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# Recurrence of thyroid carcinoma in cervical soft tissue following surgical implantation: Case report

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## ABSTRACT

**INTRODUCTION:** Thyroid cancer is the most common type of malignant endocrine cancer. Differentiated thyroid cancer, which includes papillary and follicular cancers, represents majority (90%) of all thyroid cancers and has a favorable prognosis.

However, a minority of patients develops loco-regional recurrence.

**CASE REPORT:** We report here a rare case of a 63 years-old man who underwent total thyroidectomy in 2015 for multinodular goiter whose histopathological examination revealed a papillary thyroid carcinoma. He received 6 weeks later a 100 mCi of radioactive iodine therapy. In 2017, he was admitted for multiple cervical lymph nodes with high serum thyroglobulin level (234 ng/mL) which required a bilateral central and lateral neck dissection. He was readmitted in 2019 for multiple subcutaneous neck nodules with high serum thyroglobulin level (197 ng/mL). The histopathological examination of the excised nodules revealed a papillary thyroid carcinoma. The patient showed no sign of recurrence after 2 years follow-up.

**CONCLUSION:** Local soft tissue recurrence followed surgical implantation should be suspected when nodules are determined alongside the thyroid after previous thyroid surgery. Therapy for these soft tissue implants may be difficult; a comprehensive long-term postoperative evaluation should be completed to minimize the risk of recurrence in cervical soft tissue.

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## 1. Introduction

Thyroid cancer is the most common type of malignant endocrine cancer and its incidence is rising worldwide [1,2]. Differentiated thyroid cancer, which includes papillary and follicular cancers, represents majority (90%) of all thyroid cancers and has a favorable prognosis.

However, a minority of patients develops loco regional recurrence, including cervical lymph node metastases (60–75%) [3].

Recurrent thyroid cancer in cervical soft tissue following conventional thyroid surgery with functional neck dissection are extremely rare [4–6]. However, some authors suggest that those subcutaneous lesions may result by surgical implantation of thyroid neoplasms [7,8].

We report here a rare case of papillary thyroid carcinoma recurrence in cervical soft tissue after total thyroidectomy with functional neck dissection; which may support the theory of surgical implantation for thyroid neoplasms.

This study has been reported in accordance with the SCARE criteria [9].

## 2. Case report

A 63 years-old male, with no other relevant personal nor familial medical history, was admitted to our Ear Nose Throat department of IBN ROCHD Hospital in 2015 for surgery of a multinodular goiter whose histopathological examination revealed a papillary thyroid carcinoma.

He received 6 weeks later a 100 mCi of radioactive-iodine therapy.

In 2017, he presented with multiple cervical lymph nodes with high serum thyroglobulin level (234 ng/mL) so he underwent a functional bilateral central and lateral cervical neck dissection. After the surgery, he remains asymptomatic with undetectable levels of thyroglobulin (<1 ng/mL) for 2 years.

In 2019, he was readmitted for multiple neck subcutaneous nodules located particularly in front of surgical scar (Fig. 1). No cervical lymph nodes were noted. Blood examination showed a high level of thyroglobulin (197.5 ng/mL), with normal thyroglobulin antibodies level (6.4 μUI/mL) and normal ultrasensitive thyroid-stimulating hormone (0.64 μUI/mL).

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Fig. 1. Multiple sub cutaneous nodules located particularly in front of surgical scar.

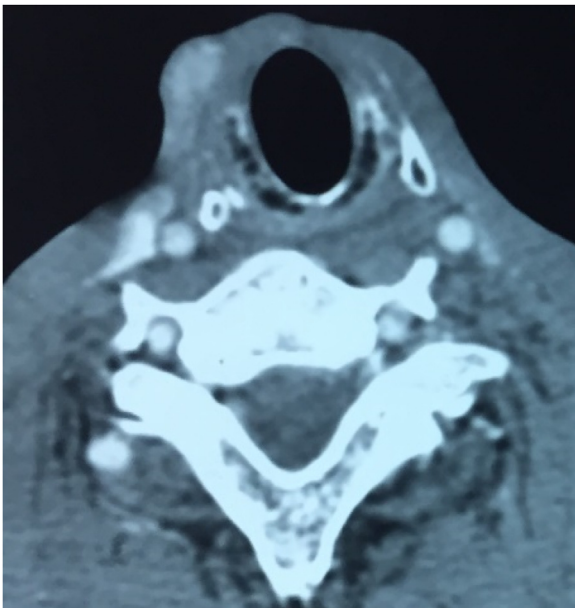


Fig. 2. CT showing multiple heterogeneous round lesions.

Computed tomography showed multiple heterogeneous round lesions in cervical soft tissues suggesting recurrence of papillary thyroid carcinoma (Fig. 2).

The patient underwent surgery by senior neck surgeon. The surgery consisted of a complete excision of the eight subcutaneous nodules (Fig. 3).

The histopathological analysis concluded to papillary carcinomatous lesions (Fig. 4).

Clinical exam with thyroglobulin dosage were performed after 1, 3, 6, 12 and 18 months.

We noticed no recurrence of the neck nodules and a decrease in thyroglobulin level (0.7 ng/mL) after 18 months follow-up.

### 3. Discussion

The theory of surgical implantation for thyroid neoplasms has been developed by H. Ruben in 2004. He studied 9 cases with neck soft tissue thyroid recurrence and suggested that those lesions are probably surgically implanted in eight cases [7].

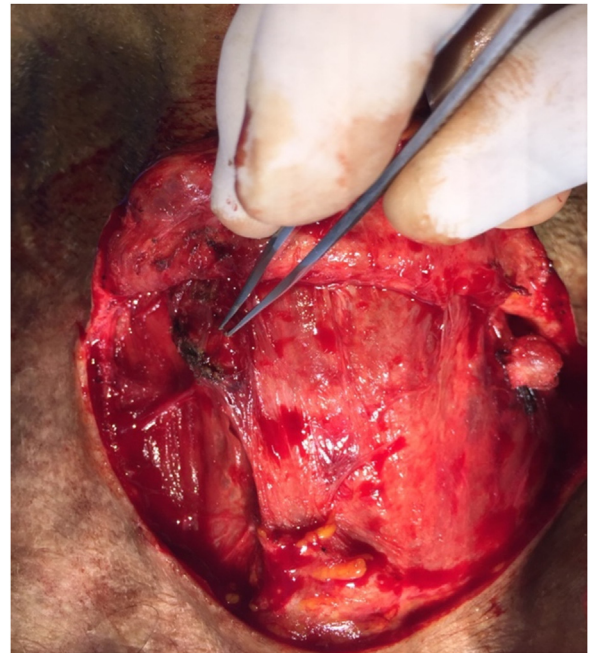


Fig. 3. Per-operative view of the subcutaneous nodules.

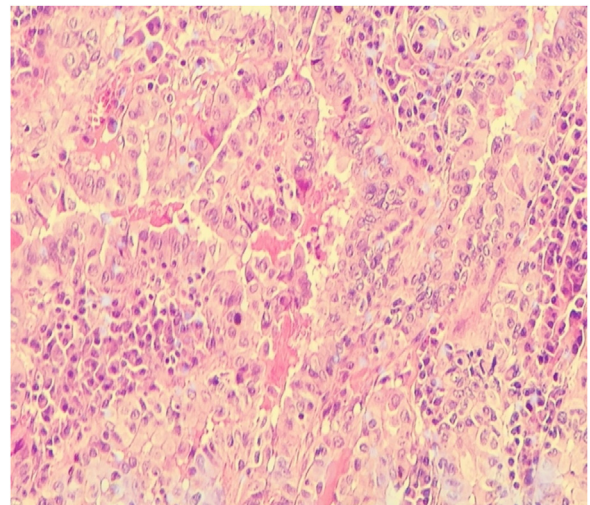


Fig. 4. Histopathological examination showing a papillary carcinoma of the subcutaneous nodules.

Yasuhiro Ito reported a case of a 28 years-old woman who developed a subcutaneous nodule 1 month after a fine-needle aspiration biopsy (FNAB) for a thyroid nodule. He performed a total thyroidectomy with resection of the subcutaneous nodule. The histological examination revealed a follicular carcinoma in both the thyroid and the subcutaneous nodule [8].

Panunzi reported a 76 years-old woman who presented with a subcutaneous nodule within 8 months after FNAB of a thyroid nodule that had been diagnosed as follicular neoplasia. He suggested that immunodeficiency due to multiple myeloma and/or therapy-related immunosuppression contributed to the development of a subcutaneous nodule [10].

Although the exact etiology of local soft tissue recurrence after open thyroid surgery is still unknown, multiple possible factors associated with recurrence can be speculated. One potential cause is proliferation and attachment of carcinoma cells transported in the bloodstream to soft tissue. Surgical skills may have played

an important role and instrument contamination during specimen manipulation could have led to implantation during surgery [6,11–14].

Luying Gao suggests that cervical soft tissue recurrence is a strong predictor of distant recurrence with a poor prognosis compared with patients with lymph nodes recurrence [6]. Moreover, they recommended an immediate search for other recurrences at the time of diagnosis for cervical soft tissue recurrence with a close follow-up [6].

#### 4. Conclusion

Local soft tissue recurrence following surgical implantation should be suspected when nodules are determined alongside the thyroid after previous thyroid surgery.

Therapy for these soft tissue implants may be difficult. A comprehensive long-term postoperative evaluation should be completed to minimize the risk cervical soft tissue recurrence.

#### Declaration of Competing Interest

The authors report no declarations of interest.

#### Funding

This study did not receive any sources of funding.

#### Ethical approval

This type of study does not require any ethical approval by our institution.

#### Consent

Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Authors contribution

M. Baghdad: drafting the article.  
Y. Oukessou: drafting the article.  
K. Choukry: acquisition of data.  
H. Radhi: study concept.  
A. Mkhatri: revising the article.  
M. Mahtar: final approval.

#### Registration of research studies

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M. Baghdad.

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