

# Ectopic thyroid tissue in the parotid salivary gland

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## ABSTRACT

Benign ectopic thyroid tissue within the parotid salivary gland is very rare. A 32-year-old woman presented with a slowly-growing, painless mass in the parotid region. The mass, which was clinically diagnosed as a parotid tumour, was found at surgery to be cystic in nature. Histological examination showed thyroid tissue with secondary changes in the cyst wall and colloid in the lumen. On iodine isotope scan, the thyroid gland was found in its normal location. The possible origin of the ectopic thyroid tissue in the parotid salivary gland could be due to a common evolution of the thyroid and parotid glands, a heteroplasia or a metaplasia.

**Keywords:** choristoma, ectopic thyroid, parotid gland neoplasms, thyroid gland, thyroid neoplasms

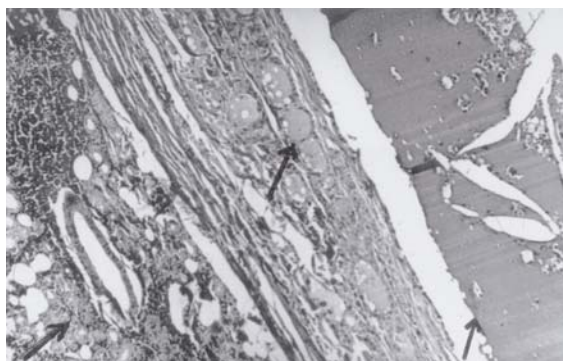
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## INTRODUCTION

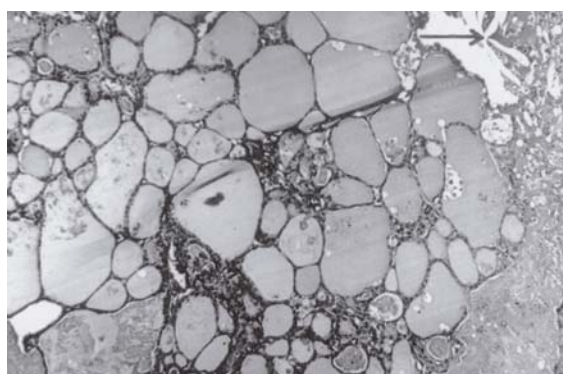
Ectopic thyroid tissue may be found between the foramen caecum and the normal position of the thyroid gland. Though uncommon, it is often found in the region of the foramen caecum as a lingual thyroid at the base of the tongue in patients whose gland fails to descend. Extralingual thyroid tissue is commonly located in the anterior cervical area, in the region of the thyroglossal duct. Ectopic thyroid tissue has been described in the submandibular region<sup>(1)</sup>, trachea<sup>(2)</sup>, mediastinum<sup>(3)</sup>, heart<sup>(4)</sup>, lung<sup>(5)</sup>, duodenum<sup>(6)</sup> and adrenal gland<sup>(7)</sup>. Other sites are rarer. Ectopic thyroid tissue may undergo malignant changes<sup>(2,3)</sup>. To our knowledge, ectopic thyroid tissue has not been documented in the parotid salivary gland. We report a case where ectopic thyroid tissue presented as a slowly-growing mass in the parotid salivary gland, which was initially clinically-misdiagnosed as a parotid tumour.

## CASE REPORT

A 32-year-old woman presented with a slowly-growing, painless mass of one year duration on the



**Fig. 1** Photomicrograph of the outer cyst wall shows compressed parotid tissue with chronic sialadenitis (left arrow). The luminal surface shows thyroid follicles of varying sizes (central arrow). The lumen of the cyst contains colloid (right arrow). (Haematoxylin & eosin, x 100).



**Fig. 2** Photomicrograph shows thyroid follicles of varying sizes with cholesterol crystals (arrow). (Haematoxylin & eosin, x 400).

left side of the face, just below the left ear lobule. Examination revealed a firm, mobile, non-tender mass measuring 40 x 40mm, with well-defined margins. The skin over the mass was smooth, but appeared stretched and tense. With the clinical diagnosis of a parotid gland tumour, a fine-needle aspiration biopsy of the mass was performed. However, only serosanguinous material containing neutrophils, lymphocytes and foamy histiocytes was obtained, and no definite conclusion could be made. The patient underwent surgery. At surgery, a cystic mass was found in the superficial lobe of the parotid gland. The mass was resected along with a thin rim of surrounding parotid tissue. The patient had an uneventful postoperative recovery.

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The excised globular cystic mass measured 40mm in diameter, and contained inspissated amber-coloured fluid. The inner surface of the cyst wall showed multiple reddish-brown excrescences projecting into the cavity of the cyst. The thickness of the cyst wall varied from 3mm to 6mm, which microscopically, showed fibrous tissue. The outer aspect of the cyst wall showed compressed parotid tissue with changes of chronic sialadenitis. The luminal surface of the cyst wall showed non-neoplastic colloid-containing thyroid follicles of varying sizes (Figs. 1 & 2). These follicles showed no suggestion of a papillary pattern or ground-glass nuclei, nuclear grooving or pseudoinclusions. Thus, the possibility of a thyroid papillary carcinoma was excluded. Secondary changes, including haemorrhage with haemosiderin deposits, foamy histiocytes and cholesterol crystals (Fig. 2), were also seen. The lumen of the cyst contained only colloid. On immunohistochemical staining, the colloid and cytoplasm of the follicular cells showed thyroglobulin positivity. Thus, a diagnosis of benign intraparotid ectopic thyroid tissue with cystic degeneration was established.

On questioning the patient, she denied a previous history of goitre. Thyroid function tests done a week after surgery were normal. An iodine isotope scan showed no evidence of ectopic thyroid tissue at any other site and confirmed the presence of the thyroid gland in the normal location. The thyroid gland showed uniform accumulation of the iodine isotope with no suggestion of any hypofunctioning ("cold") nodules, thus ruling out a thyroid neoplasm. Additional thyroid imaging studies were not done, due to financial limitations of the patient. Detailed investigation ruled out other tumours in the body, especially in the ovaries. The patient remains well two years after surgery and has been advised to return for regular follow-up.

## DISCUSSION

The only primary salivary gland tumour that may bear a resemblance to thyroid tissue is the acinic cell carcinoma with a follicular pattern<sup>(8)</sup>. However, this tumour could be ruled out in our patient due to thyroglobulin positivity, and absence of acinar cells with cytoplasmic basophilic zymogen granules. The possibilities for the presence of thyroid tissue in the parotid gland include a teratoma in the parotid gland, metastasis from a thyroid carcinoma or from a malignant ovarian teratoma with thyroid tissue, and ectopic thyroid tissue. In our case, the heterologous elements usually found in a teratoma were absent in the parotid mass. No primary tumour was detected in the thyroid gland or patient's body, especially the ovaries. Moreover, the parotid salivary gland is a very rare site for tumour metastasis.

Primary thyroid carcinomas may be very small and difficult to detect, and rarely metastasise to the parotid salivary gland. However, careful follow-up for two years did not show any sign of growth of the primary tumour,

or metastasis in other parts of the body. We therefore concluded that our patient had ectopic thyroid tissue in the parotid gland. The ectopic thyroid nodule had formed a fibrous capsule around it, and had undergone degenerative changes that transformed it into a cyst.

A plausible explanation for the presence of thyroid tissue in the parotid gland is based on comparative anatomy. The oropharyngeal region of chordates and vertebrates contains a great variety of mucous and serous glands to assist food capturing and digestion. In the course of evolution, the oral glands increased in complexity culminating in the enzyme-producing salivary glands that are restricted almost entirely to mammals. Most chordates possess a mucus-producing subpharyngeal gland (endostyle) located ventrally in the pharynx. Early in chordate evolution, the secretion of iodine compounds begin in the endostyle while it is still a part of the feeding mechanism. The endostyle loses its original function as a constituent of the pharynx and evolves as the thyroid gland, which, like the endostyle, arises as an unpaired evagination from the midventral pharyngeal floor.

Thus, the history of the thyroid gland, in phylogeny, is one in the course of which a feeding structure is transformed into a gland of internal secretion<sup>(9)</sup>. In our case, the evolutionary association between the salivary glands and the thyroid gland (which were both feeding structures) seems to have been recalled. The presence of intrathyroid salivary gland tissue reported in the literature<sup>(10)</sup> may have a similar basis. Another explanation for the presence of heterotopic thyroid tissue in the parotid gland might be an aberrant differentiation of local tissue, that is, a heteroplasia. Some authors have also suggested that ectopic thyroid follicles may be metaplastic in nature<sup>(6)</sup>, which could explain the presence of ectopic thyroid tissue in the parotid gland in our patient.

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