

# Intraoperative Imprint Cytological Diagnosis of Heterotopic Thyroid Presenting as Sellar Mass

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## Abstract

A 43-year-old woman presented with headache, nausea, severe visual impairment and galactorrhea and decreased visual acuity. A 4×3.5×3 cm mass completely filling the sphenoid sinus, elevating the pituitary gland and stalk was observed. The patient underwent transsphenoidal removal of the lesion to alleviate visual loss. The tumor cells showed strong positivity for thyroglobulin and TTF-1. This patient was followed up for 2 years after the operation; the laboratory study and computed tomography showed no lesions. In conclusion, this is a rare benign finding in which complete surgical resection achieves a cure.

**Keywords:** Imprint Cytological diagnosis; Thyroid; Sellar mass

## Introduction

It is difficult to explain ectopic thyroid in the sella turcica since throughout the development, the thyroid descends from the tongue to the anterior part of the trachea. However, the failure of migration of thyroid tissue has been reported to produce ectopic thyroid tissue.<sup>1</sup> Some cases of ectopic lesions have been reported in the literature in the head and neck or in the abdominal organs but its presence in the central nervous system is an interesting finding.

## Case Report

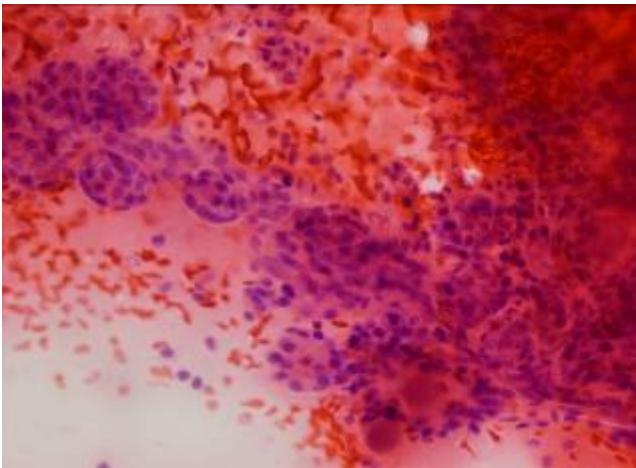
A 43-year-old woman presented with headache, nausea, severe visual impairment and galactorrhea. The neurological examination was normal except for decreased visual acuity, i.e. 2/10 and 6/10 in the right and left eyes, respectively. An examination for pituitary hormones revealed increased prolactin levels. Serum TSH, free T3, and free T4 levels were normal. An MRI examination of the brain with gadolin-

ium revealed an enhancing 4×3.5×3 cm mass completely filling the sphenoid sinus, elevating the pituitary gland and stalk. The patient underwent transsphenoidal removal of the lesion to alleviate visual loss. Intraoperative touch imprint cytology showed blood stained cellular smears with microfollicular aggregates, as well as purplish colloid-like material. Small follicular cell with regular round or slightly oval nuclei were seen. The chromatin pattern was even (Figure 1a-c). The surgical specimen consisted of fragmented mass measuring 2×1×0.5 cm. In histology, it was composed of highly differentiated follicular thyroid tissue with variable sized follicles containing colloid substance (Figure 2). The tumor cells showed strong positivity for thyroglobulin and TTF-1, suggestive of thyroid tissue (Figure 3). The patient's postoperative course was uneventful. This patient was followed up for 2 years after the operation; the laboratory study and computed tomography showed no lesions.

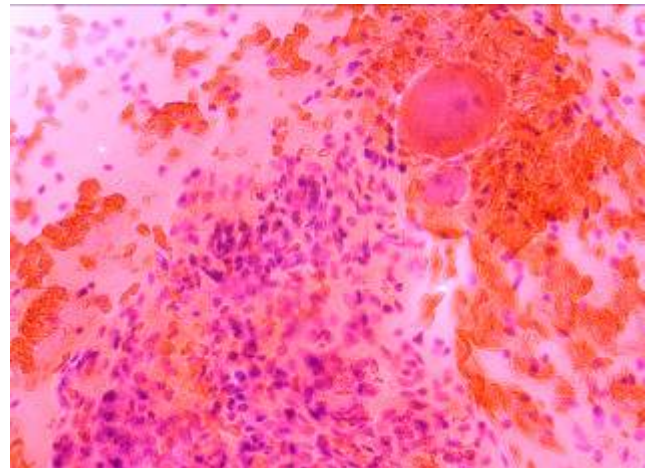
## Discussion

The human thyroid gland develops from the fusion of one median with two lateral anlagen. The median anlagen originates from the base of the tongue in the foramen cecum and forms the majority of them.

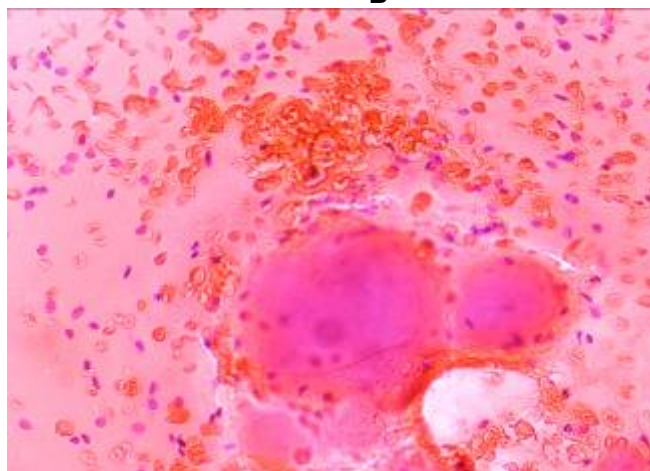
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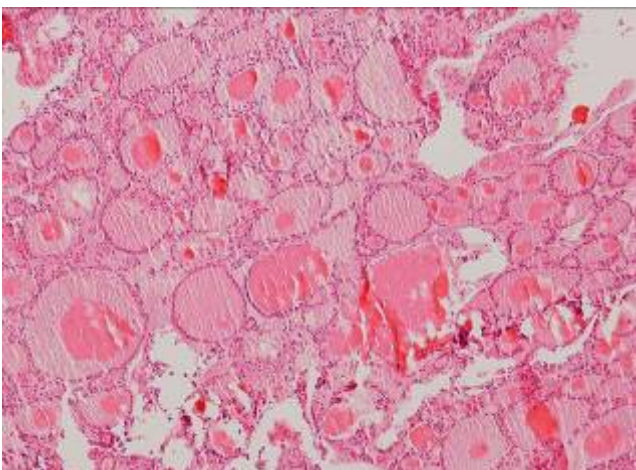


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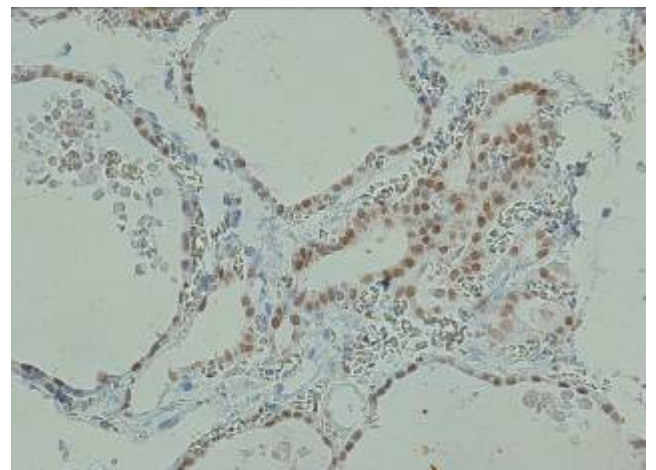


C

**Fig 1a, 1b, 1c:** Microfollicles as well as colloid-like materials (H&E stain  $\times 400$ ).



**Fig 2:** Thyroid follicles lined by cuboidal follicular epithelial cells are filled with eosinophilic colloid (H&E stain  $\times 400$ ).



**Fig 3:** Immunohistochemical staining for TTF-1 (Avidin-Biotin complex  $\times 400$ ).

It develops into a diverticulum, expands laterally, becomes bilobed and descends from the tongue to its final position in the anterior neck. The thyroglossal

duct serves as a conduit between the thyroid and fore-gut, which usually becomes atrophy.<sup>2</sup> Thyroid maldescent can result in the presence of lingual thyroid

tissue. Because of its close association with the development of other tissues, thyroid tissue may be seen in association with the esophagus, larynx, trachea, jugular carotid lymph nodes, soft tissue of the neck, the heart and great vessels and even duodenum.<sup>3-5</sup>

We report a patient with a pituitary tumor diagnosed as having ectopic thyroid tissues because the resected tumor was composed of large follicles and follicular epithelium that stained positively for thyroglobulin. Some explanations have been suggested for this finding. Our case can not be explained in terms of a metaplastic transformation,<sup>6</sup> because the thyroid develops from the endoderm whereas the pituitary gland develops from the ectoderm.

Another possibility is a metastatic lesion from a follicular carcinoma thyroid.<sup>7,8</sup> A histological diagnosis of differentiated thyroid tissue at the skull base with no evidence of primary thyroid cancer should prompt further analyses, a <sup>131</sup>I whole body scan and thyroidectomy. In this case, the <sup>131</sup>I whole body scan was normal. Surgical treatment was planned for the thyroid gland to rule out any pathologic findings as a primary site, but our patient did not agree. No evidence of other tumors was detected by a whole body CT scan and ultrasound.

Another rare condition that contains normal thyroid tissue is struma ovarii.<sup>9,10</sup> Struma ovarii is a monodermal teratoma composed totally or mainly of thyroid tissue. It accounts for 1-3% of benign teratomas of the ovary. Struma ovarii is generally benign and occurs mainly in women older than 40 years. It is usually an incidental finding or is discovered in a patient with nonspecific symptoms. In pituitary region, the metastatic monodermal teratoma that contains only thyroid tissue was not reported in the literature. In the review of the literature, the presence of normal thyroid tissue in the central nervous system as an ectopia was only described by Ruchti et al.<sup>6</sup> According to their opinion, the thyroid heterotopia might be the origin of the tumor in our case. Endodermal cells may have become dislocated in proximity to Rathke's pouch around the 29th gestational day, when the thyroid gland is in the stage of a simple bud attached to the buccal floor in close contact to the ectodermal cells of the primitive buccopharyngeal cavity.<sup>6</sup> In conclusion, this is a rare benign finding in which complete surgical resection achieves a cure.

**Conflict of interest:** None declared.

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