

# Ectopic thyroid – a case series

BERTHA A, JULIE HEPHIZIBAH, NYLLA SHANTHLY

## ABSTRACT

**Introduction and aim:** Thyroid dysgenesis refers to conditions which are related to defects in the thyroid organogenesis, which present as absent, ectopically located or reduced glandular tissue. We report our experience on ectopic thyroid and its diagnosis and management in our institution over the past five years.

**Materials and methods:** A retrospective analysis of all the patients who were evaluated for pathologies in the thyroid, who underwent thyroid scintigraphy by using 99mTechnetium from January 2005 to December 2010, was done. 2 mCi of pertechnetate was given intravenously and the images were acquired after 20 minutes. The patients were imaged by using a gamma camera.

**Observations:** A total of 134 patients underwent the study, of which 12 patients (8.95%) were found to have ectopic thyroid. Ectopic thyroid tissue was observed not only in the midline cervical region – in the lingual, suprahyoid and the subhyoid locations, but also in the submandibular region in one individual.

**Conclusion:** In our series of observations, 8.95% of all the cases which were screened for thyroid diseases, showed ectopic thyroid tissue. Lingual thyroid was seen in 41.6% of the cases. Most of our patients responded well to hormonal therapy and did not need any surgical intervention. Long term follow up is absolutely necessary, as the prevalence of malignancies is higher in these individuals.

**Key Words :** Thyroid embryogenesis, ectopic thyroid tissue, thyroid scintigraphy.

**KEY MESSAGES:** Ectopic thyroid due to the defective organogenesis of the thyroid gland is not very uncommon in our population. They should be borne in mind, detected early and treated adequately to prevent complications like dysphagia and malignancies.

## INTRODUCTION

### Embryogenesis of the thyroid gland

The thyroid gland is the first endocrine organ to develop on the 24th day of the embryonic period (20 somites stage)[1]. It develops as a midline endodermal derivative of the pharynx of the developing foregut. It is first identified as a median thickening of the endoderm, lying in the floor of the pharynx between the first and the second pharyngeal pouches, immediately dorsal to the aortic sac. This area later invaginates to form a median diverticulum in the fourth week of development, caudal to the median tongue bud. The median thyroid diverticulum is connected to the pharynx by the thyroglossal duct. The initial site of connection in the floor of the mouth is marked by the foramen caecum, from which it extends inferiorly in the midline which is anterior to the primordium of the hyoid bone, often forming a recurrent loop around the hyoid bone[1].

It is not uncommon to find ectopic thyroid tissue between the foramen caecum and the normal position of the thyroid gland, often in the region of the foramen caecum, as a lingual thyroid at the base of the tongue, in patients whose glands fail to descend. Extra lingual thyroid tissue is commonly located in the midline in the anterior cervical area, corresponding to the path of the thyroglossal duct [1]. Interestingly, ectopic thyroid tissue has been described in the lateral cervical area also. It is rare, but there have been reports of ectopic tissue in the submandibular region[2], the trachea[3], the mediastinum[4], the heart[5], the lung[6], the duodenum[7], the adrenal gland[8], the parotid gland[9] and the gall bladder[10]. Ectopic thyroid tissue is known to undergo malignant changes[3, 4, 11, 12]. This retrospective study was undertaken to calculate the prevalence of ectopic thyroid among the patients who came with any thyroid abnormality to our institution.

## MATERIALS AND METHODS

A retrospective analysis of all the patients who were evaluated for pathologies in the thyroid, who underwent thyroid scintigraphy by using 99mTechnetium from January 2005 to December 2010, was done. A total of 134 patients underwent thyroid scintigraphic studies. 2 mCi of pertechnetate was administered intravenously after all the precautions were taken and the images were acquired after 20 minutes. All the patients were imaged by using a gamma camera. (G E Infinia Hawkeye and Seimens Symbia)

## OBSERVATIONS

The prevalence of ectopic thyroid among the 134 patients who were investigated for thyroid abnormalities was 12 (8.95 %). The youngest patient was three years of age and the oldest patient presented at 21 years of age. The average age at presentation in our institution was 10.6 years. 58% of our study patients were females. The most common presenting complaint was a swelling in the neck, in seven individuals (54%). Three patients (23%) presented with a swelling in the posterior third of the tongue and difficulty in swallowing. One patient came to the hospital for the evaluation of short stature and two others presented with hypothyroidism. Lingual thyroid was the commonest site of the ectopic thyroid at 41.6%, followed by hyoid which was seen in 25% and 8.3% each of thyroglossal cyst, subhyoid, suprahyoid and submandibular ectopic thyroid tissue [Table/Fig-1]. Surgical excision was done for two cases (16.6%) and the rest of the cases were administered hormone replacement therapy.

## DISCUSSION

The prevalence of ectopic thyroid is less than 10% in the reviewed literature and our study recorded a prevalence of 8.95%, confirming the same[11]. The remnant of the thyroglossal duct which does not atrophy, presents mostly as a midline thyroglossal cyst, but can track anywhere from the thyroid cartilage up to the base of the tongue.

Age	Sex	Location	Relevant biochemistry	Treatment	Biopsy
15	M	Lingual	Euthyroid	Thyroxine	
8	F	Lingual	Hypothyroid	Thyroxine	
9	M	Lingual	Hypothyroid	Thyroxine	
21	F	Lingual	Hypothyroid	Thyroxine	
13	F	Lingual	Hypothyroid	Thyroxine	
14	F	Thyroglossal duct	Hypothyroid	Thyroxine	
8	M	Suprahyoid	Hypothyroid	Thyroxine	
12	M	Hyoid	Hypothyroid	Thyroxine	
5	F	Hyoid	Hyperthyroid	Excision	Normal thyroid tissue
4	F	Hyoid	Hypothyroid	Lost to follow up	
3	M	Subhyoid	Hyperthyroid	Excision	Normal thyroid tissue
19	F	Submandibular	Hypothyroid	Thyroxine	

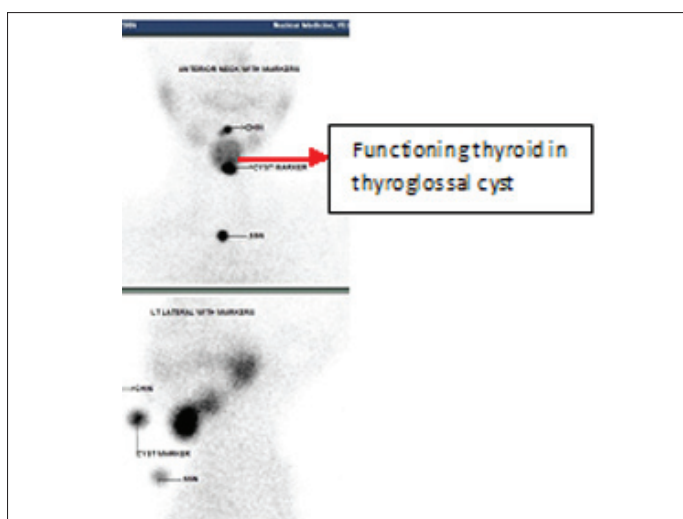
[Table/Fig-1]: Ectopic thyroid tissue – age and sex wise distribution, location of ectopic thyroid and management.

Only one of our patients presented with a midline hyoid thyroglossal cyst, which was the only functional thyroid tissue [Table/Fig-2].

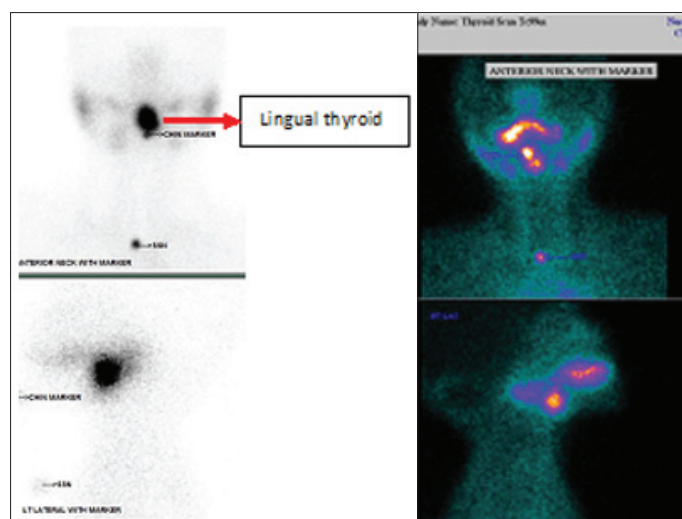
An aberrant or ectopic thyroid gland may occur anywhere along the path of the initial descent of the thyroid, although it is most common at the base of the tongue, just posterior to the foramen caecum[1,11]. In our series, 41.6% of the cases had lingual thyroid, which represented a complete failure of the thyroid in descending [Table/Fig-3]. The incomplete descent of the thyroid gland leads to the final resting point of the thyroid gland in the hyoid, the suprahyoid or the subhyoid areas. Three individuals presented with ectopic thyroid tissue in the hyoid region, one presented with ectopic thyroid in the suprahyoid region [Table/Fig-4], and one presented with ectopic thyroid in the subhyoid region [Table/Fig-5]. There was one case of ectopic thyroid in the lateral cervical area, in the submandibular region [Table/Fig-6].

The patients can be clinically asymptomatic or the ectopic thyroid may often cause discomfort and / or local compression that may necessitate a surgical approach. In our series, most of the patients presented with features of hypothyroidism. Biochemically, they were all found to have elevated thyroid stimulating hormone (TSH) levels. A few of them presented with dysphagia which was secondary to obstruction which was caused due to the lingual thyroid. The youngest patient presented with swelling and purulent discharge in the submental region for 6 months. On examination, he was found to have a 2x3 cms cystic swelling in the submandibular region, which moved on deglutition and protrusion of the tongue. Incidentally, he was found to have phimosis.

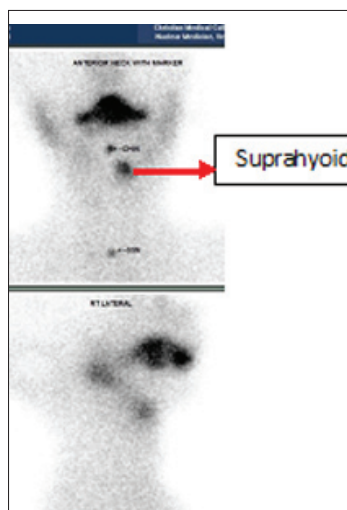
A five year old female presented with a swelling in the midline of the neck of three years duration. On examination, the 2x2 oval swelling was found to move, with the deglutition and the protrusion of the tongue and it was transilluminant. A patient came to the hospital at 15 years of age for the evaluation of short stature, with a history of pain in the right and left hips, of three months duration. There was no weight loss, polyuria, polydipsia or proximal muscle weakness. The oldest patient presented with a swelling at the base of the tongue of 13 years duration and excessive sleep. A majority of these patients were treated with hormonal replacement therapy and only two patients (16.6%) required surgical excision. Excisions were done for the suprahyoid and the subhyoid ectopic thyroid tissue. The biopsy confirmed the presence of ectopic thyroid tissue in both the cases. The patient with the submandibular ectopic thyroid was treated with hormone replacement therapy. All our patients on hormonal treatment are on regular follow-up since 2005 and are clinically asymptomatic. Iodine ablation was not resorted to in our series, as most of those who were affected were below the age of 18 years and had presented with significant hypothyroidism. None of our cases presented with thyrotoxicosis. Hormonal treatment was therefore preferred over surgery which has a high rate of complications. The estimated incidence for carcinoma arising in a lingual thyroid was only 1%[11, 12]. In our series, as the follow up of the patients was for too short an interval, the malignant potential cannot be commented at this stage.



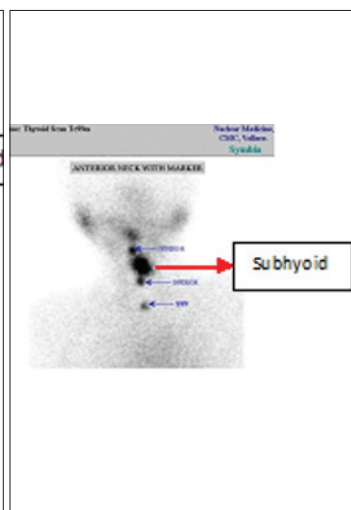
[Table/Fig-2]: Thyroglossal cyst



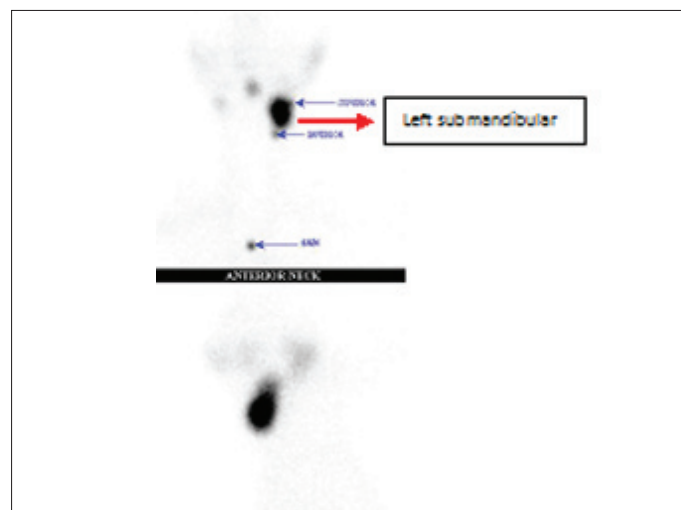
[Table/Fig-3]: Lingual thyroid



[Table/Fig-4]: Suprahyoid thyroid tissue



[Table/Fig-5]: Ectopic thyroid in the subhyoid region



[Table/Fig-6]: Ectopic thyroid in the left submandibular region

## CONCLUSION

In these series of observations, of the 12 cases which were studied, 41.6% were lingual thyroids and there was a slightly higher preponderance of the ectopic thyroid in females. It was noted that the patients responded well to hormonal therapy and that they did not require any surgical intervention. Long term follow up is absolutely necessary, as the prevalence of malignancies is higher in these individuals.

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