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CASE REPORT

Pseudoaneurysm of the Breast Treated with Percutaneous Ethanol Injection



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The incidence of complications following core needle biopsy (CNB) or fine needle aspiration cytology (FNAC) of the breast is low, and the subsequent need for surgical management of any complication is rare. We herein report such a case in whom a pseudoaneurysm of the breast developed 2 days after a manually guided FNAC of a benign breast lesion. Percutaneous ethanol injection for treatment of the pseudoaneurysm was successfully done with remaining thrombosed hematoma in a single session.

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Introduction

For decades, core needle biopsy (CNB) and fine needle aspiration cytology (FNAC) have been used as important techniques for obtaining definitive diagnosis of focal breast lesions. A successful procedure obviates the need for diagnostic surgery. The incidence of complications following CNB or FNAC of the breast is low and the subsequent need for surgical management of any complication is rare [1–3].

Case Report

A 42-year-old woman presented with a small palpable nodule in the upper outer quadrant of her right breast. She had no history of familial breast cancer, previous breast surgery, or anticoagulation therapy. Clinical examination revealed an 11-mm nontender mobile nodule in the upper outer quadrant on the right breast. Manually guided FNAC was done by an experienced surgeon at the outpatient clinic. Immediately after the needle procedure, direct manual compression was performed for 10 minutes by the surgeon and then a further 20 minutes by the patient herself. She went home afterwards. However, she felt local pain in the following 48 hours, and therefore visited the

Conflicts of interest: All authors declare no conflicts of interest.

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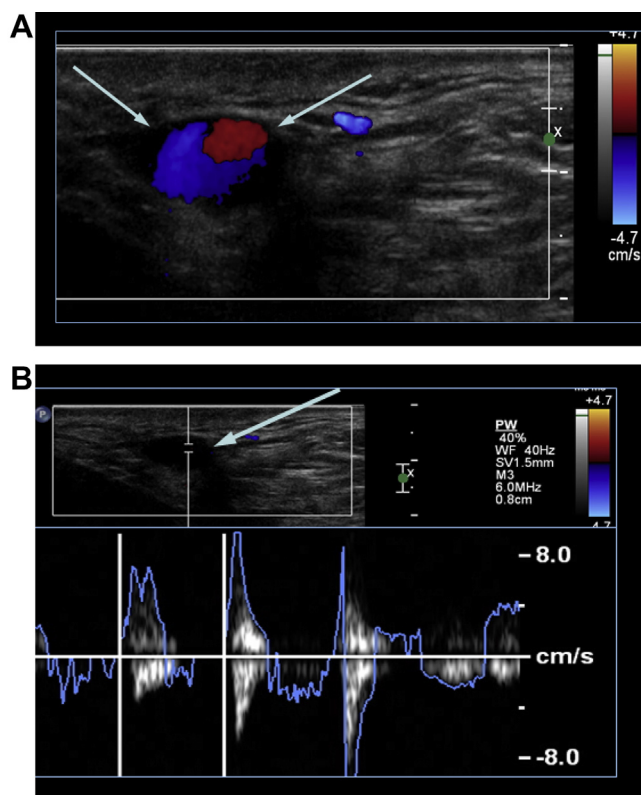


Fig. 1 (A) Color Doppler ultrasound demonstrates blood flow within the center of the mass (arrows), presenting as yin–yang sign and (B) high-velocity antegrade and retrograde flow through a narrow vascular channel connecting it to an adjacent arterial vessel.

breast clinic for help. Breast ultrasound was requested to confirm the nature of the mass.

Ultrasound examination of the breasts demonstrated a 9-mm well-defined hypoechoic solid mass of benign nature, and fibroadenoma was considered on the basis of the ultrasonographic findings. This was supposed to be the nodule subjected to the recent FNAC. Another well-defined 15-mm nearly anechoic focal lesion with a relatively hyper-reflective wall was also revealed, adjacent to the previously noted small solid lesion. Color Doppler ultrasound demonstrated blood flow within the center of the mass (Fig. 1A) and high velocity antegrade and retrograde flow through a narrow vascular channel connecting it to an adjacent arterial vessel (Fig. 1B). A diagnosis of iatrogenic pseudoaneurysm was made. Percutaneous ethanol injection was suggested to the patient for treating the pseudoaneurysm. The patient accepted the suggestion and written consent was obtained. Under ultrasound guidance, a fine needle (23 gauge) was inserted into the blood space, and 1.0 mL absolute ethanol (Merck KGaA, Darmstadt, Germany) was injected. Immediate hemostasis was achieved with direct manual compression for 30 minutes. Recheck with ultrasound and color Doppler showed no active blood space (Fig. 2). The patient was sent home after scheduling clinical review for the following week. The final cytological report of FNAC was a benign lesion without malignant cells, most likely a fibroepithelial lesion. The

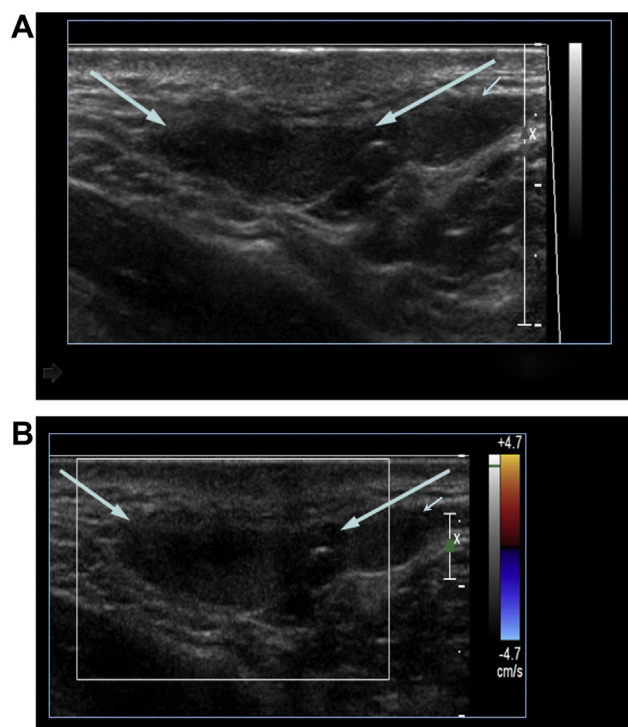


Fig. 2 (A) Ultrasound reveals echogenic material in the initially anechoic fluid space adjacent to the small breast nodule (which was diagnosed as a fibroadenoma on ultrasound, small arrows), representing thrombosis (large arrows), and (B) color Doppler ultrasound shows no color flow signal in the cavity (arrows), indicating no active blood space.

follow-up color Doppler ultrasound showed a totally thrombosed hematoma that had regressed in size. The thrombosed hematoma was not palpable 2 weeks after the treatment procedure.

Discussion

Hematomas are undesirable complications of needle procedures of the breast. They rarely require surgical treatment, percutaneous drainage, or other intervention. Hematomas usually occur immediately after the needle procedure, and can be observed at real-time sonography when the procedure is done with ultrasound guidance [1–5]. A hematoma caused by injury to an artery is essentially a spontaneously thrombosed pseudoaneurysm. However, a pseudoaneurysm may not be thrombosed, and as the pressure inside the active pulsatile blood cavity increases further, extension of the active blood space may occur and cause more severe morbidity [6,7]. Risk of pseudoaneurysm formation is greater in patients with known atherosclerosis, in elderly people, and in women, and increased risk is also associated with anticoagulation therapies [8]. Color Doppler ultrasound can be effectively used to demonstrate arterial blood filling and draining from the cavity in phase with the cardiac cycle, through a small communicating channel at the site of initial vessel trauma [8]. This is particularly characteristic in larger lesions developed in a median or larger-sized artery.

There are few previous reports of pseudoaneurysm in the breast [9–11]. Spontaneous lesions have been reported both in patients with systematic hypertension [9] and in those in whom no such predisposing risk factors or history of trauma are present [10,11]. The presence of degenerative arterial disease and anticoagulation following mitral valve replacement is consistent with spontaneous pseudoaneurysm formation, although delayed procedure-related complications at an arterial site previously weakened by biopsy may also be a contributory factor.

The use of percutaneous CNB of the breast has increased in recent years and is likely to continue to rise as asymptomatic surveillance programs are expanded. There are several reports in the literature to date of breast pseudoaneurysm formation following image-guided CNB; some with stereotactic procedures [12,13], and some with ultrasound-guided procedures [14,15]. The majority of procedural complications are minor and of no clinical consequence, resolving spontaneously under observation or medical management. Major complications requiring surgical intervention are exceptional [16]. To the best of our knowledge, this is the first case report to describe a pseudoaneurysm of the breast that developed after FNAC.

The incidence of procedure-related pseudoaneurysm is likely to increase because of the increasing number of image-guided core biopsy and needle procedures. Extended use of color Doppler ultrasound monitoring in the early post-procedure period might provide a chance of successful nonsurgical occlusion. Some reports suggest that ultrasound-guided external compression is unlikely to be successful and that mechanical and pharmaceutical embolization agents (e.g., percutaneous thrombin injection) are to be preferred to avoid surgical treatment [15]. This case report is an addition to the literature illustrating an easily available interventional method to treat a pseudoaneurysm following needle procedures of the breast.

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