VER
Vascular & Endovascular Review

Aseptic Thyroid Abscess

Dr. Shilpa Samuel Dhinakaran[1], Dr. Manoj Prabhakar[2], Dr. Saran Keshav[3], Dr. Raja Senthil[4]

[1]MBBS, M.S (Post Graduate Student - Master of Surgery), Sri Ramachandra University, Chennai, India
[2]MBBS, M.S (Master of Surgery), Sri Ramachandra University, Chennai, India
[3]MBBS, M.S, M.Ch (Trauma surgery and critical care), AIIMS, Jodhpur, India
[4]MBBS, M.S (Master of Surgery), Sri Ramachandra University, Chennai, India

SUMMARY

An elderly diabetic female presented with fever, swelling, and pain over the anterior aspect of her neck for one week. Clinical examination revealed a firm 4x3 cm swelling with warmth and tenderness. CT neck showed a colloid cyst with rupture and fluid collection within the thyroid gland, associated with inflammation. USG-guided FNAC indicated necrotic material. A hemithyroidectomy was performed, revealing pus within the gland. Frozen section confirmed non-malignancy. Postoperative recovery was uneventful, and pus culture showed no bacterial growth, consistent with an aseptic thyroid abscess. The patient had an uneventful follow-up.

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BACKGROUND

Thyroid abscesses are rare but can be life-threatening if untreated [1]. They are more common in immunocompromised individuals and children. Common causative organisms include *Staphylococcus aureus, Streptococcus, Gram-negative bacteria*, *anaerobes,* and *fungi*. Despite their rarity, thyroid abscesses should be considered a differential diagnosis for painful neck swellings.

CASE PRESENTATION

An elderly female from a lower socioeconomic background presented with a rapidly enlarging anterior neck swelling for one week, accompanied by high-grade fever, pain, and erythema. She was previously treated at another hospital with symptomatic relief but persistent swelling. She had a history of type II diabetes mellitus and hypothyroidism, both well-managed. There was no family history of thyroid malignancy.

On examination, a firm, 4x3 cm swelling was noted on the right anterior neck, moving with deglutition, with smooth surface, palpable lower border, and signs of inflammation. No cervical lymphadenopathy was observed.

INVESTIGATIONS

- **Total Leukocyte Count:** 22,410 cells/cumm (77% polymorphs)
- **HbA1c:** 12.0%
- **Thyroid Function Tests:** Free T3 - 1.69 pg/mL, Free T4 - 1.35 ng/dL, TSH - 2.470 mIU/L
- **Urine Routine:** Normal
- **Ultrasound Neck:** Right visceral space collection, large solid-cystic lesion in the right lobe (TIRADS 3), features of thyroiditis (Figure 1).
- **CT Neck:** 2x2.2x2.8 cm colloid cyst in the right thyroid lobe with rupture and associated inflammation (Figure 2).
- **USG-Guided FNAC:** Necrotic material suggestive of abscess formation

DIFFERENTIAL DIAGNOSIS

- **Thyroid Malignancy:** Initially suspected due to patient's age but ruled out due to absence of cervical lymphadenopathy and imaging findings suggestive of rupture.
- **Infective Thyroiditis/Thyroid Abscess:** Considered due to leukocytosis, FNAC findings, and clinical presentation

TREATMENT

The patient was started on IV antibiotics and analgesics. A hemithyroidectomy with intraoperative frozen section analysis was planned. Once the thyroid capsule was breached, a stream of pus was encountered (Figure 3). Pus culture showed no growth, indicating an aseptic abscess. Histopathology confirmed abscess formation without malignancy.
Postoperatively, the patient had an uneventful recovery and was discharged with routine follow-up.

OUTCOME AND FOLLOW UP

Follow-up at 3 and 6 months was uneventful. The patient resumed daily activities immediately postoperatively. Repeat thyroid function tests remained within normal limits

DISCUSSION

Thyroid abscesses are uncommon due to certain factors such as:

1. Protective fibroelastic true capsule and pre tracheal fascia also known as the false capsule around the gland.
2. Rich vascular supply from the superior and inferior thyroid arteries and the thyroid ima artery whereas the lymphatic drainage of the thyroid is to the paratracheal and deep cervical nodes.
3. Iodine-rich environment, which provides antimicrobial properties. The gland has a rich iodine content since the thyroid gland secretes 80 micrograms of iodine in the form of T3 and T4 hormones per day [2].

Acute suppurative thyroiditis (AST) with abscess formation occurs in <1% of thyroid disorders, more commonly in immunocompromised adults (e.g., diabetes, AIDS) [3]. It can also be secondary to local congenital anatomic defects such as third or fourth branchial arch anomalies [4].

SIMILAR PUBLISHED CASES

1. **Case 1:**
   A middle-aged immunocompromised woman presented with a history of fever and a tender swelling over the anterior aspect of her neck. She was diagnosed with acute suppurative thyroiditis and Methicillin-resistant *Staphylococcus aureus* (MRSA) bacteraemia. Transoral and transcervical drainage of the thyroid abscess was performed. Pus cultures confirmed the presence of MRSA [3].
2. **Case 2:**
   A young female presented with a history of neck swelling and pain associated with fever. Investigations revealed a thyroid abscess, which was managed conservatively [5].
3. **Case 3:**
   A study of 14 patients showed that suppurative thyroiditis accounted for 0.29% of neck abscesses. The most frequently isolated organisms were *Mycobacterium tuberculosis* and *Staphylococcus aureus* [6].
4. **Case 4:**
   A child in his early childhood presented with fever and a painful neck mass. The patient was diagnosed with a thyroid abscess. Culture of the aspirated fluid revealed no bacterial growth, indicating a sterile thyroid abscess [7].
5. **Case 5:**
   A child in his middle childhood presented with a thyroid abscess. The case report concluded that the left lobe is more commonly involved, with infection frequently spreading via a piriform sinus fistula to the thyroid gland [8].
6. **Case 6:**
   A middle-aged woman was diagnosed with subacute thyroiditis, a condition more commonly seen in young and middle-aged adults, with a higher incidence in females. While bacterial pathogens are the primary causative agents of thyroid abscesses, subacute thyroiditis is an inflammatory thyrotoxic condition presumably caused by viral infection [9].
7. **Case 7:**
   A man in his late 40s presented with a painful neck swelling associated with dysphagia and odynophagia. In the absence of predisposing factors for thyroid abscess formation, an aggressive neoplasm should be considered in the differential diagnosis, as it may present similarly to an abscess [10].

MANAGEMENT OPTIONS

- USG-guided aspiration for localized abscesses.
- Incision and drainage for extensive infections.
- Hemithyroidectomy or total thyroidectomy in cases of suspected malignancy or abscess with cystic degeneration.

In critically ill patients with retro-pharyngeal extension, emergency drainage is warranted to prevent further spread [11].
In this case, due to the presence of a colloid cyst and abscess, along with necrotic FNAC findings, hemithyroidectomy with frozen section was performed to exclude malignancy.

TAKE HOME MESSAGE

- Thyroid abscess should be considered a surgical emergency in painful thyroid swellings.
- It is more common in immunocompromised adults than in children [12].
- USG-guided aspiration is preferred in septic patients to control infection spread.

REFERENCES

1. Lesh R, Hellums R, Pichardo P, et al. Thyroid abscess: a case series and literature review. Ear Nose Throat J. 2023. doi:10.1177/01455613221150128.
2. Ahad F, Ganie SA. Iodine, iodine metabolism, and iodine deficiency disorders revisited. Indian J Endocrinol Metab. 2010.
3. Yedla N, Pirela D, Manzano A, Tuda C, Lo Presti S. Thyroid abscess: challenges in diagnosis and management. J Investig Med High Impact Case Rep. 2018 May 25;6:2324709618778709. doi:10.1177/2324709618778709. PMID: 29854858; PMCID: PMC5971374.
4. Chaudhary N, Gupta A, Motwani G, Kumar S. Fistula of the fourth branchial pouch. Am J Otolaryngol. 2003;24(4):250–2. doi:10.1016/S0196-0709(03)00026-7.
5. Chainchel Singh MK, Vijayanathan A. Idiopathic Thyroid Abscess - A Rare Occurrence. Eur Endocrinol. 2019;15(1):42-43. doi:10.17925/EE.2019.15.1.42

6. Callejo JG, Martinez JR et al. Management of Thyroid Gland AbscessManejo del absceso de la glándula tiroides. Acta Otorrinolaringologica (English Edition). 2019 March; 70(1):61-67.
7. Mehmood A, Inam R, Ali Siddiqui Z, E Kibria R. An Idiopathic Sterile Thyroid Abscess in a Five-Year-Old Child. Cureus. 2024;16(6):e62257. Published 2024 Jun 12. doi:10.7759/cureus.62257
8. Ghaemi N, Sayedi J, Bagheri S. Acute suppurative thyroiditis with thyroid abscess: a case report and review of the literature. Iran J Otorhinolaryngol. 2014;26(74):51-55.
9. Teoh JHI, Velaiutham S. Lessons of the month 1: A diagnostic dilemma: thyroid abscess or subacute thyroiditis?. Clin Med (Lond). 2022;22(4):370-372. doi:10.7861/clinmed.2022-0160
10. Urbón-Sánchez P, Mendoza-Moreno F, Sánchez De Toca-Gómez S, et al. Thyroid abscess, an uncommon diagnosis: A case report and mini-review of the literature. Med Int (Lond). 2024;4(3):29. Published 2024 Apr 4. doi:10.3892/mi.2024.153
11. .Falhammar H, Wallin G, Calissendorff J. Acute suppurative thyroiditis with thyroid abscess in adults: clinical presentation, treatment, and outcomes. BMC Endocr Disord. 2019;19:130. doi:10.1186/s12902-019-0458-0.
12. Sharma B, et al. Thyroid abscess: a rare case report and review of literature. Thyroid Res Pract. 2018;15(1):49–51. doi:10.4103/trp.trp_47_17.

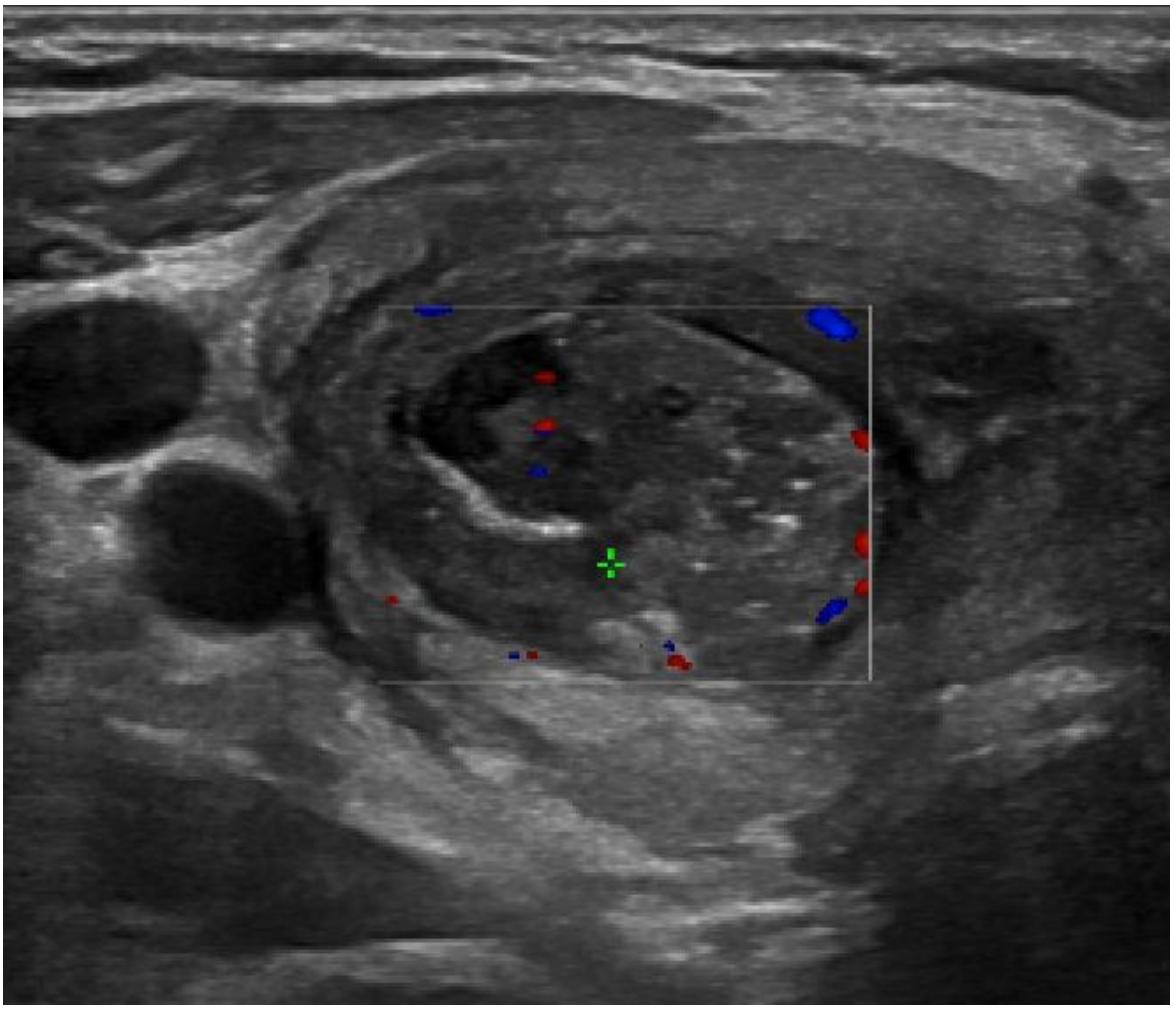

Figure 1 - Ultrasound of the neck suggesting abscess formation

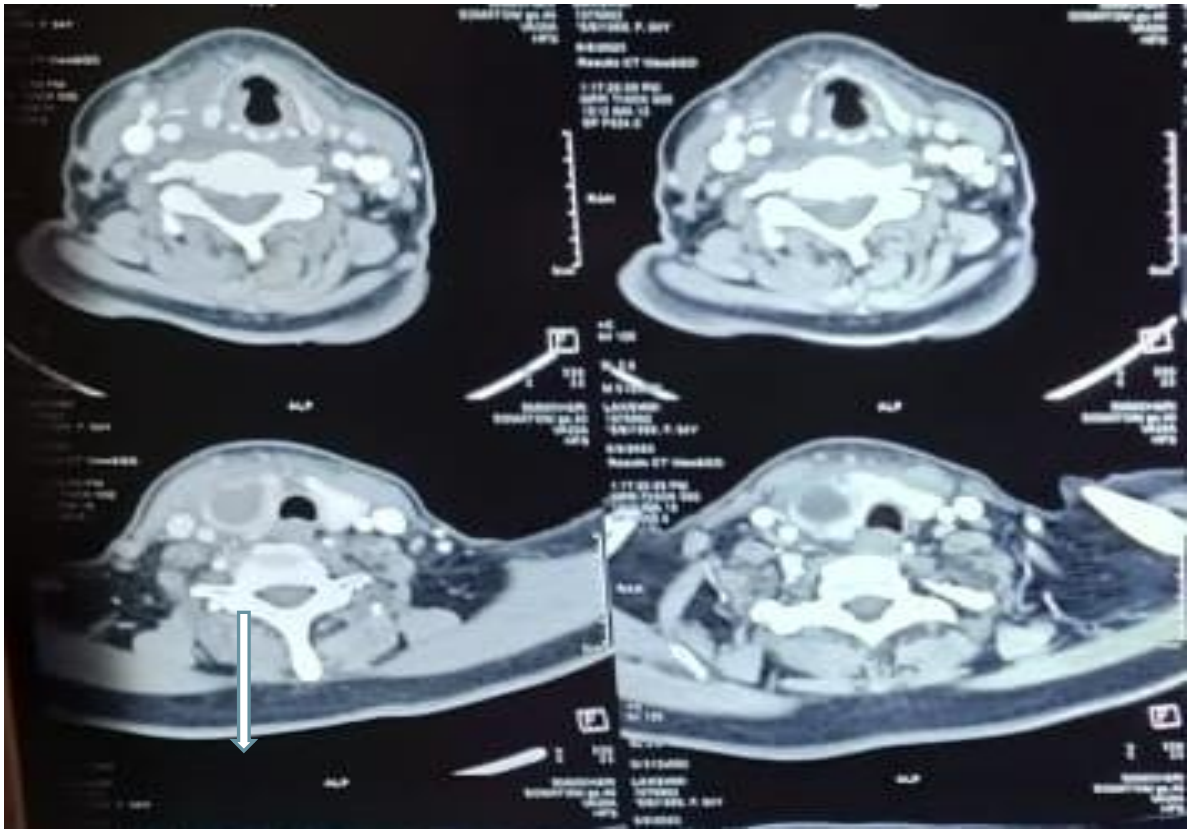

Figure 2 - CECT Neck suggesting colloid cyst of right lobe of thyroid with features of rupture shown in white arrow

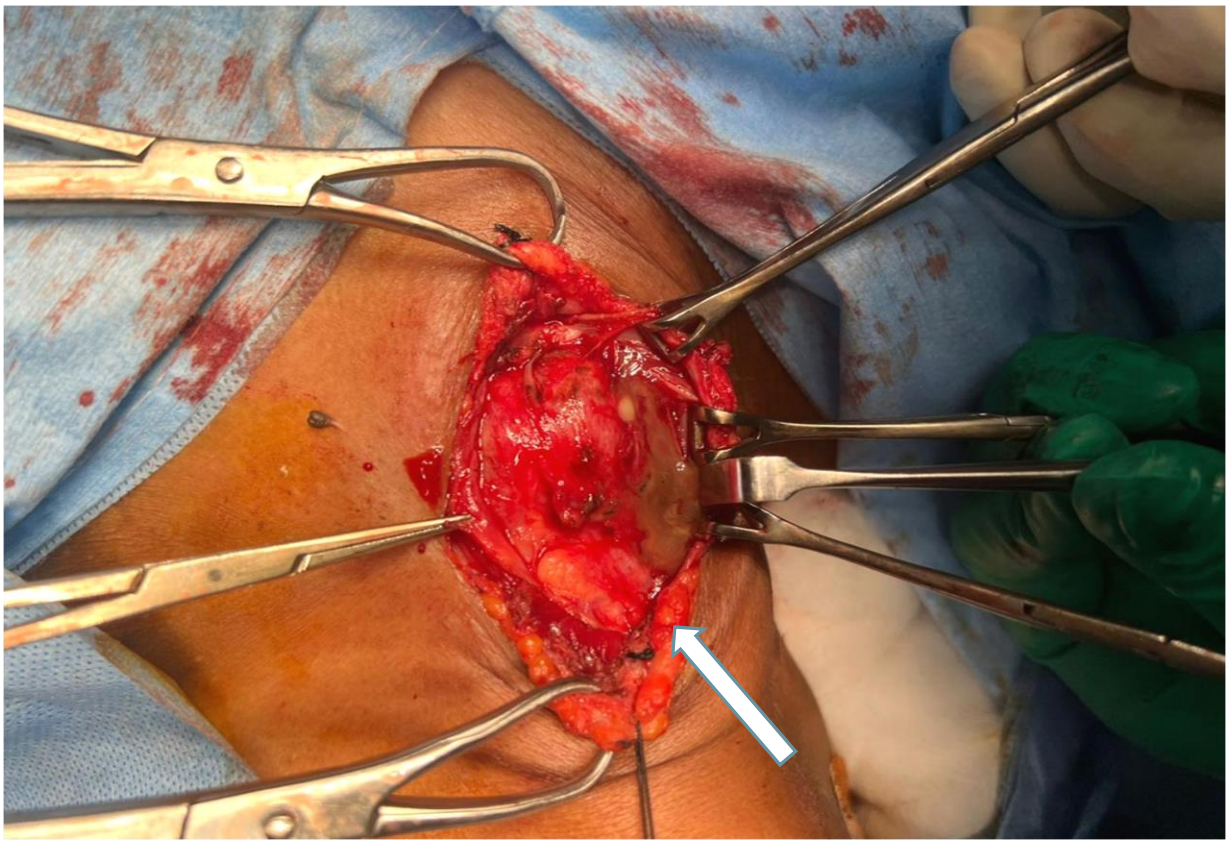

Figure 3 - Intra-operative picture of Thyroid abscess shown in white arrow