



Translocation of Lingual Thyroid: A Case Report

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Abstract

Ectopic thyroid is a rare congenital disease associated with compressive symptoms and hypothyroidism. It requires careful detection and well-planned surgical treatment. Our case is a typical ectopic lingual thyroid. We analyzed the etiology, symptoms, examinations and tests, diagnosis and surgery of the case in detail. Accurate diagnosis, adequate pre-surgical preparations and protection of blood supply of ectopic thyroid and surrounding structures during the surgery are key factors for successful treatment of ectopic thyroid.

Keywords: Ectopic thyroid; Dyspnea; Hypothyroidism; Translocation

Abbreviations: CT: Computed Tomography; POD: Postoperative Day.

Introduction

Ectopic thyroid refers to thyroid tissue that is not located at its normal position at the second to fourth tracheal cartilages. During the first 3-6 weeks of embryonic development, the thyroid progenitor cells descend to the pretracheal region from the foramen cecum as the thyroglossal duct descends caudally [1]. The descent of the primitive thyroid can be influenced and even blocked by genetic or environmental factors. Ectopic thyroid tissue may develop at any site between the foramen cecum and the lower part of the neck during this process. Solitary ectopic thyroid glands are less common, and present more complications during treatments. If the ectopic thyroid is inadvertently resected, the patient will suffer from hypothyroidism for the rest of his or her life. The root of the tongue is a

relatively common site for ectopic thyroid tissue [2].

Case Presentation

This 36-year-old woman was initially admitted at our hospital with a complaint of 3 months' duration of a foreign body sensation in her throat; she also said that the sensation had worsened during the previous half-month, with moderate dyspnea and dysphonia. A transnasal fiber optic scope showed a hemispheric neoplasm at the base of her tongue. The epiglottis was covered by the mass, with a gap of only 0.5-1 cm between the mass and the posterior laryngopharynx wall. Both vocal cords showed normal mobility. Use of ^{99m}Tc-pertechnetate thyroid scintigraphy showed a ball-shaped uptake in her head and neck region (Figure 1). Computed tomography (CT) results were consistent with those of radionuclides imaging. The mass was 3 cm in diameter and with a uniform density and a clear, round margin. Notably, however,

we did not see the usual “butterfly”-shaped thyroid image in the pretracheal region of the lower neck. (Figures 2&3) Thyroid function assay results are shown in Table 1. All the pre-treatment information indicated that the patient had a lingual thyroid and hypothyroidism.

	TSH	T3	T4	FT3	FT4
Value	43.67	1.39	54.29	4.41	12~22
Ref Range & Units	0.27~4.2 mIU/L	1.3~3.1 nmol/L	66~181 nmol/L	3.1~6.8 pmol/L	10.45 pmol/L

Table 1: Lab assays on thyroid function.

The patient underwent surgery to relocate her ectopic lingual thyroid to the right submandibular fossae. Because of the obstruction of the airway, a tracheotomy was performed first, before inducing general anesthesia. We then made an incision parallel to the mandible, to about finger 2 breadths below the margin of the lower jaw, and raised a subplatysmal flap to the mandible. The ramus marginalis of the facial nerve was identified and protected carefully to the elevated flap. The hyoid bone was resected, and the lingual base with the ectopic thyroid was exposed. A small piece of the mass was resected and sent for frozen pathologic analysis; the result confirmed our initial diagnosis. We first resected the right submandibular gland, and then dissected the lingual artery and its branches to the ectopic thyroid; these were protected in a pedicle surrounded by fascia and connective tissues. The ectopic thyroid was divided from its surroundings carefully, and the tongue mucosa that adhered to the mass was separated without penetration into the oral cavity.

The thyroid was grafted to the right submandibular fossa with the pedicle that contained the lingual artery and its branches, and the accompanying veins. After confirming a good blood supply to the translocated thyroid, the wound was closed with a drain. Our patient received a tracheotomy before her surgery for the anesthesia intubation, and tracheal fistula was closed on POD 7 when the laryngeal edema had abated. On POD 3, we still saw obvious swelling in the epiglottis region under fiber optic laryngoscope, so tracheotomy was necessary in this case. She was then sent to an endocrinologist for treatment of her hypothyroidism. She took levothyroxine as replacement therapy. She was followed up for 5 years with no other complications except permanent hypothyroidism, which was the same as her pre-surgical condition, and was modulated to a normal level by medications.

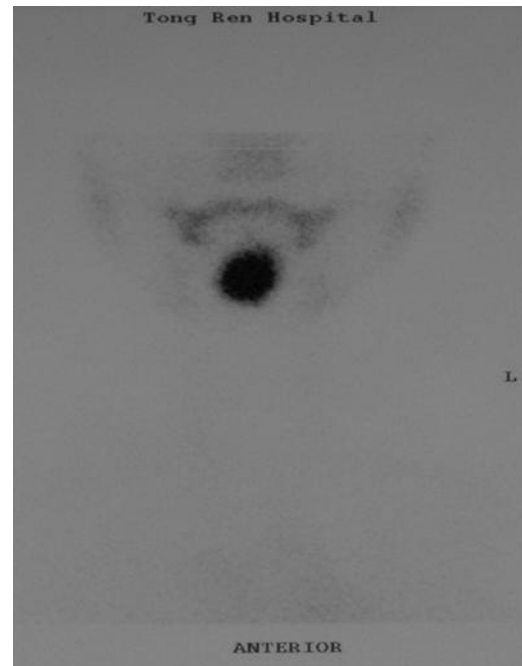


Figure 1: ^{99m}Tc -pertechnetate thyroid scintigraphy of the 36-year-old woman showed a round uptake area at the root of tongue with the absent uptake in normal pretracheal region.

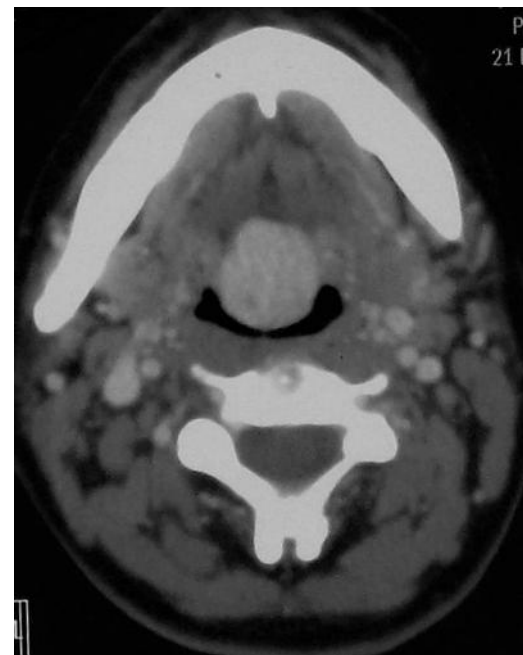


Figure 2: CT scan of the 36-year-old woman showed an enhanced clear-cut mass with a uniform dense in an axial view.



Figure 3: in an asagittal view of the 36-year-old woman, CT revealed the upper airway was compressed heavily by the ectopic thyroid.

Discussion

Ectopic thyroid occurs in only 1 person per 100,000-300,000. It is less common in men than women (male/female ratio: of 1/3-8) [3,4]. Cancerization occurs in about 0.4% [5]. Solitary ectopic thyroid with no normally-sited gland (as in the present case) make up 42.9% of cases [6]. Ectopic parathyroid does not correlate with ectopic thyroid for the deferent embryonic primordial between thyroid and parathyroid [1,7].

The lingual base is the most common site for ectopic thyroid. A congenital lingual mass will be small without any symptoms during the first ten years. And it can enlarge rapidly under some stimulation, such as puberty, pregnancy and inflammation, when much more thyroxine is required by the body. Such enlargement may cause gradual emergence of symptoms such as foreign body sensation, slurred speech, dysphagia and labored breath, according to the size and position of the ectopic tissue. And these symptoms mostly emerge among patients 30-50 years old [8,9]. In addition to these compressive complications, patients usually also suffer from hypothyroidism. The patient in our present case thus had a fairly typical ectopic site, array of symptoms and development course. Her hypothyroidism and the stimulus that enlarged her ectopic thyroid might

both reflect a dysfunctional thyroid feedback loop (Table 1).

Several examinations are recommended for patients who are suspected of having ectopic thyroid tissue, including ultrasonography, enhanced CT scan, radionuclide imaging, and laboratory tests. In the present case, our first hint that the patient had an ectopic thyroid was a CT image that showed a mass at the root of tongue but nothing at the normal thyroid area. Radionuclide imaging verified our suspicions, and the blood assay furthered our understanding of her thyroid function. All of this information helped us plan the ensuing treatments. In particular, radiographic exams provide much information about the mass that is critical to successful surgery (shape, precise location, relative discreteness of the margins, presence of calcifications, etc.). If the mass is suspected to be malignant, we should make corresponding pre-surgical preparations, including adequately informing the patient and family members.

Surgery is always the treatment for lingual thyroid with airway obstruction. For this case, surgery was recommended, because the mass was large enough to obstruct the upper airway and cause moderate dyspnea. However, such surgery can have adverse effects for benign ectopic thyroid tissue. And the most salient one is the injury of the ectopic thyroid blood supply, which would exacerbate a patient's pre-existing hypothyroidism. Therefore, identifying the pedicle and preserving the vessels are critical to the success of this procedure. During our surgery, we found that the main artery supplying the ectopic thyroid branched from the right lingual artery, accompanied by its vein. After we confirmed it to be thyroid tissue by rapid frozen biopsy of a small resected piece, we carefully dissected the thyroid and its vessels with a thick layer of fascia encircling them, and transplanted them to the right submandibular region. The vessels were placed without being compressed or twisted and we could visualize the thyroid's blood supply and drainage, which were both adequate. Another consideration is the lingual mucosa, which should be protected as much as possible during the surgical maneuvers, as clear borders between the mucosa and thyroid do not exist.

Once the glossal mucosa is penetrated, tight sutures should be taken and no epithelium should be left on the translocated thyroid. Leakage of oral secretions could cause severe infection of the wound, and possibly cause the surgery to fail. Our patient received a tracheotomy before her surgery for the anesthesia intubation. And tracheal fistula was

closed on POD 7 when the laryngeal edema had abated. On POD 3, we still saw obvious swelling in the epiglottis region under fiber optic laryngoscope, so tracheotomy was necessary in this case. Our patient continued to be hypothyroidism after the surgery, although her airway improved significantly. She has retained her biochemical euthyroid and has had no other complications with oral thyroxine treatment after the surgery.

Conclusion

In conclusion, some precautions must be taken in the diagnosis and surgical treatment of ectopic lingual thyroid, to avoid loss of this important organ.

Conflicts of Interest

The authors declare that there are no conflicts of interest related to the subject matter or materials discussed in this article.

Patient Consent

Informed consent was given by the patient for case publication.

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