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Malignancy rates after surgical excision of discordant breast biopsies

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ABSTRACT

Background: Vacuum-assisted core-needle biopsy (VAB) is increasingly used to perform breast biopsies instead of automated-gun core-needle biopsy (CNB). The significance of discordance between radiologic and pathologic findings has not been well established in the era of VAB predominance. This retrospective study was conducted to determine the rate of malignancy after surgical excisional biopsy (EXB) of these lesions at our two institutions.

Materials and methods: We reviewed medical records from January 2008–June 2013 to identify female patients who underwent EXB for a Breast Imaging-Reporting and Data System (BI-RADS) 4 or 5 lesions found to be benign and discordant on CNB. Clinicopathologic data were gathered, and analysis was performed using descriptive statistics.

Results: A total of 8081 core biopsies were performed in the study timeframe. Six of 81 (7.4%) patients who had an EXB for a benign discordant breast lesion were found to have malignant pathology (two invasive, four *in situ*). Four of 63 (6.3%) lesions originally biopsied by VAB were upgraded, compared with 2 of 17 (11.8%) originally biopsied by CNB. There were no statistically significant differences in the rates of upgrade to malignancy when data were stratified by BI-RADS score or method of biopsy.

Conclusions: The overall rate of malignancy after EXB of benign discordant lesions was 7.4%. Despite the widespread adoption of VAB, EXB is still warranted for clarification of discordant radiologic–pathologic findings.

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1. Introduction

Approximately 1.7 million breast biopsies are performed annually in the United States [1]. Percutaneous core-needle

breast biopsy is a rapid, accurate method of sampling radiologically or clinically suspicious breast lesions. It is useful in part for the identification of benign lesions that do not require excision [1–7]. Core-needle biopsy (CNB) has generally

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supplanted excisional breast biopsy (EXB) for sampling of image-detected lesions and is now considered the preferred method for initial diagnosis, having demonstrated accuracy essentially equivalent to EXB [1]. However, there is still potential for false-negative core-needle or EXB. Post-biopsy correlation of radiologic and pathologic findings is essential to correctly interpret pathology and avoid delay of malignant diagnoses [1,6,8–10]. Radiologic–pathologic discordance, defined as suspicious radiographic findings not explained by pathology findings, raises suspicion of a false-negative benign core biopsy and the possible presence of a malignancy. This generally motivates the practice of following up discordant core biopsy results with EXB. The rate at which benign discordant lesions are upgraded to malignancy on EXB is not well characterized in the literature because of relatively few studies addressing this question. Reported percentages vary widely (0%–53.8%), and various interpretations have been made in regards to standard of care for obtaining a definitive diagnosis in these lesions [11–18]. Currently, the largest published study examining this rate for vacuum-assisted core-needle biopsies (VABs), which are increasingly used over the older automated-gun biopsy technology (CNB), is limited to the use of VAB in 20 patients [11]. VAB is reported to have reduced histologic underestimation, false negatives, and incidence of discordance, with a negative predictive value as high as 99.95% [12,19–25].

VAB has been the predominant method of biopsy at our two institutions for over 5 y, and we have continued to routinely perform EXB for discordant cases. We conducted this study to determine the rate of malignancy after EXB for benign discordant breast lesions worked up by a dedicated multidisciplinary breast oncology team in the contemporary era.

2. Material and methods

2.1. Patients

A retrospective review of medical records at both Los Angeles County Medical Center (LAC) and USC Norris Comprehensive Cancer Center (Norris) was performed to identify all female patients aged 18–90 y who had EXB of a benign discordant breast lesion from January 2008–June 2013. Our radiologists' practice is to provide a Breast Imaging-Reporting and Data System (BI-RADS) score for every abnormal imaged lesion as opposed to the whole breast. Only patients with BI-RADS 4 or 5 breast lesions were included in the study. Pathologic lymph nodes were not included, as this is a separate research question. Patients with any history of known malignancy were excluded. This study was approved by the University of Southern California Institutional Review Board.

2.2. CNBs and radiologic–pathologic correlation

All CNBs were performed by specialized radiologists or radiology residents under attending supervision. Biopsies at LAC varied between VAB and CNB at the discretion of the attending radiologist, whereas only VAB was performed for our patient cohort at Norris. Core biopsies were performed under ultrasound, stereotactic, or magnetic resonance imaging

(MRI) guidance. Clips were placed and documented by mammography after biopsy for all patients. VAB devices used at LAC were as follows: 1) the Mammotome ST, EX, and elite systems (Mammotome, Cincinnati, OH); and 2) Hologic Celero and ATEC systems (Hologic Inc, Bedford, MA). CNBs were performed with the Bard Max-Core Disposable Core Biopsy Instrument (Bard, Murray Hill, NJ). VAB devices at Norris were as follows: 1) the Mammotome ST; 2) Hologic Eviva, Celero, and ATEC system; and 3) Bard EnCor and Vacora.

After pathologic diagnosis of the tissue, a multidisciplinary team, including representative faculty from radiology, pathology, and breast surgical oncology, evaluated radiologic–pathologic concordance. Figure describes the flow of patient workup that generated our study cohort of benign discordant lesions.

2.3. Post-biopsy management

Pathologically benign lesions considered discordant (radiographically suspicious despite a benign core biopsy) either underwent repeat CNB or were referred to surgery for removal by EXB, according to the radiologist's recommendation and patient preference. In general, cases were reviewed again at our multidisciplinary conference before the scheduled surgery to confirm discordance. All patients managed by EXB were represented at the conference for review of surgical pathology and treatment planning. Our medical record database was not able to generate the number of patients with discordant pathology reports who did not have EXB during this time period; however, our standard operating procedure was to perform EXB for benign discordant lesions. Surgeries for Norris patients were performed at Keck Hospital of USC.

2.4. Data collection and statistical analysis

Charts of patients satisfying study criteria were reviewed for clinicopathologic variables including clinical presentation,

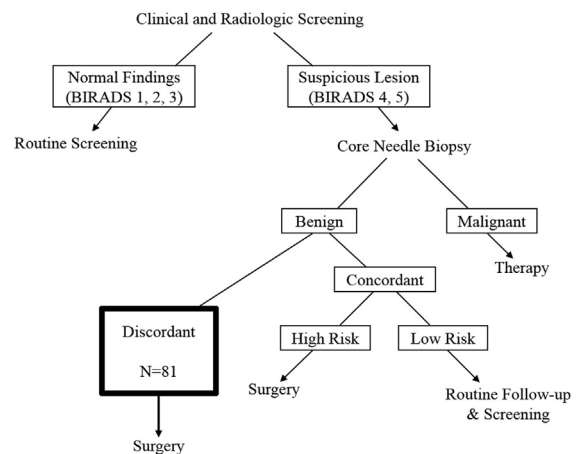


Figure – Workflow for evaluation of breast findings. We retrospectively reviewed the medical records of 81 patients undergoing EXB for benign discordant CNB. Radiologic–pathologic discordance was determined by a multidisciplinary team performing routine clinical breast examinations, screening, and diagnostic mammograms, and CNBs.

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