Radiofrequency Ablation for Iatrogenic Thyroid Artery Pseudoaneurysm: Initial Experience

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ABSTRACT

Eight iatrogenic thyroid pseudoaneurysms (ITPAs) after thyroid biopsy are reported. The mean ITPA diameter was 7.2 mm (range 4 to 12 mm). Ultrasound (US)–guided compression was initially performed at the neck of the ITPA in all cases. Among them, 4 ITPAs persisted (50%) in which radiofrequency (RF) ablation was performed. Mean RF ablation time and power were 13.5 seconds (range 5 to 24 seconds) and 20 W (range 10 to 50 W), respectively. All 4 cases were treated with RF ablation without any complications.

ABBREVIATIONS

CNB = core needle biopsy, ITPA = iatrogenic thyroid pseudoaneurysm, RF = radiofrequency

Fine needle aspiration biopsy and core needle biopsy (CNB) of thyroid masses are common procedures for tissue diagnosis of thyroid lesions and are generally safe diagnostic methods. Local pain and minor hematomas are the most common complications. Iatrogenic thyroid pseudoaneurysm (ITPA) is also a notable complication of thyroid biopsy (1). The main treatments of postcatheterization pseudoaneurysms have been ultrasound (US)-guided compression and percutaneous thrombin injection. However, the natural history of ITPA and its proven standard treatment have not been established because of its rarity.

This retrospective study demonstrates the efficacy of radiofrequency ablation (RF ablation) and suggests RF ablation as a treatment option for ITPA in cases with failing compression repair.

MATERIALS AND METHODS

Patients

This retrospective multicenter study was approved by the institutional review board, and the requirement for informed consent was waived. From 2007 to 2014, 8 pseudoaneurysms in 8 patients were detected after thyroid biopsy in 3 institutions. All ITPAs were detected and diagnosed with gray-scale and Doppler US. The total number of thyroid biopsies performed during this period was 104,030. Patient demographics and thyroid mass biopsy information are summarized in Table 1.

After the biopsy (fine needle aspiration biopsy or CNB), immediate compression of the biopsy site was performed, and each patient was observed with manual self-compression of the biopsy site without US guidance for 20 to 30 minutes. Mild patient discomfort resolved without any complications. However, when patients complained of swelling or pain at the biopsy site after manual self-compression, follow-up US was done to detect any complications such as hemorrhage.

Gray-scale US images demonstrated a new anechoic structure (Fig 1a, 1b), and color Doppler US images demonstrated a characteristic yin-yang flow (Fig 1c) and also to-and-fro (bidirectional) flow (Fig 1d). Prompt US-guided compression was done at the ITPA in

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Table 1. Patient Demographics and Information on Thyroid Biopsy

Patients			Thyroid Mass Biopsy						
No.	Age	Sex	Site	Pathology	Size (mm)	Solidity	Vascularity	FNA/CNB	Needle
1	29	F	Rt	Benign	39	Dominant solid	Peripheral	FNA	18G
2	69	M	Lt	Benign	46	Solid	Peripheral	CNB	23G
3	34	F	Lt	Benign	26	Dominant cystic	N	CNB	18G
4	60	F	Lt	Malignant, PTC	16	Solid	Peripheral	CNB	18G
5	55	F	Lt	Benign	10	Solid	N	CNB	18G
6	72	M	Rt	Benign	20	Solid	Peripheral	FNA	18G
7	48	F	Rt	Benign	12	Solid	Peripheral & central	FNA	23G
8	66	M	Rt	Malignant, PTC	16	Solid	Peripheral & central	CNB	23G

CNB = core needle biopsy; FNA = fine needle aspiration; N = no flow; PTC = papillary thyroid cancer.

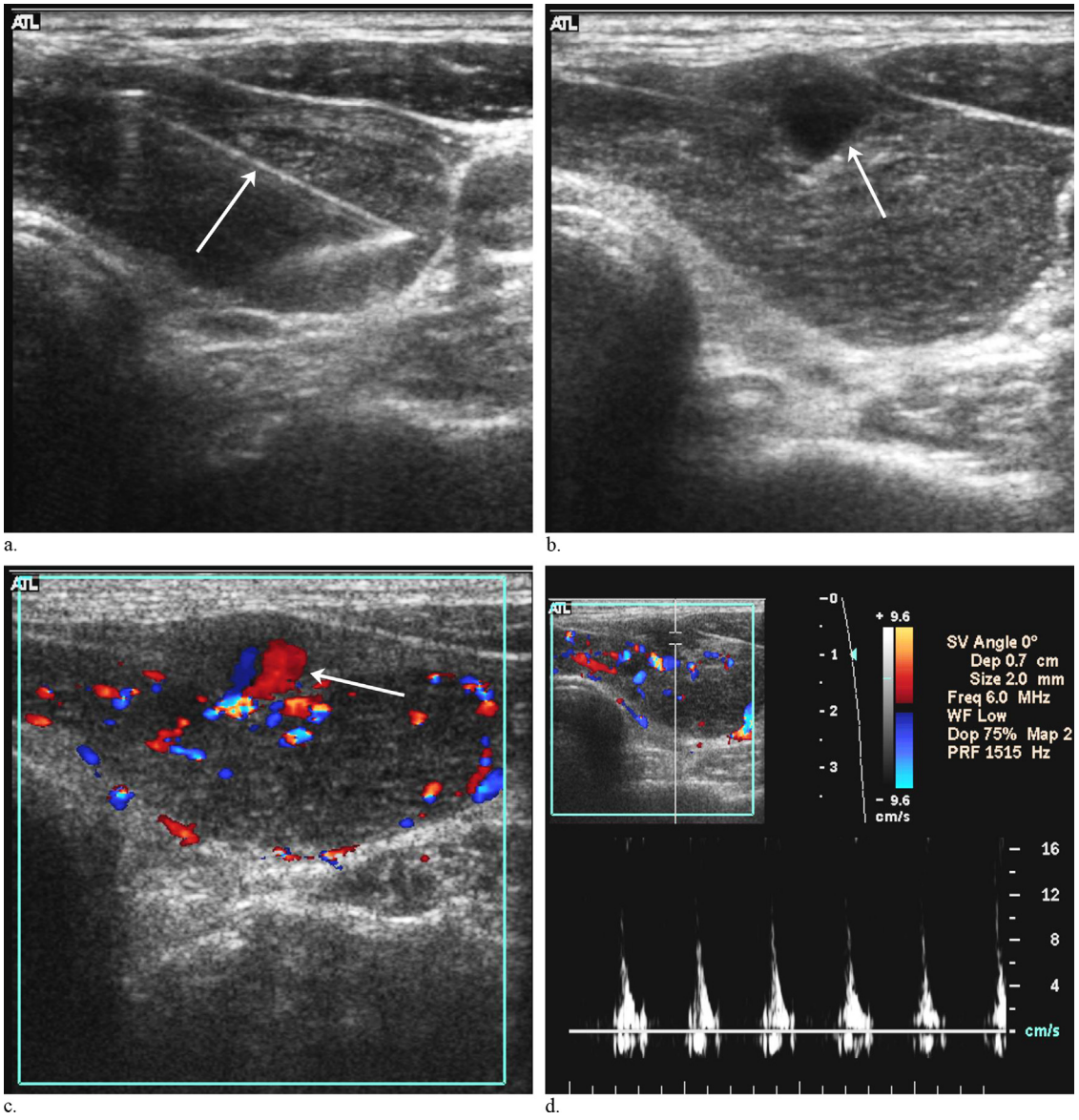

Figure 1. A pseudoaneurysm after CNB for a thyroid nodule in the left thyroid lobe in a 69-year-old man. (**a**) A biopsy needle is inserted in the mediolateral direction (arrow). (**b**) Follow-up ultrasonography reveals a newly developed 6-mm diameter hypoechoic lesion (arrow). (**c,d**) Color Doppler image reveals a classic "yin-yang" appearance (arrow) and bidirectional flow in the hypoechoic lesion.