverse and antero-posterior extent are 3cm and 2cm respectively. The isthmus measures about 1.25cm transversely as well as vertically and is located anterior to 2nd and 3rd tracheal cartilages (Standing, 2005). A conical pyramidal lobe ascends towards the hyoid bone from the isthmus. Levator glandulae thyroidea descends from the body of the hyoid bone to isthmus (Jamuna, 2013). In present case the isthmus of thyroid gland was absent in a male cadaver. The two lobes of thyroid gland were separate from each other. This is a developmental anomaly of thyroid gland. The knowledge of various developmental anomalies of thyroid gland can help the surgeon to plan for safe surgeries.

**Observations:** Dimensions of each lobe of thyroid gland: measured with Vernier caliper

DISCUSSION

The agenesis of thyroid isthmus is the complete and congenital absence of the thyroid isthmus. It can be explained on the basis of development of thyroid gland (Pastor Vazquez, 2006). The thyroid gland develops from thyroglossal duct. The thyroglossal duct arises from the endodermic epithelium of primitive pharynx, at the level of 2nd and 3rd pharyngeal arch, when it descends down, its lower end divides and gives rise to thyroid lobes and isthmus. At the same time the upper end of the thyroglossal duct degenerates (Moore Persaud, 2003). Rarely a high separation of thyroglossal duct can lead to formation of two thyroid lobes and pyramidal lobes with absence of isthmus (Sgalitzer, 1941). In present case the pyramidal lobe is also absent. The etiology of agenesis of thyroid gland or isthmus is not clearly known and most of the isthmus agenesis is sporadic familial or genetic predisposition (Tonacchera et al., 2007). The mutation in genes responsible for the development of thyroid may be associated with isthmus agenesis, especially TITF-2 genes and chromosome 22 (Omer Faruk Ozkan et al., 2013). The absence of isthmus can be associated with other types of dysorganogenesis, such as the absence of a lobe or the presence of ectopic thyroid tissue (Duh et al., 1994). In present case ectopic thyroid tissue was not seen in on its path of descend. Agenesis of isthmus can be diagnosed via scintigraphy, ultrasonography, CT, MRI (Shankar, 2009).
Knowledge regarding thyroid anomalies as agenesis of isthmus of thyroid gland can help the surgeon for safe surgical interventions.

Table 2. Incidence of agenesis of thyroid gland (Dixit, 2009)

<table>
<thead>
<tr>
<th>Authors</th>
<th>Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pastor et al</td>
<td>5 to 10 %</td>
</tr>
<tr>
<td>Marshall</td>
<td>8 to 10 %</td>
</tr>
<tr>
<td>Ranade et al</td>
<td>33 %</td>
</tr>
<tr>
<td>Dixit</td>
<td>14.6 %</td>
</tr>
</tbody>
</table>

REFERENCES


Duh QY., Ciulla TA., Clark OH. 1994. primary parathyroid hyperplasia associated with thyroid hemiagenesis and agenesis of the isthmus. Surgery, 115: 257-263


******