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## Thyroid fine needle aspiration biopsy complicated by a Pseudoaneurysm: Treatment with percutaneous thrombin injection

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### Abstract

Fine-needle aspiration biopsy (FNAB) is a cheap and effective diagnostic procedure that can be applied directly or with imaging guidance. Complications are rare and mostly insignificant. Here, we report a rare but serious complication related to thyroid FNAB: hematoma and a pseudoaneurysm (PSA) that was managed with percutaneous US-guided thrombin injection.

**Keywords:** Chhani, consumption, fuel-wood, households, Lanchaan

**Abbreviations:** FNAB=Fine Needle Aspiration Biopsy, PSA=pseudoaneurysm, USG=Ultrasonography, CDS= Color Doppler Sonography, CCA=Common Carotid Artery.

### Introduction

Thyroid FNAB is a common procedure used to diagnose the nature of thyroid nodules or diffuse gland disease. It is virtually complication-free, and any complications are usually quite minor<sup>[1, 2]</sup>. Here, we report a rare case complicated by an acute large hematoma and a pseudoaneurysm.

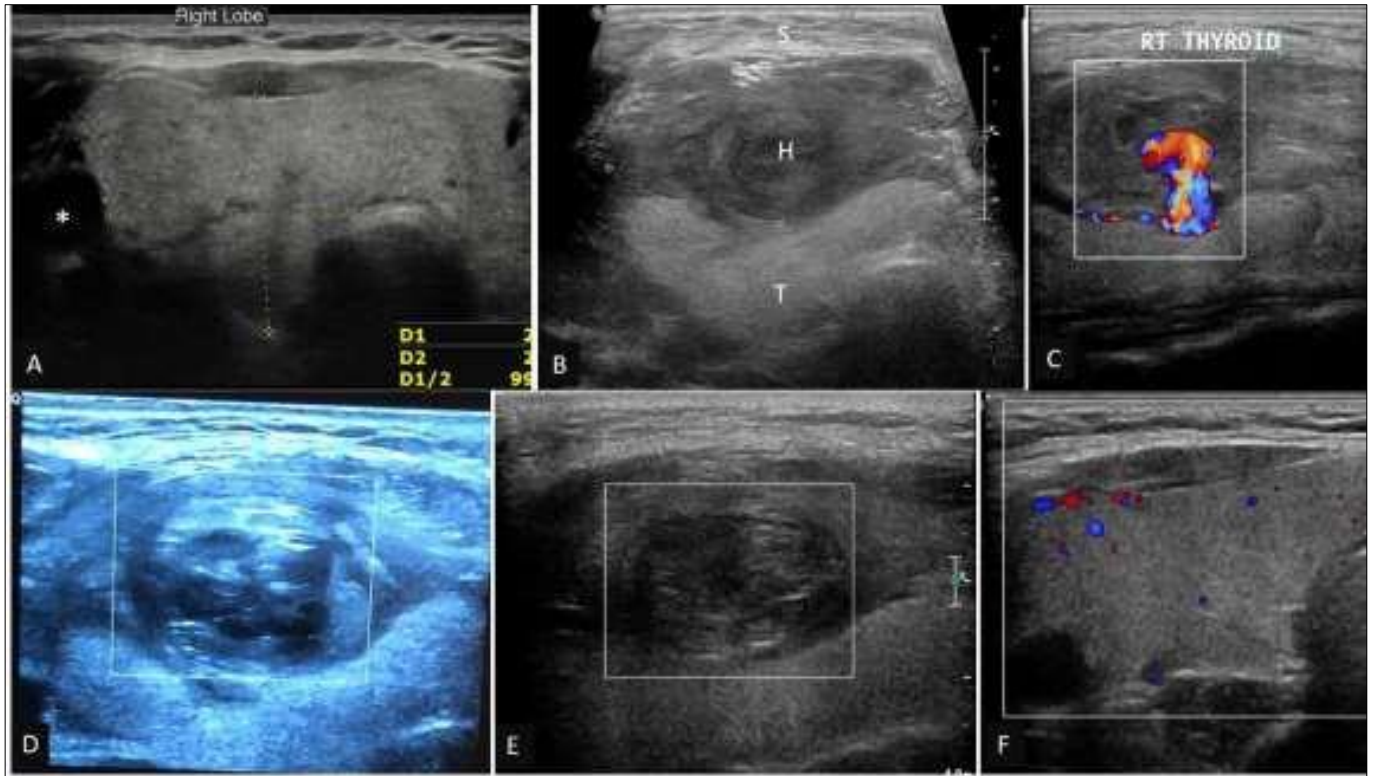
### Case Report

A 26-year-old female was referred to the interventional unit for US-guided aspiration for further assessment of her diffuse glandular enlargement. Her blood pressure and coagulation profiles were normal. She denied other morbid conditions like diabetes, chronic renal disease, or anticoagulant intake. Under complete aseptic conditions, FNA was obtained from the right lobe. The sample was insufficient, and thus the attending histopathologist requested another sample. A second pass from the same location was collected and yielded hemorrhagic fluid. A large acute swelling (hematoma) was noted, but the patient was hemodynamically stable with no pressure manifestation or airway compromise. Manual pressure was applied to the biopsy site for 20 minutes. The patient was admitted for close follow up. Ten hours later, US was repeated and showed an irregular and lobulated PSA 2x1 cm with a narrow neck of 2-3 mm presumably arising from the superior thyroid artery.

On the 2nd day, the PSA was persistent on follow-up color Doppler sonography (CDS); therefore, the patient was offered either a transcatheter embolization or percutaneous thrombin injection. She preferred the latter.

A fine needle was introduced into the aneurysm under US guidance and aseptic precautions, and 0.5 ml of TISSEEL was injected until complete cessation of the flow. The injection was monitored by US to avoid reflux into the feeding artery. CDS 4 days later confirmed complete thrombosis of the aneurysm and progressive reduction of the hematoma.

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**Fig 1:** {A} Pre-FNAB USG shows diffuse gland enlargement, right CCA (\*). {B} Immediate post-FNAB USG shows large hematoma (H) involving the anterior part of right thyroid lobe (T) that pushes the remaining portion of the lobe posteriorly. Subcutaneous fat planes are lost (S). {C} Follow up CDS after 10 hours revealed an irregular PSA within the hematoma. This was not resolved with US-guided compression for 20 minutes. {D} TISSEEL injection under US guidance and monitoring shows complete cessation of flow within the PSA. {E} Follow up after 4 days confirmed complete thrombosis of the PSA. {F} Follow up after 6 months shows complete resolution of the hematoma and restoration of the baseline echogenicity.

## Discussion

Fine-needle aspiration biopsy (FNAB) is a common method that enables cytological studies via 20, 22, and 25-gauge needles [1, 2]. FNAB is common because it is safe and cheap with a high diagnostic value for neck masses in general and the thyroid in particular. FNAB's sensitivity is estimated to be around 83%, and its specificity is around 92% [3]. It can be performed quite easily and without much financial burden on the patient. If sufficient amounts can be aspirated, then the results can be obtained within 24 hours after the cytologist performs the procedure [4, 5].

The complications that might occur during FNAB's application to the head and neck region are rare and mostly insignificant. The most common complications are pain, irritation, and minor hematoma [4, 6]. Life-threatening complications such as massive hematoma is rare but can put pressure on the airway. Other complications described in the literature: post-hematoma neuritis, pseudoaneurysm, carotid artery hematoma, acute temporary thyroid gland edema, infection, recurring nerve paralysis, vasovagal reaction, tracheal perforation, dysphagia, change in the volume of nodule, and post-aspiration growth of thyrotoxicosis [4, 7]. After FNAB, it is possible to observe hematoma growth within hours or days. However, many of these are asymptomatic and spontaneously reabsorb within days [10].

If a patient who underwent FNAB suffers from pain and mass effects within minutes of the process, then the possibility of vascular damage should be considered and manual compression should be applied to the biopsy area for few minutes to control bleeding. The hematoma should then be quickly assessed with ultrasound [4, 7].

Park *et al.* 2009 [8] reported a case with active arterial bleeding following thyroid FNAB that developed a large hematoma. This complication was treated with endovascular embolization of the superior thyroid artery with gelfoam and microcoils. Our patient preferred a percutaneous approach over catheter embolization. This used US-guided injection of 0.5 ml TISSEEL to complete thrombosis of the aneurysm.

TISSEEL contains a sealer protein and human thrombin. The sealer protein has fibrinogen as the main active ingredient. When the two components come into contact, fibrinogen is converted to fibrin, and the fibrin monomers immediately polymerize and cross-link. This leads to fibrin clotting within seconds [9].

## Conclusion

Although the application of thyroid FNAB is usually safe with no significant complications, unusual serious complications may occur. This report shows a case with post FNAB intra-thyroid hematoma and pseudoaneurysm to emphasize these complications and the treatment options.

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