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CASE REPORT

An abscess of thyroid remnant in a positive Coronavirus disease 2019 patient

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ABSTRACT

Thyroid abscess is rare due to the unique anatomy and physiological features of the thyroid gland. The underlying thyroid disorder, thyroidectomy, immunocompromised conditions, and congenital third or fourth branchial arch anomalies are among the known risk factors. The association of coronavirus disease 2019 (COVID-19) with thyroiditis is recently reported and the inflammation of the thyroid gland may predispose to the abscess formation, especially in combination with other risk factors. The principle of management is by the combination of broad-spectrum antibiotics and evacuation of the abscess, with careful monitoring of thyroid hormone status. Serial aspiration is preferred in localized or less extensive cases to avoid possible complications like thyroid storm secondary to manipulation of the gland or precipitated by the stress of surgery and anaesthesia. We present a unique case of thyroid abscess arising from the remnant of thyroid isthmus or pyramidal lobe in an immunocompetent patient with a history of total thyroidectomy and recently infected with COVID-19, successfully treated with serial aspiration and antibiotic.

1. INTRODUCTION

Thyroid abscess is extremely rare, and accounts for less than 1% of all thyroid lesions [1]. The thyroid gland is resistant to infection due to the presence of the capsule as an anatomical barrier and physiologically it has an abundant blood supply, lymphatic drainage, and iodine content [2]. The risk factors include pre-existing thyroid disorder, diabetes mellitus, or other immunocompromised conditions and underlying congenital third or fourth branchial arch anomalies [1,2]. Recently, several literatures have reported on the association of coronavirus disease 2019 (COVID-19) with thyroiditis and thyroid dysfunction [3-5]. The inflammation of the thyroid gland may lead to abscess formation, especially in cases with underlying thyroid disease or a history of thyroidectomy. We present a unique case of thyroid abscess arising from the remnant of thyroid isthmus or pyramidal lobe in an immunocompetent patient with a history of total thyroidectomy and recently infected with COVID-19.

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2. CASE PRESENTATION

A 50-year-old lady presented with painful anterior neck swelling for a one-week duration. It was progressively increasing in size and associated with fever. There was no shortness of breath, hoarseness, noisy breathing, dysphagia, rhinorrhea, cough, hyperthyroid or hypothyroid symptoms, insect bite, or local trauma. She had a history of total thyroidectomy done five years ago for multinodular goitre, but not on any thyroid hormone or calcium supplements. The surgery was uneventful, and the histopathology examination revealed nodular hyperplasia. She had no other medical comorbidities.

Upon examination, the patient is alert and conscious without signs of respiratory distress. There was a swelling at the midline and lower part of the neck measuring 5 cm x 6 cm, erythematous overlying skin, firm in consistency and tender on palpation (Figure 1). The previous total thyroidectomy scar was seen at the lower part of the swelling. The swelling moved superiorly with deglutition, but not with tongue protrusion. There was no other swelling or cervical lymph node palpable and other ear, nose, and throat examinations including flexible nasopharyngolaryngoscopy were unremarkable. The patient was detected to have COVID-19 positive by a routine antigen rapid test kit prior to ward admission. An urgent ultrasound neck was performed and revealed midline anterior neck collection with moving debris within, arising from thyroid isthmus, measuring 2.2 cm x 2.6 cm x 4.3 cm (Figure 2). The bilateral thyroid lobes were not visualised in keeping with the previous surgery. Blood investigations showed leucocytosis with neutrophilia, otherwise, other blood parameters including blood sugar and thyroid function test were within normal range.

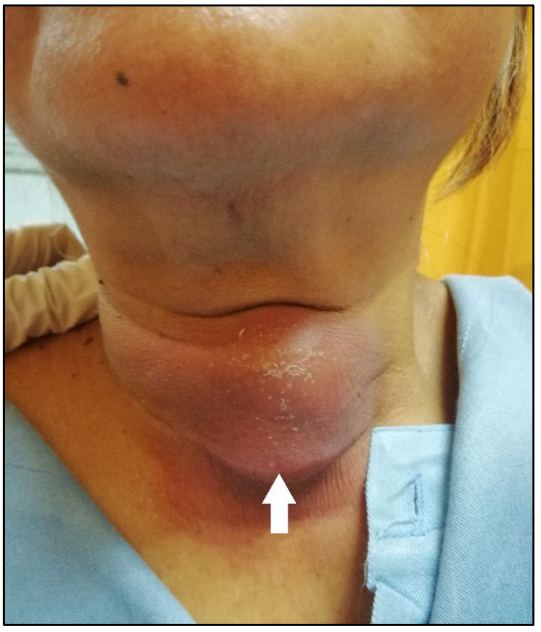

Fig.1 Swelling at the midline and lower part of the neck measuring 5 cm x 6 cm with erythematous overlying skin, firm in consistency and tender on palpation. The previous total thyroidectomy scar was seen at the lower part of the swelling (arrow)

Source: V Sha Kri Eh Dam (2026)

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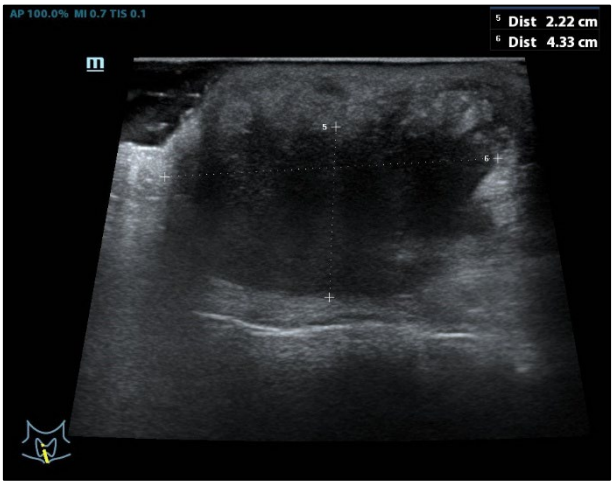

Fig.2 Ultrasound neck shows midline anterior neck collection with moving debris within, arising from thyroid isthmus, measuring 2.2 cm x 2.6 cm x 4.3 cm. The bilateral thyroid lobes were not visualised in keeping with the previous surgery

Source: V Sha Kri Eh Dam (2026)

She was admitted to the isolation ward and started on intravenous amoxicillin-clavulanate. A total of 3 serial bedside aspirations of thyroid abscess were performed every day over 3 days. The amount of the pus aspirated was reduced in trend from 10 ml on the first day (Figure 3) to 3 ml on the second day and less than 1 ml on the third day. We decided to perform aspiration instead of incision and drainage to avoid the spread of the coronavirus to other healthcare workers and to minimise manipulation of the thyroid gland which may exacerbate thyroid storm. The pus showed growth of Staphylococcus aureus and was sensitive to amoxicillin-clavulanate. The patient was discharged upon completion of intravenous antibiotics for 10 days. The neck swelling improved markedly (Figure 4), and she was given an outpatient clinic appointment in one week. After two months of follow-up, the neck swelling had completely resolved.

Fig.3 10ml pus aspirated from the thyroid abscess

Source: V Sha Kri Eh Dam (2026)

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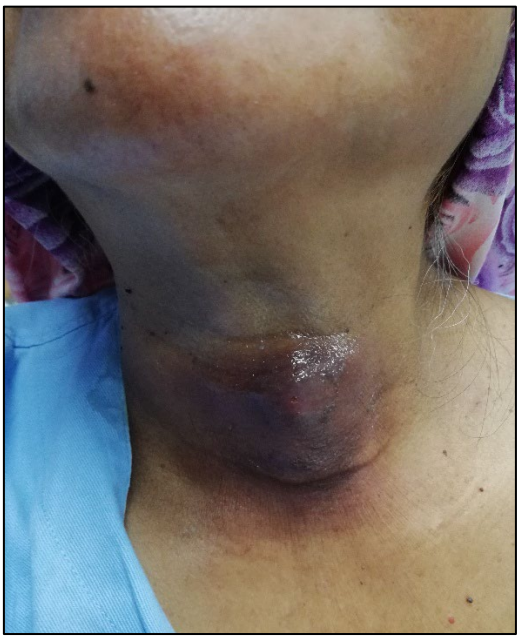

Fig.4 The swelling markedly improved after serial aspiration and 10 days of intravenous antibiotics

Source: V Sha Kri Eh Dam (2026)

3. DISCUSSION

Thyroid abscess is a rare but potentially fatal condition due to catastrophic complications such as septicaemia, deep neck or mediastinal extension, tracheal or oesophageal perforation, thyroid storm, and upper airway obstruction [2]. The immunocompromised state of the patient is the main risk factor, similar to abscess formation in other parts of the body. In an immunocompetent patient without branchial arch anomaly, pre-existing thyroid pathology or surgery may be the only risk factor. In the present case, the patient underwent total thyroidectomy for multinodular goitre, however, there was still a remnant of thyroid tissue which could be part of the thyroid isthmus or pyramidal lobe. Lack of capsule as an anatomical barrier and disturbance of blood supply and lymphatic drainage secondary to surgery possibly predisposed patient to the infection.

In addition, in the era of the COVID-19 outbreak, the virus infection can result in thyroiditis and subsequently may predispose to secondary bacterial infection. Other viruses that have been reported to be associated with thyroiditis are coxsackievirus, mumps, Epstein–Barr virus, cytomegalovirus, and influenza virus [6]. Interestingly, thyroid abscess is the only presenting symptom of COVID-19 in our presenting case without other concomitant respiratory symptoms.

The definitive treatment of our thyroid abscess required a combination of the evacuation of the abscess and the administration of intravenous antibiotics. The abscess formation can be evacuated by either serial aspiration or incision and drainage may be needed in complicated cases. The risks and benefits of each method should be weighed cautiously. The aspiration method is less invasive, can be performed at the bedside, and is usually preferred in cases of localised and non-extensive diseases but usually requires multiple sessions. Another reason that we considered this procedure was the COVID-19 status of the patient. The majority of cases with thyroid abscess have normal thyroid function tests [2], however, thyroid storm may develop during incision and drainage due to manipulation of the gland or precipitated by the stress of surgery and anaesthesia.

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Multiple pathogens have been implicated in the formation of thyroid abscesses, mainly Staphylococci especially Staphylococcus aureus as seen in the present case, and streptococci (40%), followed by gram-negative organisms (25%) and anaerobes (12%) [7]. Therefore, the principle of antibiotic administration is usually to start with a broad-spectrum antibiotic and then change to a more directed antibiotic once culture and sensitivity results are available.

Follow-up is crucial to look for resolution of infection and early detection of residual thyroid enlargement which may be suggestive of underlying malignancy or chronic inflammatory disorder. This should be applied to all cases with extra caution to the cases with underlying thyroid pathology or a history of thyroidectomy. Ultrasound is considered the primary first-line investigation of thyroid disorders and fine-needle aspiration cytology should be performed based on the thyroid imaging reporting and data system score. In the present case, no extra investigation was performed due to the complete resolution of infection and swelling. However, the patient was advised to return early if any thyroid enlargement is observed.

4. CONCLUSION

Thyroid abscess is rare and usually occurs in the immunocompromised patient. Recently, in the era of the COVID-19 outbreak, this virus has been shown to be associated with thyroiditis and predisposes to the abscess formation even in immunocompetent patients as seen in the present case. Other risk factors are underlying thyroid disorder and thyroidectomy. The management is based on a case-by-case basis and a less invasive serial aspiration is preferred in the localised abscess.

5. CONSENT

Informed consent was obtained from the patient for case write up including permission for publication of all photographs and images.

6. CONFLICT OF INTEREST

Author declares none.

7. ACKNOWLEDGEMENT

Author would like to thank the patient and all personnel who have directly or indirectly contributed to managing this case.

8. AUTHOR'S CONTRIBUTIONS

V Sha Kri Eh Dam drafted the article and was involved in critical revision and final approval.

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