



# Nodular Thyroid Tissue Implantation in Breast After Endoscopic Thyroidectomy

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## Abstract

Thyroid implantation after endoscopic thyroidectomy were rarely reported. In this case, we report a patient with benign thyroid tissue implantation after endoscopic thyroidectomy.

**Keywords** Total endoscopic thyroidectomy · Benign thyroid implantation · Endoscopy surgery · Thyroid · Nodular goitre

## Case Report

An 18-year-old female who underwent endoscopic resection of benign thyroid tumours through a breast approach presented with a palpable mass lesion in her right breast. Sonographic examination revealed two clingy hypoechoic nodules (dimensions of nodule 1: approximately 1.1 × 0.6 cm; dimensions of nodule 2: 1.1 × 0.5 cm) in the right breast gland margin at the 1 o'clock position, with clear borders and regular shapes (Fig. 1). Physical examination revealed a mass (dimensions: 1.5 × 1.0 cm) in the right breast at the 1 o'clock position, 4 cm from the nipple, with medium to hard texture, clear border, fluidity, no tenderness, and no abnormal skin changes. There were no abnormalities found in the left breast parenchyma or axillary area on either side. The patient underwent right breast mass resection under general anaesthesia. Analysis of intraoperative frozen sections showed thyroid follicular tissue hyperplasia with irregular growth (Fig. 2a). Pathology revealed a mass (dimensions: approximately 1.5 × 1.0 × 0.8 cm) with a greyish red cut surface. Microscopically, thyroid follicles of varying sizes were found proliferating and growing irregularly in fibrous adipose tissue (Fig. 2b). The patient was advised to visit the clinic for regular follow-up, and no further treatment was needed following surgery. Reviewing the past medical

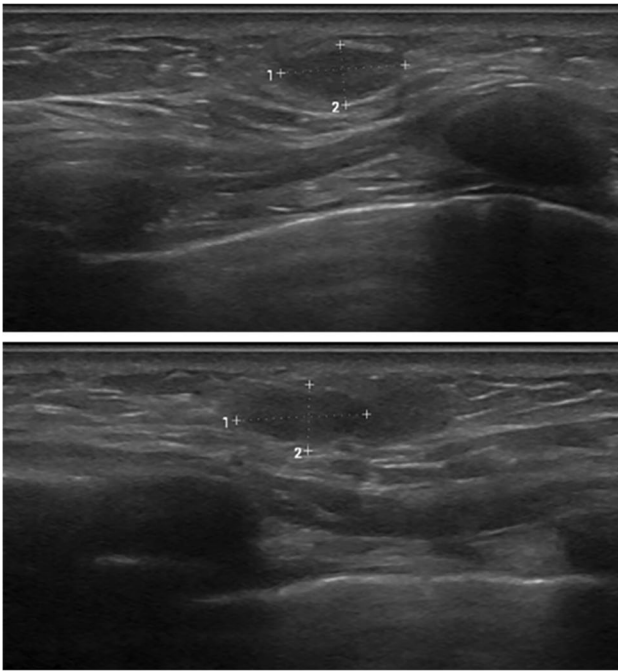
history of this patient, we found that she underwent left thyroid near-total resection and isthmic resection via a breast approach in another hospital 3 years ago due to a palpable mass lesion (dimensions of mass: 6.0 × 3.0 cm) in her left lobar thyroid, and the postoperative pathology of the thyroid mass revealed a nodular goitre with adenomatoid nodule formation (Fig. 2c). Therefore, this case was considered to be ectopic implantation of benign thyroid nodules after endoscopic thyroidectomy.

## Discussion

Compared to the traditional anterior cervical surgical incision, the total endoscopic thyroidectomy (TET) incision is more concealed and therefore “scarless” (in the neck) [1]. In addition to the complications of traditional thyroid surgery, TET may also cause subcutaneous emphysema, seroma, implantation and other complications [1]. Thyroid implantation is one of the complications of TET, but few reports of this complication were found, especially for benign thyroid implantation [1, 2]. It is important to note that implantation can be found, endoscopically, not only around the thyroid but also in the breast or oral cavity, that malignant cancer cells can implant, and that benign nodular goitres and other follicular cells are also possible [3–5]. In this study, we report the case of a female patient with benign breast thyroid implantation after TET for nodular goitre, which is rarely seen in the clinic. Due to the aggressiveness of malignant tumour cells, the risk of implantation of malignant cells in the thyroid may be increased after TET. However, implantation of benign cells in the thyroid is worth pondering. After

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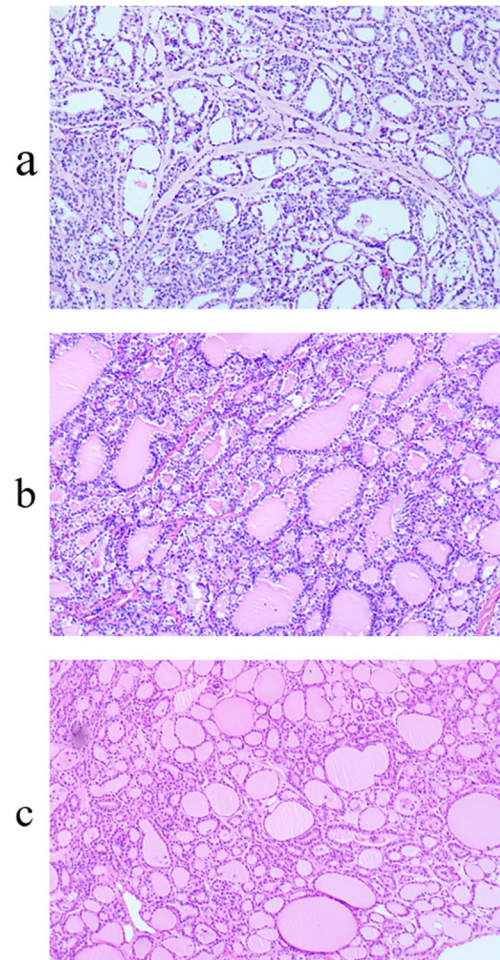
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**Fig. 1** Sonographic examination of the right breast

analysing 138 autopsy cases, Komorowski et al. [6] found that the fibrous connective tissue around the benign thyroid tumour was a pseudocapsule, thereby preventing the separation of thyroid tumour cells from tumour nodules and causing the benign thyroid tumour to extend to the adipose tissue around the thyroid gland, possibly indicating that the benign thyroid tumour cells are also invasive. In this case, the tumour was excessively pulled and squeezed during specimen retrieval due to the large size of the tumour, which further led to the shedding of tumour cells. The methods to reduce implant metastasis are as follows: improving surgical operation techniques to prevent excessive intraoperative clamping and tumour rupture, using disposable specimen bags when removing specimens, using large amounts of normal saline or sterile water to flush the wound, selecting the most suitable cases and so on [7]. One-stage local resection is recommended for benign thyroid implantation because of the benign nature of the tumour. Radioiodine therapy may be effective for the prevention and treatment of benign thyroid implantation of nodules with a high iodine uptake rate, but we still lack the support of clinical data. Thus, a patient who has a history of TET, a mass lesion in the surgical tract, and high suspicion of thyroid implantation should be considered even when pathology indicates a benign thyroid mass after TET.

**Author Contribution** Fanshuang Zhu, Zhaosheng Ma, and Zenggui Wu prepared the manuscript. Feilin Cao performed histological



**Fig. 2** Pathology: **a** intraoperative frozen pathology; **b** postoperative pathology of the breast mass; **c** postoperative pathology of the thyroid mass

examinations. All authors contributed to the article and approved the submitted version. Fanshuang Zhu, Zhaosheng Ma, and Zenggui Wu contributed equally to this manuscript.

**Data Availability** All data generated or analyzed during this study are included in this article.

## Declarations

**Ethics Approval** Not required.

**Conflict of Interest** The authors declare no competing interests.

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