Management of Architectural Distortion on Digital Breast Tomosynthesis With Nonmalignant Pathology at Biopsy

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Breast Imaging · Original Research

Keywords

architectural distortion, breast cancer, digital breast tomosynthesis, mammography, radial scar

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BACKGROUND. Digital breast tomosynthesis (DBT) has led to increased detection and biopsy of architectural distortion, which may yield malignancy, radial scar, or other benign pathologies. Management of nonmalignant architectural distortion on DBT remains controversial.

OBJECTIVE. The purpose of this study was to determine upgrade rates of architectural distortion on DBT from nonmalignant pathology at biopsy to malignancy at surgery.

METHODS. This retrospective study included cases of mammographically detected architectural distortion from July 1, 2016, to June 30, 2019, that were nonmalignant at image-guided needle biopsy and underwent surgical excision. Mammographic examinations included digital 2D mammography and DBT. Imaging data were extracted from radiology reports. Upgrade rates were summarized using descriptive statistics. Features of upgraded and nonupgraded cases were compared using Pearson chi-square test and Wilcoxon signed rank test.

RESULTS. The study included 129 cases of architectural distortion with nonmalignant pathology at biopsy that underwent excision in 125 women (mean age, 54 years; range, 23–90 years). At biopsy, 92 (71.3%) were radial scars and 37 (28.7%) were other nonmalignant pathologies. Of 66 radial scars without atypia at biopsy, one (1.5%) was upgraded to ductal carcinoma in situ (DCIS) at surgery and none to invasive cancer. Of 24 benign pathologies without atypia at biopsy, one was considered discordant. Of the 23 remaining concordant cases, one (4.3%) was upgraded to DCIS at surgery and none to invasive cancer. The overall upgrade rate to cancer of architectural distortion with concordant nonmalignant pathology at biopsy was 10.2% (13/128). The upgrade rate to cancer of architectural distortion without atypia was 2.2% (2/89) and with atypia was 28.2% (11/39). Explored features (age, personal or family breast cancer history, presentation by screening vs diagnostic mammography, breast density, associated mammographic findings, presence and size of ultrasound correlate, biopsy modality) showed no significant associations with upgrade risk ($p > .05$).

CONCLUSION. Architectural distortion on DBT with concordant nonmalignant pathology at biopsy has an overall upgrade rate to malignancy at surgery of 10.2%. Architectural distortion without atypia has a low upgrade rate of 2.2%.

CLINICAL IMPACT. Imaging surveillance can be considered for architectural distortion on DBT yielding radial scar without atypia or other concordant benign pathologies without atypia at biopsy.

Architectural distortion, defined as parenchymal distortion with no mass visible, is the third most frequent type of mammographic finding in the setting of nonpalpable breast cancer and a common finding retrospectively identified on false-negative mammograms [1–3]. However, architectural distortion can also be from nonmalignant causes, including radial scar/complex sclerosing lesion, postprocedural scars, sclerosing adenosis, fat necrosis, fibromatosis, and granular cell tumor, among other causes [2, 4, 5]. Digital breast tomosynthesis (DBT), which minimizes the effect of superimposed breast tissue in comparison with conventional digital 2D mammography, has led to increased detection of architectural distortion [6–9]. Although DBT-detected architectural distortion is less likely to be a manifestation of cancer than is digital 2D mammography–detected distortion, the associated malignancy risk is sufficiently high that routine biopsy is required for histologic analysis [10–12].

Surgical excision has long been advocated for the management of digital 2D mammography–detected architectural distortion; however, more recent evidence suggests

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that surgical excision of digital 2D mammography–detected architectural distortion is not necessary in certain nonmalignant cases, such as when needle biopsy yields radial scar without associated atypia [13–15]. Implementation of DBT has led to an increase in the proportion of cases of architectural distortion with nonmalignant pathology results at biopsy; however, there is limited published literature investigating the appropriate management of nonmalignant architectural distortion on DBT, and most existing studies include very small numbers of patients [7, 16–24]. Thus, the management of architectural distortion on DBT yielding radial scar and other benign pathologies at biopsy remains controversial. To inform management recommendations for architectural distortion on DBT, we conducted this study to determine upgrade rates of architectural distortion on DBT from nonmalignant pathology at biopsy to malignancy at surgery.

Methods

Study Population

This HIPAA-compliant retrospective study was approved by the institutional review board of Massachusetts General Hospital, which provided an exemption from the requirement for written informed consent. The study was conducted at a single academic medical center that fully integrated DBT into the screening and diagnostic settings by 2013 and that currently performs more than 60,000 combined digital 2D mammography and DBT examinations annually. An institutional online research tool was searched for mammographic reports from July 1, 2016, to June 30, 2019, containing the terms "architectural distortion" or "distortion" to identify consecutive cases of mammographically detected architectural distortion recommended for biopsy (BI-RADS category 4 or 5).

Mammography reports describing a mass as the dominant finding and architectural distortion as a secondary finding were not selected by this initial search. Because architectural distortion can be associated with asymmetry and/or calcifications according to the BI-RADS atlas [3], cases with those associated findings were selected. Selected cases were then excluded if surgery was not performed, if immediate surgery was performed without a preceding image-guided biopsy, if surgical pathology results of the architectural distortion were not known because the patient underwent mastectomy for an ipsilateral breast cancer unrelated to the architectural distortion, or if the image-guided biopsy results were malignant. This process resulted in a final study sample of cases of suspicious architectural distortion that were nonmalignant at image-guided biopsy and with known pathology results from subsequent surgery.

Imaging and Image-Guided Biopsy

All mammographic examinations included conventional digital 2D mammography and DBT. Ultrasound evaluation using a 12-5–MHz transducer was typically performed of the breast with architectural distortion. Biopsy of the architectural distortion was performed either under tomosynthesis guidance using a 9-gauge needle with six to eight samples typically acquired or under sonographic guidance using a 14-gauge needle with two to five samples typically acquired. The image interpretations and image-guided biopsies were performed by 19 breast imaging radiologists with 1 to 28 years of posttraining experience.

HIGHLIGHTS

Key Finding

- *The overall upgrade rate of architectural distortion on digital breast tomosynthesis with concordant nonmalignant pathology results at biopsy to malignancy at surgery is 10.2% (13/128). The upgrade rate to malignancy of architectural distortion without atypia at biopsy is 2.2% (2/89) and of architectural distortion with atypia is 28.2% (11/39).*

Importance

- *Imaging surveillance rather than surgery can be considered for architectural distortion yielding radial scar without atypia and other concordant benign pathologies without atypia at biopsy.*

Data Collection and Statistical Analysis

The following information was collected from the medical records: patient age, personal and family history of breast cancer, mode of presentation, findings on imaging, BI-RADS assessment category, image-guided biopsy modality, and pathologic outcomes from needle biopsy and surgery. The radiologic images themselves were not reviewed. Dedicated breast pathologists performed the histopathologic evaluation of all biopsy and surgical specimens. Upgrade rates were determined by dividing the number of cases that were upgraded to cancer at surgery by the total number of nonmalignant cases of architectural distortion at image-guided biopsy. Features of upgraded and nonupgraded cases of nonmalignant architectural distortion were compared using the Pearson chi-square test and the Wilcoxon signed rank test. A p value of $< .05$ was used to indicate statistical significance. Statistical software (Stata/IC, version 16, StataCorp) was used to analyze all data.

Results

Study Population

Over the 3-year study period, 429 cases of mammographically detected architectural distortion were recommended for biopsy in 420 women (mean age, 57 years; range, 23–90 years). Of the 429 cases, 101 (23.5%) were excluded for the following reasons: surgery not performed ($n = 92$), immediate surgery performed without preceding image-guided biopsy ($n = 7$), and unknown surgical pathology results of the architectural distortion because mastectomy was performed for an unrelated ipsilateral breast cancer ($n = 2$) (Fig. 1). An additional 199 (46.4%) cases were excluded because the biopsy yielded malignant results. Therefore, the study sample comprised 129 cases of nonmalignant architectural distortion in 125 women (mean age, 54 years; range, 23–90 years).

Of the 129 cases, 104 (80.6%) presented on screening mammography and 25 (19.4%) presented on diagnostic mammography. Of the 25 diagnostic cases, seven presented as 6-month follow-up examinations, six presented as areas of palpable concern (three of which were unrelated to the distortion), five presented as second-look studies for findings detected on other imaging modalities (one of which was unrelated to the distortion), three presented with pain (two of which were unrelated to the distor-

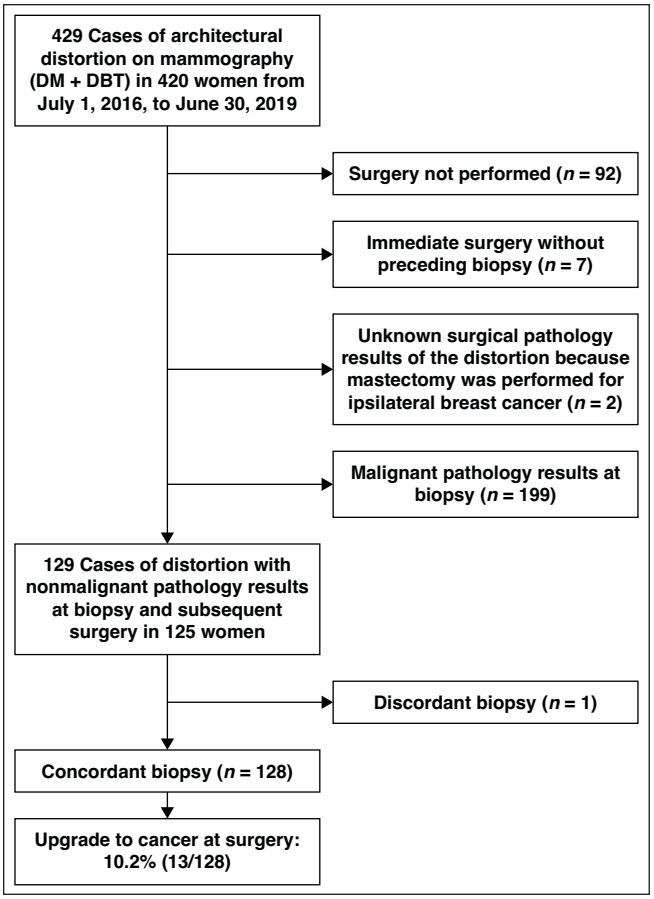

Fig. 1—Flow diagram shows patient and case selection. DM = digital 2D mammography, DBT = digital breast tomosynthesis.

tion), three presented as nipple discharge, and one presented with nipple inversion (unrelated to the distortion).

Pathologic Outcomes and Upgrade Rates

Of the 129 cases of architectural distortion with nonmalignant pathology at image-guided biopsy, 92 (71.3%) were radial scars (without atypia [*n* = 66] or with atypia [*n* = 26]) and 37 (28.7%) were other nonmalignant pathology (high-risk [*n* = 13] or benign without atypia [*n* = 24]) (Table 1). Of the 66 radial scars without atypia at biopsy, one (1.5%) was upgraded at surgery to cancer (grade 2 ductal carcinoma in situ [DCIS]). Of the 26 radial scars with associated atypia at biopsy, five (19.2%) were upgraded at surgery to invasive cancer (*n* = 2) or DCIS (*n* = 3). Of the 13 cases with high-risk pathology at biopsy (e.g., atypical ductal hyperplasia), six (46.2%) were upgraded at surgery to invasive cancer (*n* = 4) or DCIS (*n* = 2). Of the 24 cases with benign pathology and no atypia at biopsy, one was considered discordant and was upgraded to cancer at surgery (benign predominantly fatty breast tissue upgraded to grade 1 invasive ductal carcinoma); of the remaining 23 concordant cases with benign pathology and no atypia at biopsy, one (4.3%) was upgraded at surgery to cancer (grade 1 DCIS). Therefore, the overall upgrade rate to cancer of architectural distortion with concordant nonmalignant image-guided needle biopsy pathology results was 10.2% (13/128) (Table 2). The overall upgrade rate to cancer of architectural distortion without atypia was 2.2% (2/89) and with atypia was 28.2% (11/39). Figures 2–4 show representative cases.

Features Associated With Upgrade of Nonmalignant Pathology Results at Biopsy to Cancer at Surgery

Of the 13 concordant nonmalignant cases at biopsy that were upgraded to cancer at surgery, the mean patient age was 58 years, 7.7% had a personal history of breast cancer, and 38.5% had a family history of breast cancer in a first-degree relative (Table 3). A total of 69.2% presented on screening mammography, 69.2% had dense breasts, and 15.4% had associated findings on mammography (e.g., calcifications, asymmetry). A total of 53.8% had a sonographic correlate (with mean size of 1.1 cm), and 69.2% were biopsied under tomosynthesis guidance. These features were not significantly associated with the risk of upgrade to cancer at surgery (all $p > .05$).

Discussion

There is limited guidance about the appropriate management of architectural distortion on DBT with nonmalignant pathology at image-guided biopsy. To our knowledge, this investigation represents the largest study of nonmalignant architectural distortion on DBT. The overall surgical upgrade rate to malignancy of cases with concordant nonmalignant pathology results was 10.2%. The upgrade rate of architectural distortion without atypia was 2.2% and of architectural distortion with atypia was 28.2%. These results suggest that imaging surveillance rather than surgery can be considered for architectural distortion on DBT yielding radial scar and other benign pathologies without atypia at biopsy.

Given the high malignancy rate of architectural distortion on DBT, core needle biopsy continues to be recommended even when a sonographic correlate is absent [10–12]. However, given increased detection of architectural distortion on DBT than on digital 2D mammography and a higher proportion of nonmalignant pathology results at biopsy for architectural distortion on DBT than on digital 2D mammography, questions have been raised with regard to appropriate management of nonmalignant cases. Our results suggest that imaging surveillance rather than surgery may be considered for radial scars without atypia and other benign concordant pathologies without atypia, consistent with findings from earlier studies [7, 21–24]. In a study in which all radial scars and other high-risk lesions resulting from biopsies of architectural distortion underwent surgery, none of the 15 radial scars was upgraded to malignancy [7]. Further, a study of 158 DBT-detected radial scars reported an upgrade rate of 2.5% (4/158), although not all cases necessarily presented with architectural distortion on mammography [20].

Our results suggest, however, that architectural distortion yielding atypia at biopsy (e.g., radial scar with atypia, atypical ductal hyperplasia) warrants surgery given a high upgrade rate of 28.2%. Earlier studies have shown variable but likewise high upgrade rates of architectural distortion cases on DBT with atypia at biopsy [7, 16, 18]. One study reported a 0% upgrade rate of high-risk lesions in the setting of DBT-detected architectural distortion but included only three surgically excised high-risk lesions (lobular carcinoma in situ in two cases and atypical lobular hyperplasia in one case) [19].

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TABLE 1: Surgical Outcomes of 129 Cases of Nonmalignant Architectural Distortion at Image-Guided Biopsy

Pathologic Findings at Biopsy and Surgery	Total Cases (*n* = 129)
Radial scar without atypia at biopsy	66 (51.2)
No upgrade at surgery	65
Upgrade to invasive carcinoma	0
Upgrade to DCIS (from radial scar to grade 2 DCIS)	1
Radial scar with atypia at biopsy	26 (20.2)
No upgrade at surgery	21
Upgrade to invasive carcinoma	
From radial scar, ADH, LCIS, and ALH to grade 1 microinvasive lobular carcinoma	1
From radial scar and mildly atypical apocrine hyperplasia to grade 1 IDC	1
Upgrade to DCIS	
From radial scar and ADH to grade 1 DCIS	1
From radial scar, ADH, LCIS, and ALH to grade 2 DCIS	1
From radial scar and ALH to grade 3 DCIS	1
High-risk pathology at biopsy	13 (10.1)
No upgrade at surgery	7
Upgrade to invasive carcinoma	
From ADH and LCIS to grade 2 ILC and grade 1 IDC	1
From ALH to grade 1 IDC	1
From atypical apocrine hyperplasia to microinvasive ductal carcinoma	1
From atypical apocrine sclerosing lesion to grade 1 IDC	1
Upgrade to DCIS	
From ADH to grade 3 DCIS	1
From atypical intraductal epithelial proliferation to grade 1 DCIS	1
Benign pathology at biopsy	24 (18.6)
No upgrade at surgery	22
Benign breast tissue	5
Fat necrosis	1
Fibroelastotic stroma	1
Fibrosis	2
Focal adenosis, nodular adenosis, or sclerosing adenosis	5
Focal chronic inflammation	1
Microcysts	1
Sclerosing or papillary lesion	4
Stromal fibrosis	2
Upgrade to invasive carcinoma (from benign predominantly fatty breast tissue[a] to grade 1 IDC)	1
Upgrade to DCIS (from stromal fibrosis to grade 1 DCIS)	1

Note—Values expressed as number of cases, with percentages in parentheses. DCIS = ductal carcinoma in situ, ADH = atypical ductal hyperplasia, LCIS = lobular carcinoma in situ, ALH = atypical lobular hyperplasia, IDC = invasive ductal carcinoma, ILC = invasive lobular carcinoma.
[a]Case considered to be discordant with imaging findings.

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TABLE 2: Cases of Architectural Distortion With Nonmalignant Pathology Results at Image-Guided Needle Biopsy That Were Upgraded to Cancer at Surgery

Patient Age (y)	History of Breast Cancer		Presentation	Breast Density	Associated Findings	US Correlate	Size on US (cm)	Biopsy Modality	Pathology	
	Personal	Family							On Biopsy	At Surgery
47	No	No	Screening	Heterogeneously dense	None	No	NA	DBT	Radial scar	Grade 2 DCIS
74	No	Yes	Screening	Scattered areas of fibroglandular density	None	No	NA	DBT	Radial scar, ADH, LCIS, and ALH	Grade 1 microinvasive lobular carcinoma
34	No	No	Diagnostic (area of palpable cancer)	Extremely dense	Asymmetry	Yes	2.1	DBT	Radial scar and mildly atypical apocrine hyperplasia	Grade 1 IDC
50	No	No	Diagnostic (6-mo follow-up)	Scattered areas of fibroglandular density	Calcifications	Yes	1.0	DBT	Radial scar and ADH	Grade 1 DCIS
62	No	Yes	Screening	Heterogeneously dense	None	No	NA	DBT	Radial scar, ADH, LCIS, and ALH	Grade 2 DCIS
40	No	No	Diagnostic (area of palpable concern unrelated to distortion)	Heterogeneously dense	None	Yes	1.3	US	Radial scar and ALH	Grade 3 DCIS
54	No	No	Screening	Heterogeneously dense	None	No	NA	DBT	ADH and LCIS	Grade 2 ILC and grade 1 IDC
55	No	Yes	Screening	Scattered areas of fibroglandular density	None	Yes	1.3	DBT	ALH	Grade 1 IDC
58	No	No	Diagnostic (6-mo follow-up)	Heterogeneously dense	None	Yes	0.6	US	Atypical apocrine hyperplasia	Microinvasive ductal carcinoma
84	No	Yes	Screening	Scattered areas of fibroglandular density	None	Yes	0.7	US	Atypical apocrine sclerosing lesion	Grade 1 IDC
62	Yes	No	Screening	Heterogeneously dense	None	No	NA	DBT	ADH	Grade 3 DCIS
62	No	No	Screening	Heterogeneously dense	None	No	NA	DBT	Atypical intraductal epithelial proliferation	Grade 1 DCIS
90[a]	No	No	Diagnostic (pain unrelated to distortion)	Scattered areas of fibroglandular density	None	Yes	0.7	DBT	Benign predominantly fatty breast tissue	Grade 1 IDC
69	No	Yes	Screening	Heterogeneously dense	None	Yes	1.0	US	Stromal fibrosis	Grade 1 DCIS

Note—US = ultrasound, NA = not applicable, DBT = digital breast tomosynthesis, DCIS = ductal carcinoma in situ, ADH = atypical ductal hyperplasia, LCIS = lobular carcinoma in situ, ALH = atypical lobular hyperplasia, IDC = invasive ductal carcinoma, ILC = invasive lobular carcinoma.

[a]Case considered to be discordant with imaging findings.

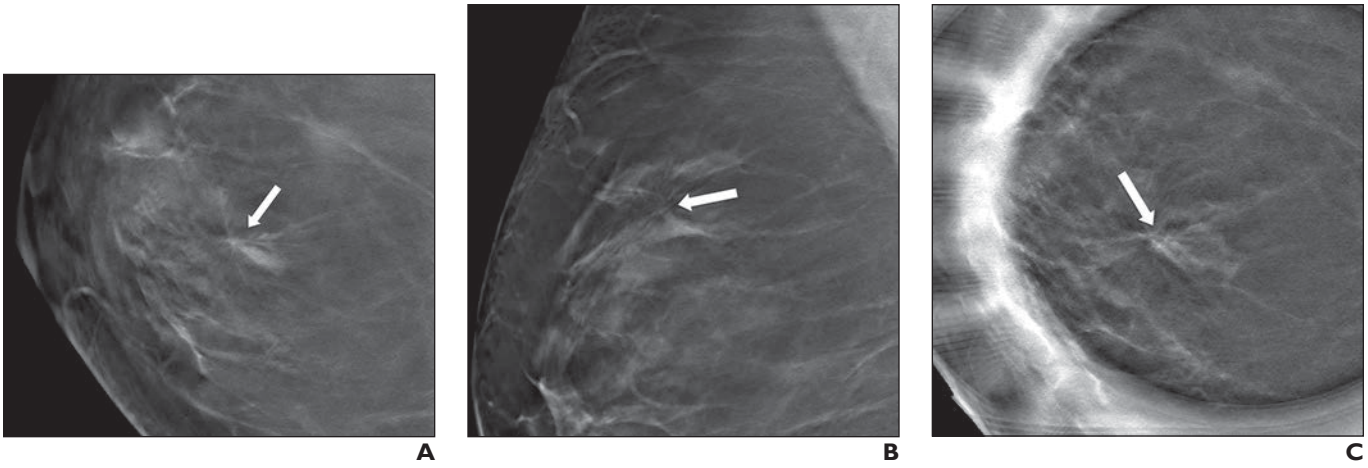

Fig. 2—49-year-old woman who presented for screening mammography that revealed right breast architectural distortion.
A–C, Right craniocaudal (**A**), mediolateral oblique (**B**), and spot compression (**C**) digital breast tomosynthesis images show architectural distortion (*arrows*) in right breast at 12-o'clock position. No sonographic correlate was identified. Tomosynthesis-guided needle biopsy yielded radial scar, which was not upgraded at surgery.

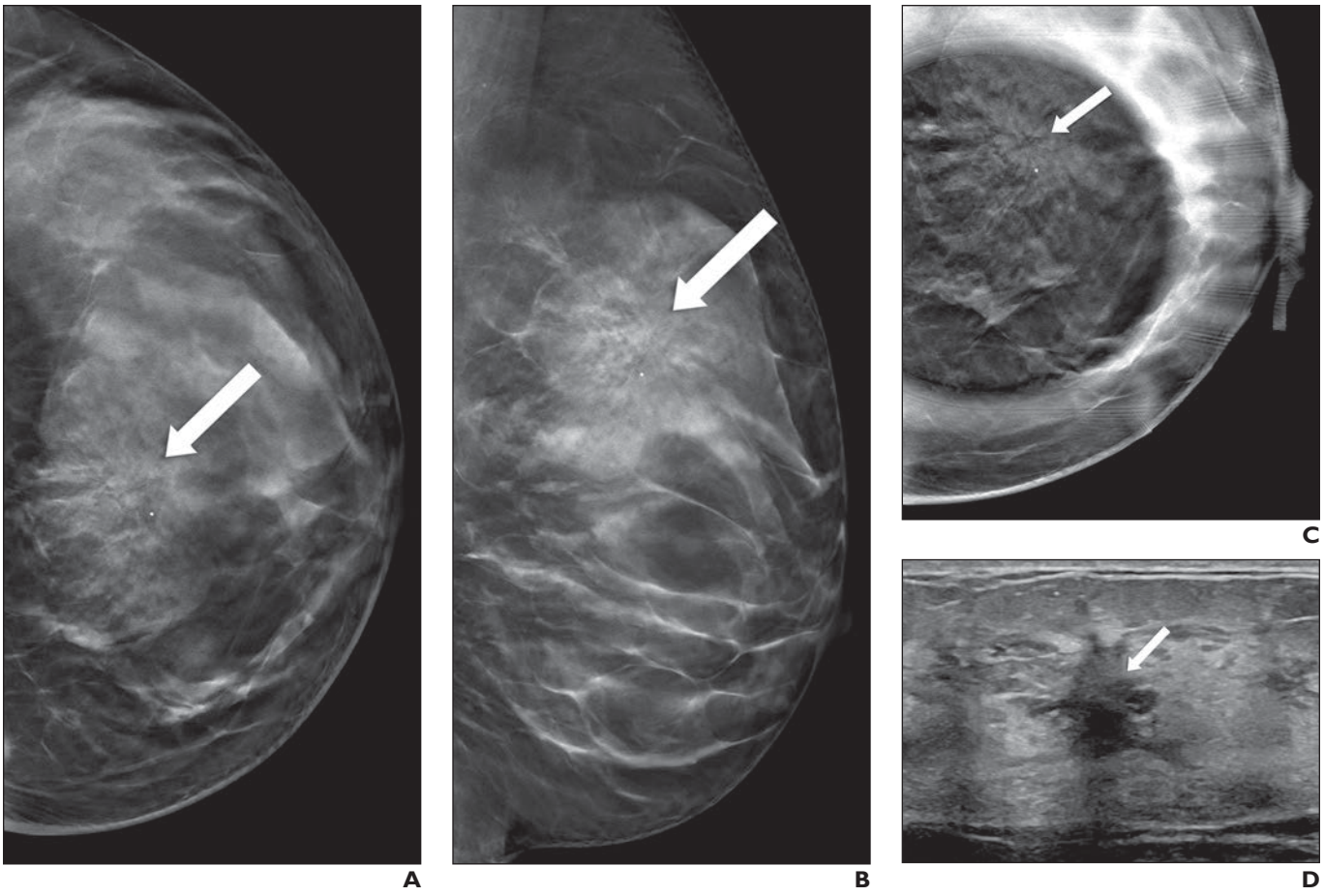

Fig. 3—40-year-old woman who presented for evaluation of palpable concern with unrelated left breast architectural distortion.
A–C, Left craniocaudal (**A**), mediolateral oblique (**B**), and spot compression (**C**) digital breast tomosynthesis images show architectural distortion (*arrows*) in left breast at 12-o'clock position.
D, Ultrasound shows corresponding irregular mass (*arrow*) in left breast at 12-o'clock position. Ultrasound-guided needle biopsy yielded radial scar with atypical lobular hyperplasia, which was upgraded to grade 3 ductal carcinoma in situ at surgery.

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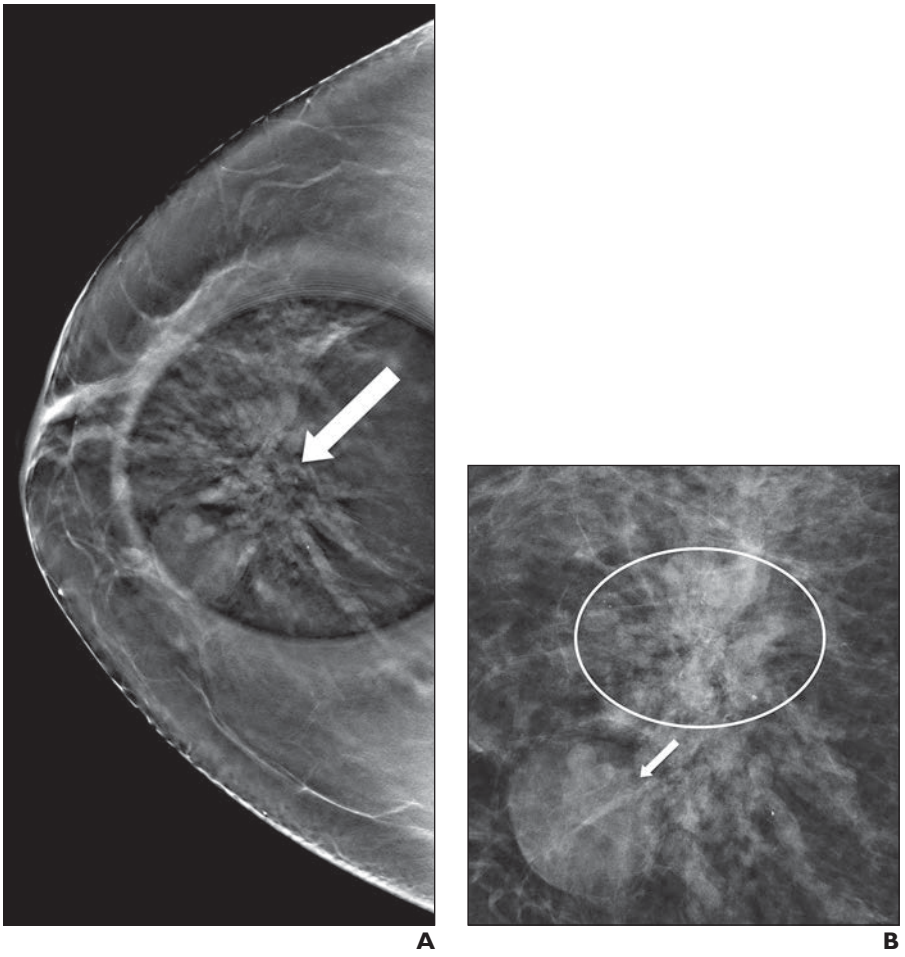

Fig. 4—50-year-old woman who presented for 6-month follow-up imaging of right breast calcifications, which revealed architectural distortion associated with calcifications.
A, Right craniocaudal spot compression digital breast tomosynthesis image shows architectural distortion (*arrow*) in central right breast.
B, Spot magnification view shows associated calcifications (*outline*). Adjacent mass corresponded to simple cyst (*arrow*) at ultrasound. Ultrasound-guided needle biopsy of possible 10-mm correlate to distortion yielded benign breast tissue. Imaging findings and pathology results were considered discordant. Tomosynthesis-guided needle biopsy was performed, yielding radial scar with atypical ductal hyperplasia. Distortion was upgraded to grade 1 ductal carcinoma in situ at surgery.

TABLE 3: Comparison of Features Between Cases of Architectural Distortion With Nonmalignant Pathology Results at Image-Guided Needle Biopsy That Were and Were Not Upgraded to Cancer at Surgery

Feature	Upgrade	No Upgrade	*p*
Patient age (y), mean ± SD	58 ± 14	54 ± 12	.23
Personal history of breast cancer			.46
Yes	7.7 (1/13)	3.5 (4/115)	
No	92.3 (12/13)	96.5 (111/115)	
Family history of breast cancer in a first-degree relative			.21
Yes	38.5 (5/13)	22.6 (26/115)	
No	61.5 (8/13)	77.4 (89/115)	
Presentation			.24
Screening mammography	69.2 (9/13)	82.6 (95/115)	
Diagnostic mammography	30.8 (4/13)	17.4 (20/115)	
Breast density at mammography			.77
Nondense	30.8 (4/13)	34.8 (40/115)	
Dense	69.2 (9/13)	65.2 (75/115)	

(Table 3 continues on next page)

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TABLE 3: Comparison of Features Between Cases of Architectural Distortion With Nonmalignant Pathology Results at Image-Guided Needle Biopsy That Were and Were Not Upgraded to Cancer at Surgery (continued)

Feature	Upgrade	No Upgrade	*p*
Associated findings on mammography (e.g., calcifications, asymmetry)			.59
Yes	15.4 (2/13)	10.4 (12/115)	
No	84.6 (11/13)	89.6 (103/115)	
US correlate[a]			.52
Yes	53.8 (7/13)	44.4 (48/108)	
No	46.2 (6/13)	55.6 (60/108)	
Size of US correlate (cm), mean ± SD	1.1 ± 0.5	1.2 ± 0.7	.82
Modality for biopsy guidance			.46
DBT	69.2 (9/13)	78.3 (90/115)	
US	30.8 (4/13)	21.7 (25/115)	

Note—Unless otherwise indicated, values expressed as percentage, with numerator and denominator in parentheses. US = ultrasound, DBT = digital breast tomosynthesis.
[a]US not performed in seven nonupgraded cases.

None of the evaluated clinical and imaging features were significantly associated with the frequency of upgrade. Previous research has shown that architectural distortion is more likely to represent malignancy when presenting on diagnostic rather than screening mammography and when there is a sonographic correlate, though these two features were not associated with surgical upgrade risk in the current study [6, 25]. Smaller needle gauge at biopsy and larger lesion size have also been found to be associated with surgical upgrade risk of breast lesions [26, 27]; these associations were not observed in the current study (i.e., no difference in upgrade rate between DBT-guided biopsy using 9-gauge needle vs US-guided biopsy using 14-gauge needle; no difference in mean size of US correlate between upgraded and nonupgraded cases), possibly related to the small number of upgraded cases.

Our study has important limitations. It was retrospective in design and conducted at a single center; validation of the observations in prospective and/or multicenter studies is needed. In addition, our analysis was based on imaging reports. Radiologists exhibit high interobserver variability in the assessment of architectural distortion; therefore, spiculated masses could have been incorrectly classified as distortion and vice versa [28]. Interobserver variability is also high among pathologists, who have lower levels of concordance for atypia than for invasive carcinoma [29]. Nonetheless, dedicated breast pathologists reviewed all biopsy and surgical specimens. Also, we did not evaluate the potential association between upgrade risk and the number of obtained core biopsy samples because that information is not documented in the biopsy reports in our practice.

Our study offers guidance regarding the management of architectural distortion on DBT with nonmalignant pathology results at biopsy. Historically, surgery has been recommended for all cases of architectural distortion, including cases that are nonmalignant at biopsy. Our results suggest that imaging surveillance rather than surgery can be considered for architectural distortion on DBT yielding radial scar without atypia or other concordant benign pathologies without atypia. Our results support the continuation of surgical consultation and excision for architectural distortion on DBT with associated atypia.

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Editorial Comment: Architectural Distortion on Digital Breast Tomosynthesis—to Excise or Not to Excise?

Digital breast tomosynthesis (DBT) has been widely adopted into clinical practice. Its adoption has been accompanied by increasing detection of architectural distortion, an often subtle finding that shows far greater conspicuity on DBT than on digital mammography alone [1]. The PPV of DBT-detected architectural distortion, though lower than that of digital mammography–detected architectural distortion, remains high at approximately 35% [2]. Therefore, although the number of cancers presenting as architectural distortion is increasing, radiologists are also more frequently encountering nonmalignant pathologies from core needle biopsy (CNB) of architectural distortion, posing a management dilemma.

This study addresses the controversial issue of management of nonmalignant pathology from CNB of architectural distortion, which has implications for the management of radial scars and complex sclerosing lesions. Surgical excision was historically the standard of care for radial scars given possible upgrade to malignancy. However, recent literature has shown a very low upgrade risk for these lesions, leading to wide practice variation regarding whether these lesions require routine excision. Current guidelines of the American Society of Breast Surgeons state that most radial scars "should be excised, although imaging follow-up is reasonable" in certain scenarios [3].

The study included 129 lesions with nonmalignant pathology from CNB of architectural distortion on DBT, most of which were radial scars. The overall surgical upgrade rate to malignancy was 10.2%. The upgrade rate for architectural distortion with atypia was 28.2% and without atypia was 2.2%. The authors conclude that in the absence of atypia, surveillance rather than surgery can be considered for architectural distortion on DBT that yields radial scar at CNB.

Importantly, this study highlights that the long-established approach of uniformly recommending surgical excision for all radial scars no longer applies in the era of DBT. Ultimately, the decision to excise requires a multidisciplinary approach and shared decision-making with patients. Larger prospective studies will help solidify consensus guidelines.

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