Symptomatic Fibroadenoma Resolves Status Post Cryoablation

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CASE
A 29-year-old African American female presented to her primary care physician for evaluation of a painful and palpable right breast lump at 11 o’clock, 6 cm from the nipple. She was referred to the breast imaging center where targeted ultrasound demonstrated a 3.2 cm oval circumscribed mass suggestive of a fibroadenoma, BI-RADS 4A – low suspicion for malignancy (Figure 1A). Ultrasound-guided biopsy was performed with clip placement in the center of the mass (Figure 1B). Two 12-gauge core specimens were placed in formalin and submitted for histologic evaluation.

Hematoxylin and eosin staining revealed a circumscribed mass with proliferation of both stromal and glandular elements with pericanalicular growth and mild increased bland stromal cellularity but no mitoses. These findings are consistent with a benign cellular fibroadenoma. (Figures 2A, 2B)

Given symptoms and desire for treatment, the patient was referred to a breast surgeon for consideration of surgical excision versus clinical observation with follow-up imaging as needed. She was also offered ultrasound-guided cryoablation. The patient elected cryoablation.

Ultrasound-guided cryoablation was performed with local anesthesia and ultrasound guidance in the breast imaging center. Once the cryoablation needle was placed in the geometric center of the fibroadenoma (Figure 3A), the treatment protocol began with a 5-minute freeze, an 8-minute passive thaw, followed by a second and final 5-minute freeze. Near the end of the first freeze, ice had almost entirely engulfed the fibroadenoma (Figure 3B). By the end of the second freeze, the fibroadenoma had been completely engulfed by ice. The patient was discharged home within 15 minutes of procedure completion and was able to resume normal activities immediately.

The patient returned for follow-up ultrasound imaging 9 months after cryoablation, which revealed the biopsy clip in place but complete resolution of the previously seen mass (Figure 4). The patient reported immediate relief of pain, gradual decreased palpability in the interim, and is currently asymptomatic.
Ultrasound-guided cryoablation is a virtually painless, percutaneous, non-operative procedure that can be used to treat breast fibroadenomas\textsuperscript{1-5} and breast cancer\textsuperscript{6-9}. A clinical perspective review article discussing the indications, risks, benefits, post-procedure anticipatory guidance, as well as technical aspects of the procedure and post-procedure imaging has been recently published.\textsuperscript{10} A Category I Current Procedural Terminology (CPT) code exists for cryoablation of breast fibroadenomas: 19105.

Fibroadenomas are an extremely common benign growth of the breast. No treatment is necessary for asymptomatic fibroadenomas. Treatment may be indicated for patients with symptoms, such as pain, palpability, and/or growth.\textsuperscript{3}

**DISCUSSION**

Ultrasound-guided cryoablation is a virtually painless, percutaneous, non-operative procedure that can be used to treat breast fibroadenomas\textsuperscript{1-5} and breast cancer\textsuperscript{6-9}. A clinical perspective review article discussing the indications, risks, benefits, post-procedure anticipatory guidance, as well as technical aspects of the procedure and post-procedure imaging has been recently published.\textsuperscript{10} A Category I Current Procedural Terminology (CPT) code exists for cryoablation of breast fibroadenomas: 19105.

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**Treatment options include hormone therapy, surgical excision, and ultrasound-guided cryoablation. Cryoablation may be particularly applicable for patients with multiple symptomatic fibroadenomas who have already undergone surgical excision or for those who prefer a nonsurgical treatment option. Notably, fibroadenomas in African American**
women are twice as common, more likely to be multiple, and tend to occur at a younger age compared to Caucasian women. An estimated 500,000 fibroadenomas are surgically excised every year. The cost of surgical excision in a community hospital is approximately $18,000 versus $3,500 for cryoablation.

The cryoablation system employed in this particular case utilizes closed-loop circulation of liquid nitrogen to create extremely cold temperatures surrounding the active tip of the cryoablation needle in order to kill targeted tissue. The procedure lasts less than 30 minutes and only requires local anesthesia. Patients are able to resume normal activities immediately after the procedure. Our patient experienced immediate relief of pain and gradual reduction to subclinical palpability within 9 months after undergoing cryoablation.

Reported in the literature, treated fibroadenomas show mean volume reduction of 73-89% within 12 months of the procedure. It has been our experience that fibroadenomas with cellular stroma and less collagen are more likely to demonstrate complete or near-complete resolution following cryoablation than fibroadenomas with less cellularity and more collagen. This histologic finding may help triage patients to surgery versus cryoablation in the future.

US-guided cryoablation is a feasible treatment option for women with symptomatic fibroadenomas.

References

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