



Thyroid Hemiagenesis with Agenesis of Isthmus a Case Report

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Abstract

Thyroid gland is an endocrine gland being highly vascular, having two lobes which are connected by an isthmus. Gland is somewhat H shaped in appearance. Thyroid anomalies can be in the form of unilateral lobar agenesis. In this case report, right lobe of the thyroid gland is absent along with the isthmus. The significance lies in the fact that surgeons ought to know about various anomalies of the gland to plan a safe surgery.

Keywords: Isthmus, thyroid, agenesis

INTRODUCTION

Thyroid is brownish red gland which extends from C5 to T1 vertebra.¹ Thyroid is the primary endocrine gland to start development in embryo.² Thyroid agenesis was reported by Marshall³ in 1895 who noticed one child with right lobe absent among 60 childhood thyroid glands. Patients having thyroid hemiagenesis are supposed to have accompanying thyroid disorders. The prevalence of thyroid hemiagenesis is 0.02% in normal children, a rough estimation⁴. Females are more common candidates for thyroid agenesis and the lobe usually absent in them is the left one⁵. Left lobe hemiagenesis was detected by Das in 1962⁶.

CASE REPORT

During the routine dissection work in the Department of Anatomy, Government Medical College, Jammu, the thyroid gland in the male cadaver presented with absence of right lobe of thyroid gland along with the isthmus, with normal left lobe. The left lobe was measuring 6.9 cm in length and 3.7 cm in width. The direction of the apex of the left lobe is towards the oblique line on thyroid cartilage and external laryngeal nerve and superior thyroid artery lies in its vicinity, the base is in relation with right laryngeal nerve and inferior thyroid artery. The thyroid gland was placed in its proper anatomical position except for the absence of its right lobe and isthmus was absent from its proper anatomical position in front of 2nd and 3rd tracheal cartilage. Left lobe was supplied by superior and inferior thyroid artery.

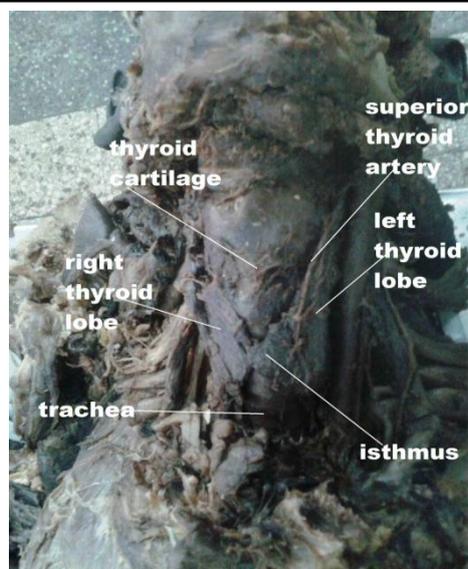


Fig 1.Normal thyroid anatomy

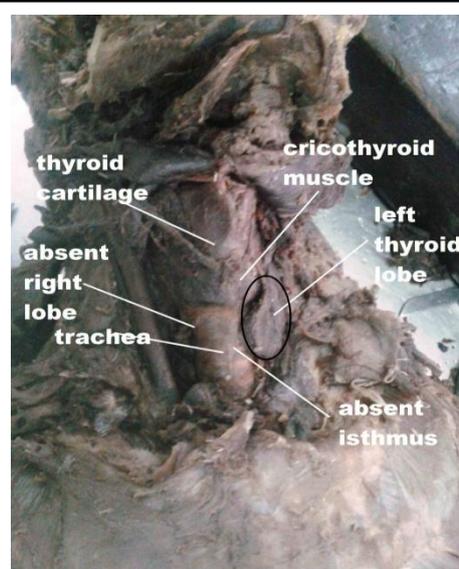


Fig 2. Agnesis of right thyroid lobe and isthmus

DISCUSSION

Literature regarding thyroid agnesis is rich as per its variations are concerned. Agnesis of thyroid gland being rare congenital anomaly presents with absence of a lobe of thyroid gland or lobe and isthmus or both. Its development begins from the foramen caecum in the midline⁷. The gland makes its appearance in the floor of pharynx as an epithelial proliferation which later is indicated by foramen caecum. It makes its descent as bilobed diverticulum in front of pharyngeal gut. During its descent, the gland maintains a connectivity, with the tongue by means of a duct known as thyroglossal duct, which then disappears later⁸. Thereafter it further moves downwards in front of hyoid bone and cartilages of the larynx. By 7th week, it reaches in front of trachea which is its final destination. By that time, it has acquired shape of bilobed structure with an intervening isthmus. Hemiagenesis is thought to result from impaired migration process or any malfunctioning during process of lobulation either because of genetic or environmental elements. Role of chromosome 22 have been cited by some authors as cause of thyroid lobe agnesis.

Hemiagenesis of gland, ranged between 0.005% and 0.2% and its prevalence is more in females^{9,10}. Gursoy et al.⁹ found in their study the prevalence of hemiagenesis to be 0.25% in patients having thyroid disorders whereas the normal population

had a prevalence of 0.025% and the absence of left lobe was seen in all cases but in our case there is absence of right lobe and isthmus. The absence of isthmus was claimed to be rare in humans by various workers¹¹.

Won and Chung concluded that the isthmus was absent in 3% of the cases studied by them¹². Braun et al. researched on 58 cadavers and conveyed that isthmus was absent in 4 cadavers¹³. Pastor et al. said that the absence of isthmus is accompanied either by the absence of a lobe or the presence of ectopic thyroid¹⁴. Ranade et al. conveyed the 33% incidence of absence of isthmus.¹⁵ In this case report we have absence of right lobe of thyroid gland accompanied by the absence of isthmus.

The most common dysorganogenesis is absence of isthmus followed by hemiagenesis¹⁶. The hemiagenesis of thyroid gland is more prevalent in symptomatic patients than normal people⁸. Agnesis of thyroid gland can be diagnosed by ultrasonography, CT scan, MRI but its diagnoses is usually difficult unless the patients refer for other thyroid ailments.¹⁷

The clinical significance of this case is that the individual diagnosed with absence of isthmus should be screened for cancers of thyroid, metastasis, amyloidosis, thyroiditis etc. Malignancy always remains a cause for concern.¹⁸

CONCLUSION

Thyroid agenesis is a rarity that being asymptomatic can't be diagnosed easily unless the patient comes for another condition. Its diagnosis is usually incidental. Its awareness can help surgeons in proper surgeries. Undue interventions can be avoided in patients. Moreover our study helps to better understand the anatomy of thyroid gland.

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