Processing Stereotactic Breast Biopsy Specimens: Impact of Specimen Radiography System on Workflow

To the Editor:

After breast tissue cores are obtained from a patient during a stereotactic biopsy performed for suspicious calcifications with potential atypia and/or breast malignancy, the presence of target calcifications within the tissue cores must be verified before sending the tissue to pathology. At our breast imaging center, there are two commercial imaging systems being used for this, the Bioptics CoreVision System, located in the biopsy room, and the GE 2000D System, which is a free-standing mammography unit located outside the biopsy room. They are essentially equivalent in terms of specimen radiography capabilities. The only difference is the location of the equipment and the rapidity of acquiring a specimen radiograph of the core tissue samples.

The Bioptics unit allows for quickly evaluating the core tissue specimens in the biopsy room and efficiently transferring them to the collection jars sent to pathology. Otherwise, the core tissue specimens must be taken out of the biopsy room to the reading room workstation for specimen radiograph evaluation and separating core samples before sending them to pathology. This is relevant for institutions where the specimen is separated into “with calcifications” and “without calcifications” collection jars, which is often standard operating procedure. This also obviates the need to “hold” another mammography unit in a separate room, in addition to the biopsy unit, for obtaining the specimen images, which is an interruption in the usual work flow and an inconvenience for scheduled screening mammography patients. Using the Bioptics CoreVision increases overall efficiency of imaging the core tissue samples, and decreases time required to determine whether target calcifications are obtained so that a biopsy clip can be placed and the procedure completed.

Prior to this study, the mammographers at our institution reported that although the overall quality of the two systems is equivalent, it seemed to take less time with one system compared with the other. Although there have been reports on interpretation workflow in mammography (1–4), as well as biopsy procedure times (e.g., patient positioning and needle localization times) (5,6), there have been no reports in the literature on this topic to date. Therefore, this study determined how long it takes mammographers to process core tissue samples from stereotactic core needle biopsies performed for suspicious breast calcifications with one system versus the other.

The study was Institutional Review Board exempt. There were no deviations in the normal biopsy and specimen processing routine. Two mammographers used a form to record 3 key time points in the specimen processing routine. They completed it for 27 specimens with the GE 2000D unit and 27 with the Bioptics CoreVision unit, alternating for every other patient. Each mammographer completed half the cases. For each specimen, they recorded the time that (a) core tissue samples were placed in a tray for acquiring specimen radiography (“imaging of the specimen tray”), (b) they placed the biopsy clip in the breast following specimen radiography that showed the presence of target calcifications (“placement of biopsy clip”), and (c) when core tissue samples were transferred from the imaging tray to the specimen container that was subsequently sent to pathology (“placement of tissue cores in specimen container for histology”). For each case, the specimen radiography system used, the date, and which mammographer performed the procedure were recorded.

The data for each step and the overall combined time were analyzed with an ANOVA. There was a significant difference in total time (F = 18.556, p < 0.0001) for Bioptics CoreVision versus GE. There was also a significant difference as a function of user (F = 6.397, p = 0.0146), although both users took
significantly less time with the Bioptics CoreVision system. Dividing the process into the two basic steps, there was a significant difference in “imaging of the specimen tray” to “placement of biopsy clip” time ($F = 13.934$, $p = 0.0005$) for Bioptics CoreVision versus GE. There was no difference as a function of user ($F = 0.602$, $p = 0.4416$). For “placement of biopsy clip” to “placement of tissue cores in specimen container for histology” time, there was a significant difference ($F = 14.25$, $p = 0.0004$) for CoreVision versus GE. There was also a significant difference as a function of user ($F = 15.721$, $p = 0.0002$), although only one user took significantly less time with the Bioptics CoreVision system and the other had no significant difference.

There are different imaging systems available for processing core tissue samples obtained at the time of stereotactic breast biopsies performed for suspicious breast calcifications, and some factors to consider when deciding whether or not to purchase a mobile specimen radiograph machine that can be placed in the biopsy room include quality and price. However, the methods in which specimen radiography can impact workflow in terms of how long it takes to perform the steps necessary to process the specimens for transport to pathology is generally not considered. As the processing of specimens takes the mammographer away from the patient (even for a short time), it extends the procedure and thus can extend the patient’s discomfort and anxiety.

This study demonstrated that a mobile specimen radiograph machine located in the procedure room can significantly reduce processing time of core tissue samples obtained during stereotactic needle biopsy performed for evaluation of suspicious breast calcifications. On average, there was approximately a 2.5 minute reduction in processing time per procedure, with a maximum reduction of almost 14 minutes (longest total time Bioptics CoreVision = 385 seconds – longest GE2000D time = 1195 seconds = 13.5 minutes). Assuming the average, actual procedure time is approximately 10 minutes and a moderate practice conducts an average of five biopsies per day, the average 2.5 minute reduction (25% time savings) would save at least 15 minutes overall per day in overall workflow. When deciding whether or not to purchase a specimen radiography system for processing stereotactic breast biopsy core tissue containing microcalcifications, it would be worth the user’s time and effort to learn how easily and quickly the component steps can be performed using a specimen radiograph machine located in the procedure room.

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REFERENCES