

## Large Calcified Thyroid Cyst with Escherichia Coli Abscess

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### Abstract

### Case Report

This case highlights the rare occurrence of a large benign calcified cyst with Escherichia coli abscess of the right lobe of the thyroid gland associated with colloid nodular goiter, hyperglycemic derailment, tracheal compression and deviation.

**Keywords:** large thyroid cyst, Escherichia coli abscess.

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## INTRODUCTION

Cystic thyroid degeneration with subsequent calcification and abscesses are uncommon and may be seen in long standing nodular goiters. However, large calcified thyroid cyst causing symptoms of thyroid abscess with tracheal compression and deviation, associating hyperglycemic derailment are not commonly reported in literature [1]. When they occur, however, they may lead to significant morbidity including a thyroid storm stairway obstruction, sepsis [2-5]. Hyperglycemic derailment is known to be associated with adverse outcome and increased mortality [6-8].

The blood investigations including full blood count, urea and electrolytes and coagulation were screened (Table):

CRP	21.48 mg/dl	(0-5mg/dl)
WBCC	17.2/nl	(4.3-10.8/nl)
free T3	2.24 pmol/l	(3.1-6.8 pmol/l)
free T4	18.71 pmol/l	(12-22 pmol/l)
TSH	0.09 mIE/l	(0.27-4.2 mIE/l)
Glucose	837 mg/dl	(82-115 mg/dl)
HbA1c-IFCC	129.0 mmol/molHb	(21.3-44.3 mmol/molHb)
HbA1c-NGSP	14.0 %Ges.Hb	(4.8-6.0 %Ges.Hb)

## CASE PRESENTATION

A 78-year-old female who was presented to our emergency department experienced hyperglycemic derailment (blood sugar level was 893 mg/dl) with and a red anterior neck swelling. She had no known medical illnesses, history of neck trauma, pre-existent thyroid. Apart from a low grade pyrexia at 37,6 °C, her vital signs were: heart rate 112 beats per minute, pulse per minute, blood pressure 130/80 mm Hg and respiratory rate normal.

She was admitted to Intermediate Care Unit and stabilized. After stabilisation of the emergency patient, we find out a history of enlargement of goiter for 20 years with a low painful, red anterior neck-side swelling for one month. She had progressively worsening difficulty in breathing with intermittent dysphagia for solids. Examination revealed a hard and low painful, red, warm mass arising from the right thyroid lobe measuring 11 cm× 10cm in size with symptoms of local infiltration and gross tracheal deviation to the left side (Fig 1). There was no cervical lymphadenopathy.



**Fig-1: Anterior and lateral view showing a large, hard and tender mass of the neck with signs of an abscess (view before operation)**

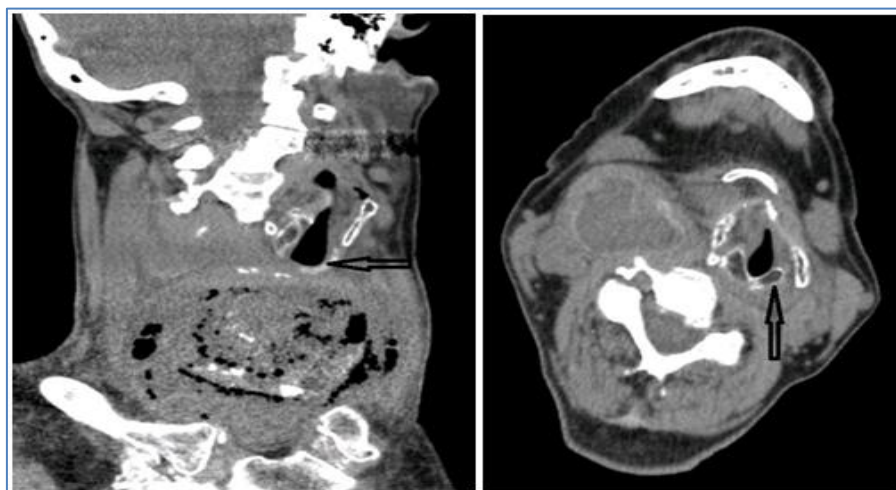
Ultrasound scan showed a large calcified thyroid cyst and right thyroid nodules. The patient had ultrasound guided aspiration under aseptic technique with aspiration of abscess pus.

She had an urgent CT scan which showed a large calcified thyroid cyst with thick enhancing wall

and abscess measuring 10 x 9 x 9,2 cm (Fig 2. A and B), compressing and displaying the trachea to the left side (Fig 3) and almost occupying the whole right thyroid lobe and a hypodense lesions over the right hemithyroid measuring 3,2 x 4,2 x 2,4 cm. The left thyroid lobe and isthmus appeared normal.



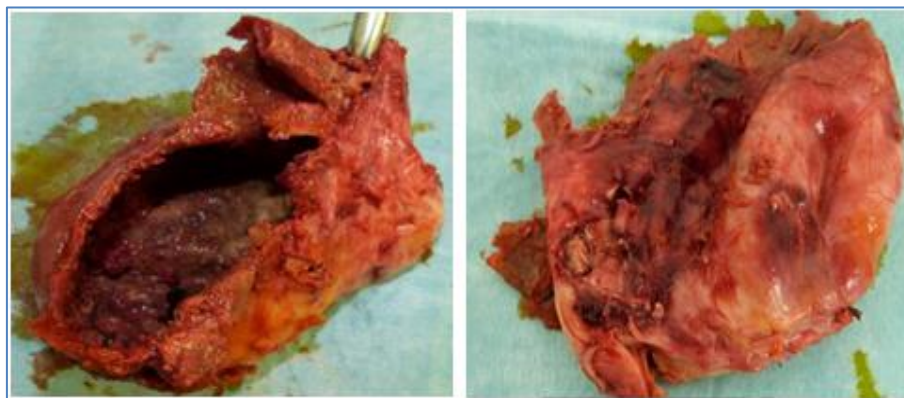
**Fig-2: CT-Scan of head and neck showing the large calcified thyroid abscess (measuring 10 x 9 x 9,2 cm) with significant tracheal stenosis (view A) and a hypodense lesions over the right hemithyroid measuring 3,2 x 4,2 x 2,4 cm (arrow view B)**



**Fig-3: CT-Scan of head and neck showing a significant tracheal deviation to the opposite side (Arrow)**

The patient underwent intravenous antibiotic and was taken for surgery after stabilisation. The neck was explored with Kocher suprasternal incision. There was extensive subcutaneous edema. The deep investing cervical fascia, strap muscles and thyroid capsule were matted together with complete obliteration of dissection planes. There was extensive phlegmone and edema. The

calcified cyst with abscess was completely removed (Fig 4) from the thyroid gland and remaining right lobe were not dissected. The wound was not closed. She was admitted to Intensive Care Unit after surgery. A day after she underwent a second-look operation with a right hemithyroidectomy.



**Fig-4: The excised calcified cyst with abscess cavity is shown**

Histology of the thyroid abscess revealed the presence of a cervical soft tissue with severe scarring, chronic granulating, large scaled abscessing, necrotizing inflammation of the adjacent thyroid parenchyma. No evidence of malignancy. Histology of the right hemithyroid revealed the presence of a colloid nodular goiter with high-grade regressive changes, fresh hemorrhages and a 1,5 cm follicular adenoma, no abscess, no malignancy. *Escherichia coli* was isolated from the aspirate.

The patient recovered with hypothyroidism, without voice alterations or recurrence. She was diagnosed with type 2 diabetes (first diagnosis) and the treatment was adjusted. Antibiotics were continued seven days post-operative.

She was discharged after 10 days on Metformin 500 mg/Januvia 50 mg/Lantus 16IE/ L-Thyroxin 75 mg daily.

## DISCUSSION

Several recent studies have shown an association of insulin resistance with thyroid nodular disease. Accumulating evidence suggests that the recent increase in the incidence of thyroid nodular disease, in iodine replete areas, is related to the increased prevalence of insulin resistance [9]. Hyperglycemia is a common condition in critically ill patients. Patients admitted to an intensive care unit represent an inhomogeneous collective and hyperglycemia might need a differential evaluation depending on the underlying disorder. Hyperglycemic derailment is known to be associated with adverse outcome and increased mortality [10-12].

## CONCLUSION

Calcification of a large thyroid cyst with *Escherichia coli* abscess is a rare phenomenon. Unusually, in the patient reported here, the thyroid abscess was confluent with colloid nodular goiter and hyperglycemic derailment. The majority of such obstructive calcified thyroid cysts are benign. Imaging with ultrasound and CT scan may have to be utilized to determine the extent of the lesion before surgery.

## Author contributions

All authors contributed equally to the manuscript drafting. All authors read and approved the final manuscript. All authors have **no conflict of interest** to declare.

## Informed consent

Informed consent was obtained from patient.

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