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Case Report

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Posted Date: October 8th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-11028546/v1>

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Additional Declarations: No competing interests reported.

Spontaneous Hemorrhage in a Thyroid Nodule Presenting as a Rapidly Enlarging Neck Mass: A Case Report

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Abstract

Background: Spontaneous hemorrhage within a thyroid nodule is an uncommon but important benign condition that may present as rapid neck swelling and mimic malignant disease. This diagnostic overlap can lead to unnecessary surgical intervention if not accurately identified.

Case Presentation: We report the case of a 30-year-old woman who presented with a two-week history of rapidly enlarging, painless anterior neck swelling. Physical examination revealed a firm, non-tender mass measuring approximately 6 × 6 cm in the left thyroid lobe. Thyroid function tests were normal. Ultrasonography demonstrated a 6.5 × 6 cm complex thyroid nodule with mixed echogenicity and internal fluid–fluid levels, suggestive of intranodular hemorrhage. Fine-needle aspiration (FNA) of the solid component revealed benign follicular epithelial cells with abundant colloid, consistent with a colloid goiter. Aspiration of the cystic component yielded approximately 40 mL of hemorrhagic fluid, with cytology showing red blood cells, hemosiderin-laden macrophages, and cholesterol crystals, without evidence of malignancy. Following aspiration, the swelling showed marked regression with significant symptomatic improvement. The patient was managed conservatively without surgical intervention and remained stable on short-term follow-up.

Conclusion: Spontaneous intranodular hemorrhage should be considered in the differential diagnosis of rapidly enlarging thyroid masses. FNA plays a crucial role in establishing a definitive diagnosis, preventing misinterpretation as malignancy, and avoiding unnecessary surgery. Early recognition is particularly important in resource-limited settings to optimize patient care and reduce healthcare burden.

Keywords: Thyroid nodule, Spontaneous hemorrhage, Fine-needle aspiration (FNA), Rapidly enlarging neck mass, Case report

Introduction

Thyroid nodules are frequently encountered in clinical practice, and the vast majority are benign, most commonly representing colloid nodules or nodular hyperplasia (1,2). The main diagnostic challenge in evaluating thyroid nodules is the accurate differentiation between benign and malignant lesions, as this directly influences clinical management and decisions regarding surgery (2). Fine-needle aspiration (FNA) cytology serves as the primary diagnostic tool, providing a safe, minimally invasive, and highly reliable method with a strong negative predictive value for benign disease (1,3). Nodules classified as benign on cytology generally have a very low likelihood of malignancy and are therefore managed conservatively with periodic clinical and imaging follow-up (3,4).

Although benign thyroid nodules typically demonstrate slow or stable growth, sudden enlargement raises concern for malignancy, including aggressive tumors such as anaplastic carcinoma (4,5). Nevertheless, rapid enlargement is more commonly due to benign causes, particularly intranodular hemorrhage or cystic degeneration (4,6). Spontaneous hemorrhage within a thyroid nodule is an infrequent but recognized phenomenon that may present as abrupt neck swelling, occasionally associated with pain, compressive symptoms, or, rarely, airway compromise. Despite its benign nature in most cases, this condition may closely resemble malignant disease clinically, creating diagnostic uncertainty and potentially leading to unnecessary surgical management (6).

In this report, we present a case of spontaneous hemorrhage occurring in a benign thyroid nodule that manifested as a rapidly enlarging neck mass in a young woman. The case underscores the diagnostic value of FNA and highlights the importance of recognizing this entity as a potential diagnostic pitfall in routine clinical practice.

Case Presentation

Clinical History

A 30-year-old woman presented to the surgical outpatient clinic with a complaint of a painless anterior neck swelling of two weeks' duration. She reported that the swelling had appeared suddenly and progressively increased in size over a short period, causing noticeable cosmetic

concern and anxiety. There was no history of trauma, radiation exposure, dysphagia, dyspnea, dysphonia, weight loss, fever, or features suggestive of thyroid dysfunction.

The patient had no prior history of thyroid disease or similar neck swelling. There was no family history of thyroid malignancy or endocrine disorders. She was not on any anticoagulant therapy and had no known bleeding diathesis.

Physical Examination

On physical examination, a firm, non-tender, and well-defined swelling was noted predominantly involving the left thyroid lobe (**Fig. 1**). The mass measured approximately 6×6 cm in greatest dimensions. The overlying skin was normal, and there were no dilated veins or signs of inflammation. No cervical lymphadenopathy was detected, and systemic examination was within normal limits.

Figure 1. Gross clinical image of the neck swelling

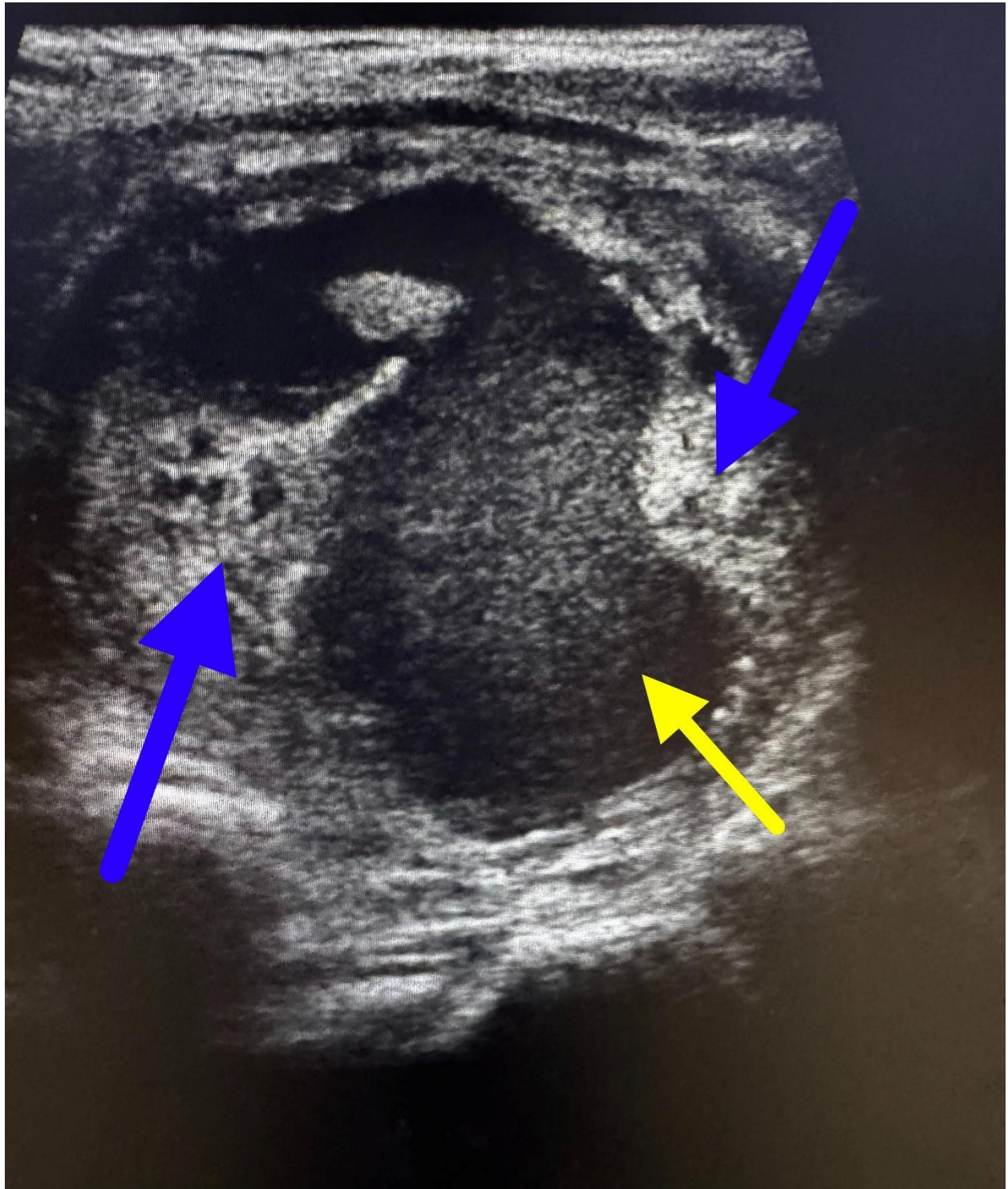


Clinical photograph showing a visible swelling involving the anterior neck, predominantly affecting the left thyroid region (red arrow), corresponding to a rapidly enlarging thyroid mass.

Diagnostic Assessment

Thyroid function tests were within normal limits. Neck ultrasonography (**Fig. 2**) demonstrated a 6.5×6 cm complex nodule in the left thyroid lobe with mixed echogenicity and internal fluid–fluid levels, suggestive of intranodular hemorrhage in an otherwise benign thyroid lesion. The right thyroid lobe appeared normal, and no suspicious cervical lymph nodes were identified. Based on imaging findings, fine-needle aspiration (FNA) was recommended for further evaluation.

Figure 2. Ultrasonographic appearance of the thyroid nodule



Ultrasound image of the left thyroid lobe demonstrating a complex thyroid nodule with mixed echogenicity. The cystic component is indicated by the yellow arrow, while internal solid

components are indicated by blue arrows. The overall appearance is suggestive of intranodular hemorrhage within a benign thyroid lesion.

FNA was performed from both the solid and cystic components of the lesion. Aspiration of the solid component yielded moderately cellular smears composed of benign follicular epithelial cells arranged in sheets and clusters, with abundant colloid in the background, consistent with a colloid goiter.

Aspiration of the cystic component yielded approximately 40 mL of dark brown hemorrhagic fluid (**Fig. 3**).

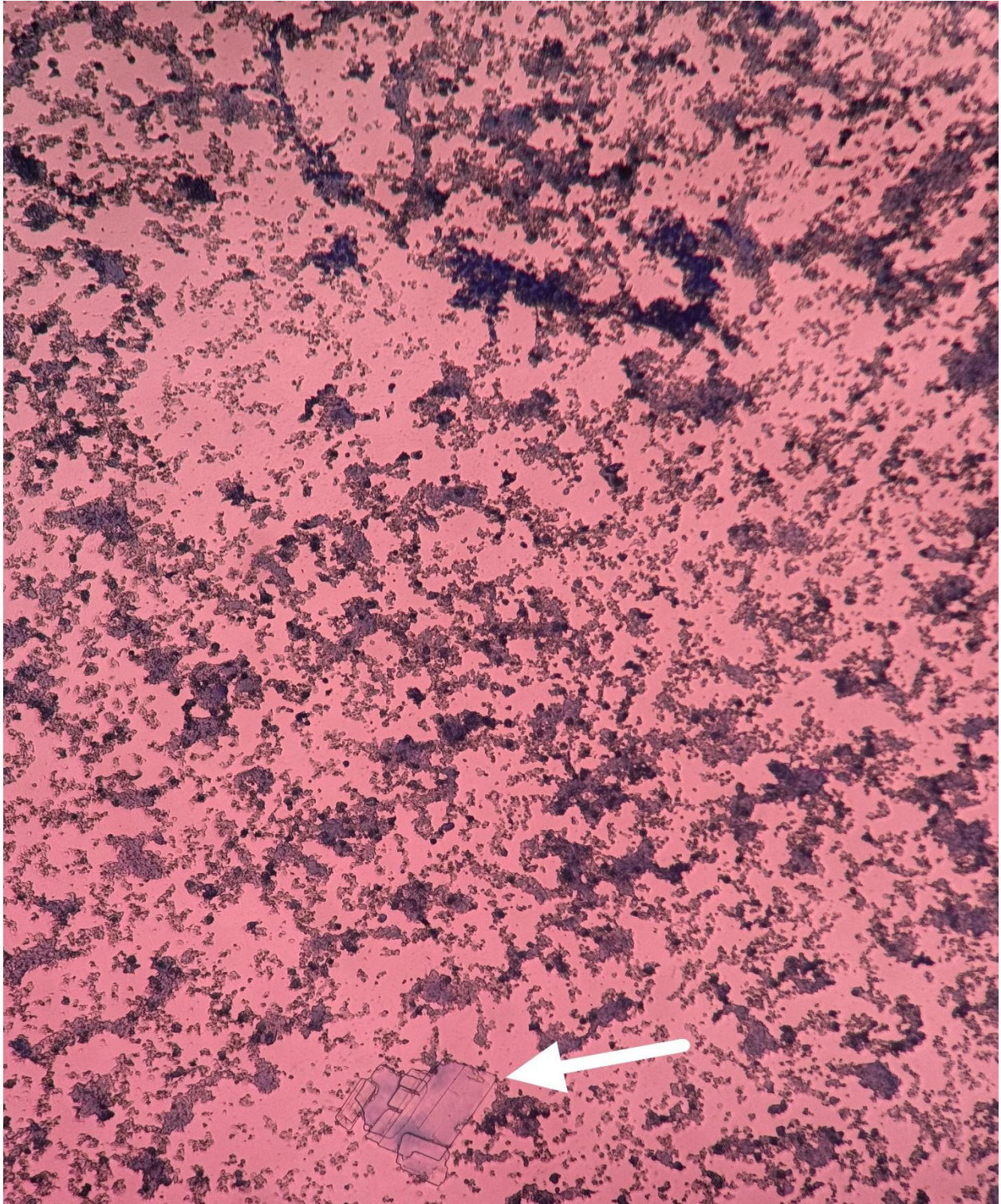
Figure 3. Gross appearance of aspirated hemorrhagic fluid



Fine-needle aspiration yielding approximately 40 mL of dark brown hemorrhagic fluid collected in multiple syringes, consistent with intranodular hemorrhage.

Cytological examination of the fluid (**Fig. 4**) revealed abundant red blood cells, hemosiderin-laden macrophages, and cholesterol crystals, consistent with hematoma and intranodular hemorrhage. No cytological features suggestive of malignancy were identified.

Figure 4. Cytological features of hemorrhagic thyroid nodule



Cytological smear showing numerous hemosiderin-laden macrophages and cholesterol crystals (white arrow) in a hemorrhagic background, consistent with intranodular hemorrhage in a benign thyroid nodule.

Final Diagnosis

Spontaneous intranodular hemorrhage in a benign thyroid nodule (colloid goiter) presenting as a rapidly enlarging thyroid mass.

Clinical Course and Management

Following aspiration, the thyroid swelling showed marked reduction in size, with significant improvement in neck contour. The patient was managed conservatively with reassurance and advised for periodic follow-up. Surgical intervention was not required, and no recurrence or progression was observed during short-term follow-up.

Patient Perspective

The patient initially experienced considerable anxiety due to the rapid growth of the neck swelling and fear of malignancy. She reported significant psychological distress prior to diagnostic evaluation. However, after receiving the FNA results confirming a benign hemorrhagic nodule, she expressed substantial relief and reassurance. She was particularly relieved to avoid surgery and was satisfied with conservative management and the improvement in her symptoms following aspiration.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying clinical information.

Timeline

The chronological sequence of clinical presentation, diagnostic evaluation, intervention, and outcome is summarized in **Table 1**.

Table 1. Chronological summary of clinical presentation, diagnostic workup, and follow-up findings in a patient presenting with rapidly enlarging thyroid swelling.

Time Point	Clinical Event
Day 0	Sudden painless anterior neck swelling noted
Day 14 (Presentation)	Presented with rapidly enlarging left thyroid swelling (2 weeks duration)

Day 14	Physical examination: 6.5 × 6 cm firm, non-tender left thyroid mass; right lobe normal
Day 14	Ultrasound: complex nodule with hemorrhage
Day 14	FNA performed from solid and cystic components
Day 14	40 mL hemorrhagic fluid aspirated
Day 28 (Follow-up)	Marked regression, symptom improvement

Discussion

Spontaneous hemorrhage occurring within a thyroid nodule is an infrequent but clinically relevant event that may manifest as abrupt thyroid enlargement and often raises concern for underlying malignancy. Although most thyroid nodules are benign and demonstrate indolent behavior, rapid growth is conventionally considered an alarming feature that warrants prompt evaluation to exclude aggressive thyroid cancers (3,4). In this context, anaplastic carcinoma, poorly differentiated carcinoma, and rapidly growing differentiated thyroid malignancies are key diagnostic considerations (4).

Nevertheless, a significant proportion of rapidly enlarging thyroid lesions are benign in nature. Among these, intranodular hemorrhage and cystic degeneration within colloid nodules represent the most common causes (4,6). Colloid nodules, which constitute the predominant benign thyroid lesion, may undergo degenerative changes including hemorrhage, infarction, and cystic transformation, leading to sudden clinical presentation (6). The bleeding is believed to result from rupture of fragile intranodular vessels, typically without any identifiable trauma or precipitating event, as illustrated in this case (6).

From a clinical perspective, hemorrhagic thyroid nodules may present with sudden enlargement and occasionally pain or compressive symptoms; however, completely painless presentations are also well documented and can further complicate clinical assessment, as observed in this patient (6,7). On ultrasonography, such lesions often appear as complex cystic nodules with internal echoes or fluid–fluid levels suggestive of hemorrhage, but these features lack specificity and may overlap with cystic degeneration or necrotic malignant tumors (4,6). Consequently, imaging findings alone are insufficient for a definitive diagnosis, making cytological assessment essential.

The differential diagnosis of a rapidly enlarging thyroid mass is extensive and includes both benign and malignant entities. Malignant causes comprise anaplastic carcinoma, poorly differentiated carcinoma, papillary thyroid carcinoma with cystic change, primary thyroid lymphoma, and metastatic tumors (4,8). On the other hand, benign conditions such as intranodular hemorrhage, cystic degeneration of colloid nodules, subacute thyroiditis, and parathyroid lesions may present in a similar fashion (6,8). Notably, cystic variants of papillary thyroid carcinoma can closely resemble benign hemorrhagic nodules on imaging and cytology, constituting a significant diagnostic pitfall (8). Furthermore, hyperplastic or adenomatous nodules may exhibit focal cytologic atypia that overlaps with papillary carcinoma, including nuclear grooves and chromatin clearing, thereby complicating interpretation (9). In rare instances, ectopic or intrathyroidal parathyroid tissue aspirated as a thyroid lesion may also

mimic neoplasia due to high cellularity and absence of colloid (6). These overlapping features highlight the necessity of integrated clinicoradiologic and cytopathologic correlation.

Fine-needle aspiration (FNA) remains the primary diagnostic modality for thyroid nodules, although it is not without limitations. Diagnostic errors mainly arise from inadequate sampling, dilutional effects in cystic or hemorrhagic lesions, and cytomorphic overlap between benign and malignant processes (8,9). Hemorrhagic nodules are particularly susceptible to nondiagnostic or false-negative results because aspirates may be dominated by blood with limited follicular epithelial cells (9).

In contrast, reactive cytologic atypia in degenerative lesions may be misinterpreted as malignancy, resulting in false-positive or indeterminate diagnoses (8). These limitations contribute to diagnostic categories such as atypia of undetermined significance (AUS), which often necessitate repeat aspiration or surgical excision for definitive evaluation (3). Therefore, reliance on cytology alone is insufficient, and results must be interpreted in conjunction with clinical and imaging findings.

Early and accurate identification of spontaneous intranodular hemorrhage carries important clinical implications. Although generally benign and self-limiting, this condition can closely resemble malignant disease and may lead to unnecessary surgical procedures if misdiagnosed. Timely diagnosis using FNA allows reliable distinction between benign hemorrhagic nodules and malignant lesions, thereby preventing unwarranted thyroidectomy (3,8).

In addition, FNA may provide therapeutic benefit in such cases, as evacuation of hemorrhagic fluid often results in immediate reduction in nodule size and symptom relief, as demonstrated in this patient (6). Moreover, appropriate cytological stratification of thyroid nodules ensures that only patients with significant suspicion of malignancy undergo surgery, thereby improving resource utilization, particularly in low-resource settings (3).

Rapid enlargement of a neck mass is frequently associated with considerable psychological distress due to fear of cancer. This anxiety can significantly influence patient expectations and may contribute to a preference for more aggressive management. Therefore, establishing a benign diagnosis is crucial not only for clinical decision-making but also for patient reassurance, reduction of psychological burden, and improvement of overall quality of life. Clear and timely communication of benign cytological findings plays a central role in alleviating patient anxiety.

This case report has certain limitations. As a single case, the findings cannot be generalized to all patients presenting with rapidly enlarging thyroid nodules. Furthermore, the absence of histopathological confirmation may be considered a limitation; however, the concordance between clinical presentation, imaging findings, cytology, and marked post-aspiration regression strongly supports the diagnosis of spontaneous hemorrhagic thyroid nodule. Additionally, long-term follow-up was not available, which would have been valuable in assessing recurrence or long-term behavior.

Conclusion

Spontaneous hemorrhage within a thyroid nodule is an important benign cause of rapid thyroid enlargement that can closely simulate malignant disease. Awareness of this entity, combined with careful clinicoradiologic correlation and judicious use of fine-needle aspiration, is essential to avoid diagnostic errors and unnecessary surgical intervention. Early and accurate diagnosis not only guides appropriate management but also significantly reduces patient anxiety and healthcare burden.

Declarations

Ethics and consent to participate

Ethical approval for this case report was waived by the Institutional Review Board (IRB) of Mekelle University College of Health Sciences, Mekelle, Ethiopia, as this study involved a single patient and did not include any intervention beyond routine clinical care. All procedures were conducted in accordance with institutional and ethical standards. Patient confidentiality was strictly maintained, and all identifying information was anonymized. This case report was prepared in accordance with the CARE reporting guidelines.

Consent to publish

Written informed consent was obtained from the patient for publication of this case report and accompanying clinical information, including images. The patient explicitly consented to the publication of these details under a Creative Commons license, acknowledging that the material may be freely available on the internet. A copy of the signed written consent form is retained by the authors and will be made available to the Editor-in-Chief of the journal upon reasonable request.

Availability of data and materials

All data generated or analyzed during this study are included in this published article. Additional details are available from the corresponding author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

No funding was received for this study.

Authors' contributions

Binyam Mohammedbirhan Berhe: Conceptualization, data curation, formal analysis, investigation, methodology, project administration, supervision, validation, visualization, writing – original draft, writing – review and editing.

Mohammedaman Mohamedseid Ibrahim: Data curation, investigation, validation, writing – review and editing.

Temesgen Gebremariam Weldeslassie: Data curation, investigation, methodology, writing – review and editing.

Tigabu Bezabh Hagos: Project administration, visualization, writing – original draft, writing – review and editing.

Mizan Kidanu Weldemariam: Data curation, investigation, writing – review and editing.

Acknowledgements

The authors would like to thank the patient for consenting to share her clinical information for educational and scientific purposes. We also acknowledge the staff of Mekelle University College of Health Sciences for their support in patient care and diagnostic services.

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