



Frequency and outcomes of biopsy-proven fibroadenomas recommended for surgical excision[☆]



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ABSTRACT

Our aim was to investigate the outcomes of fibroadenomas recommended for surgical excision due to large size (> 2 cm) or interval growth. A retrospective review of our institutional radiology database from 2007 to 2015 was performed. We identified 167 biopsy-proven fibroadenomas recommended for surgical consultation. Of these, 75 (45%) cases actually underwent excision, 7 (9%, 95% CI: 4–18%) of which were upgraded to phyllodes tumors upon histopathological examination. Our results support the current recommendation to surgically excise breast lesions diagnosed as fibroadenomas with size > 2 cm or with interval growth due to the considerable risk of finding phyllodes tumors.

1. Introduction

Fibroadenomas are the most common benign tumors of the breast, comprising of about half of all breast biopsies [1]. These lesions typically present as firm, well-circumscribed masses in women aged 20–30 years. Fibroadenomas tend to grow slowly, reaching maximum diameters of 2–3 cm in size [2]. However, their growth can be rapid at times of increased hormonal influence, such as pregnancy [3]. Often diagnosed sonographically, fibroadenomas appear as hypoechoic, oval solid masses with smooth contours and weak internal echoes in a uniform distribution, [4]. Diagnosis can be adequately confirmed with either core needle biopsy (CNB) or, in institutions with experienced cytopathologists, fine needle aspiration (FNA) [5]. On histology, fibroadenomas are circumscribed, biphasic tumors comprised of benign epithelial and stromal components. It is well-accepted clinical practice to conservatively manage biopsy-proven fibroadenomas with periodic imaging surveillance [4,6,7] unless large in size, typically > 2–3 cm for which surgical excision is then recommended [3]. The recommendation for surgical excision is due to the potential undersampling of a more concerning diagnosis: a phyllodes tumor masquerading as a fibroadenoma.

Phyllodes tumors are rare lesions of the breast that grow continuously, potentially to sizes > 10 cm [8]. They pose a diagnostic

challenge as they can be clinically and sonographically difficult to distinguish from fibroadenomas [9]. They tend to occur in women with a mean age of 40–50 years, although the range can vary from 10 to 80 years [10]. Their size is not a discriminatory feature as they are often detected on routine mammographic screenings before reaching large sizes [11]. Histologically, they consist of epithelial and stromal elements like fibroadenomas; however, the stroma of phyllodes tumors has higher cellularity. Based on the degree of cellularity and other stromal characteristics, (i.e. pleomorphism, nuclear atypia, mitotic figures), phyllodes tumors are classified as benign, borderline, or malignant [11]. The benign tumors, the most abundant type, are the most likely to be misdiagnosed as fibroadenomas due to their overlapping histological features.

Phyllodes tumors require more aggressive management than fibroadenomas; therefore, differentiating these two entities is important. Regardless of the histologic type, phyllodes tumors must be surgically excised with wide margins [12]. Unlike fibroadenomas, benign and borderline phyllodes tumors have the potential for expansile growth and local recurrence, and the malignant types can additionally undergo distant metastasis [11]. In the surgery and pathology literature, studies have recommended surgical excision of fibroadenomas with size > 2–3 cm at the time of presentation or with interval growth at imaging follow-up due to concern for phyllodes tumors [3,13,14]. However,

Abbreviations: FNA, fine needle aspiration; CNB, core needle biopsy

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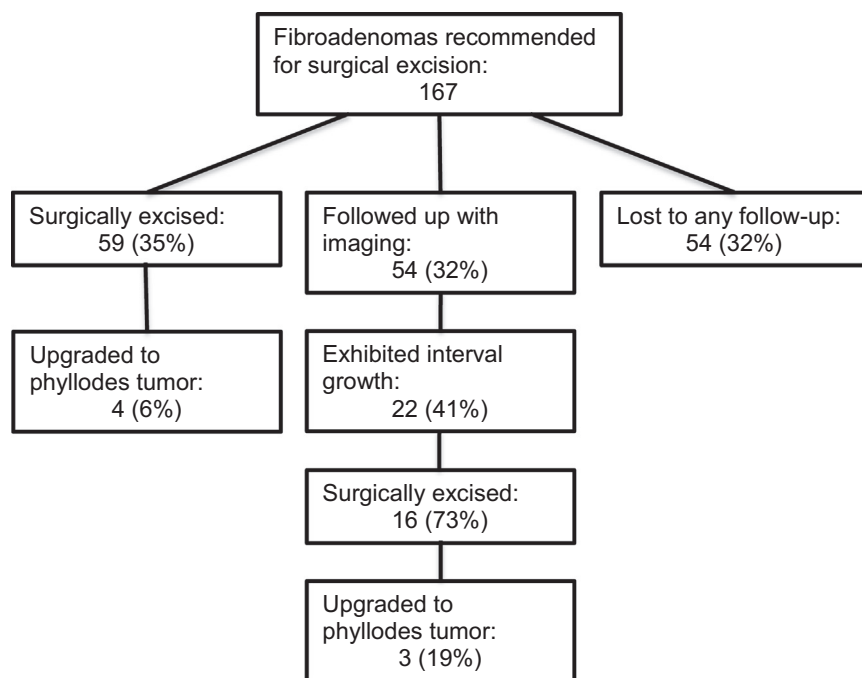


Fig. 1. Flowchart shows the outcomes of biopsy-proven fibroadenomas that were recommended for surgical excision from January 2007 to December 2015.

Table 1
Clinical and histological characteristics of all fibroadenoma cases that were recommended surgical excision are compared to those that were later upgraded to phyllodes tumors following excision.

	All fibroadenoma cases recommended surgical excision (n = 167)	Cases upgraded to phyllodes tumor after excision (n = 7)
Median age of patient	34 years old (range 21–72 years)	42 years old (range 22–52 years)
Median size of fibroadenoma	2.5 cm (range 1.1–9.6)	2.2 cm (range 1.9–3.5)
Reported palpable	54% (90/167)	57% (4/7)
Initial sampling method	FNA: 62% (103/167) CNB: 38% (64/167)	FNA: 43% (3/7) CNB: 57% (4/7)
Histological characteristics of excised lesion	Simple: 83% (138/167) Myxoid: 10% (16/167) Complex: 4% (6/167) Cellular: 4% (7/167)	Benign: 71% (5/7) Borderline: 29% (2/7) Malignant: 0% (0/7)

there is no universally accepted size criterion for surgically excising fibroadenomas. At our institution, the radiologists' threshold for recommending surgical excision is at the low end of the size spectrum of 2 cm to minimize the risk of missing phyllodes tumors. The downstream impact of our recommendation has not been previously studied. Our aim is to investigate the outcomes of the fibroadenomas recommended for surgical excision and the frequency of diagnosis as phyllodes tumors after excision.

2. Subjects and methods

This study was compliant with HIPAA and was approved by our institutional review board, which waived the requirement for patients' written informed consent.

A retrospective review was conducted of fibroadenomas for which surgical consultation for excision was recommended. We performed a search for “fibroadenoma” along with “surgical consultation” from January 2007 to December 2015 in our institutional electronic radiology database. We chose the word “consultation” rather than “excision” to keep our search broad as “surgical consultation” is the phrase used in our institution when recommending the patient be seen for

evaluation for excision. We manually reviewed reports from the search, and those that used the words “fibroadenoma” and “surgical consultation” without contextual relation to each other were excluded. We identified 290 cases of fibroadenoma with a recommendation for surgical consultation.

These fibroadenomas had been confirmed by either CNB or FNA. US-guided core biopsies were performed with 14-gauge (G) [Bard Biopsy, Tempe, AZ] or 12G [Celero, Hologic Inc., Bedford, MA] needle devices. US-guided fine needle aspiration biopsies were performed with either 23G or 25G needles with a minimum of three passes. While FNA may not be generally accepted as the best method for breast biopsy, some studies have shown that FNAs are comparable to CNB for diagnosing fibroadenomas in institutions with experienced cytopathologists [15]. Our institution has dedicated cytopathologists who routinely perform real-time assessment for adequate tissue sampling at the time of FNA, and we believe that FNA biopsies are an adequate method of diagnosis.

We collected relevant clinical history and reviewed reports from all available dedicated breast imaging examinations (i.e. ultrasound, mammography, and MRI), as well as pathology reports. The lesion size was defined as the largest dimension measured by ultrasound. We used 7–12-MHz linear array transducers in 2005 (HDI 5000; Philips Healthcare, Bothell, WA; or LOGIQ700; GE Healthcare, Wauwatosa, WI). Between 2006 and 2011, 14-MHz linear array transducers were used (Acuson Sequoia; Siemens Medical Solutions). In cases of multiple fibroadenomas in one patient, information on the fibroadenoma recommended for surgical excision was recorded.

Fibroadenomas have a peak incidence in women in their second and third decades of life and will typically remain stable in size after reaching 2–3 cm (9). With this in mind, we excluded patients who were < 21 years of age (9). Patients were also excluded if there was known history of breast cancer (40), or if the lesion was < 2 cm in size without interval growth at subsequent imaging follow-up (74). The latter cases were initially recommended surgical consultation per patient wishes and/or discretion of interpreting radiologist based on outstanding clinical suspicion. Of the 290 cases, we identified 167 fibroadenomas that were > 2 cm in size at the time of presentation or that had undergone an interval increase in size at imaging follow-up regardless of initial size.

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