

Opinion

Breast Density and the Efficacy of Secondary Screening

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The topic of density in relation to breasts has become a major issue of discussion as of late. Dense breast tissue refers to the breast tissue appearing on a mammogram. When a patient is told their breasts are dense this means that additional screening options may be appropriate as cancerous masses can hide behind the tissue. Masses appear white in color on a screening, or hyperechoic. Breast tissue results in the same imagery, so imagine looking for a snowball within a blizzard. Malignant tumors can be masked in these situations; resulting in a mammogram with a negative finding, hence the recommendation for adjunct screening.

Roughly 40% of women have dense breasts.¹ Breast density is one of the strongest risk factors associated with breast cancer. It is a highly established predictor of cancer risk and a mammogram misses every other cancer in dense breasts.² The density can be categorized into 4 levels; A, B, C, D. The category of A would be a classification of a breast being almost entirely fatty, whereas the classification of D would be extremely dense. About 1 in 10 women fall into this latter category.

In general, women with breasts that are classified as heterogeneously dense or extremely dense are considered to have dense breasts.³

The question arises as to what this means if a patient is considered to have heterogeneously dense breasts. The awareness of density and its ability to mask abnormalities in a mammogram has prompted many states (over half) to require physicians to “notify” patients if they have dense breasts and to recommend getting adjunct screenings.

Universal density reporting will prevent later stage cancers and give ALL women access to an EARLY diagnosis – when most treatable and with better survival outcomes. computerized tomography (CT) data show a statistically significant increase in the detection of small, early and invasive cancers invisible by mammogram.⁴

Additional screening tests to mammography for women with dense breast tissue will increase detection by up to 100%. These invasive cancers, missed by mammography, are small, node negative and at an early-stage.¹

Recommended Adjunct Screening Methods

Breast tomosynthesis or a 3-D mammogram: Tomosynthesis uses X-rays to collect images of the breast from multiple angles. A 3-D image of the breast is formed by computer software.

Breast MRI: An magnetic resonance imaging (MRI) acquires its images using magnets. MRI doesn't use radiation. Breast MRI is recommended for women with a very high-risk of breast cancer. This might include those with genetic mutations, etc.

Breast ultrasound: Ultrasound uses sound waves to acquire images and analyze tissue. A diagnostic ultrasound is commonly used to look into areas of concern a radiologist might have found on a mammogram.

Automatic breast ultrasound (ABUS): There are pros and cons to each. A 3-D mammogram is estimated to detect 1 additional cancer per 1,000. However, cancerous masses may be hidden behind dense breast tissue. The patient is also exposed to more radiation (although considered safe).³

A breast MRI detects 14 additional cancers in 1,000 but can have many false positives, resulting in unneeded biopsies and stress on the patient. The MRI is more cumbersome, involves the injection of a contrast dye, and it is quite an expensive exam which might not be covered by your insurance.

Breast ultrasound detects an additional 2-4 cancers per 1,000 but is less cumbersome nor does it require a contrast injection. However, handheld ultrasound exams are heavily dependent on the individual scanner and they do result in an increase in false positives as well.

This concern is reduced when the concept of ABUS is adopted. An ABUS unit takes the user dependence out of the exam as well as add an additional level of speed and efficiency. This advanced technology achieves a 3-D image that can “see through” dense breasts to reveal areas that the radiologist was not able to see behind the dense tissue.

During these procedures the patient is laid on their back (supine) or on their front (prone), depending on the particular brand. When the patient is supine, a mechanical arm is positioned over the body. The operator holds the arm as the transducer (object acquiring the image) is guided across the breasts from side to side (transverse) as well as up and down (longitudinal). Each breast typically takes 2-3-minutes, depending on the brand.

When the patient is laid prone, conversely, the breast is placed within a cup and the transducer moves along the breast clockwise, acquiring three dimensional (3D) images without the use of a mechanical arm or added pressure (the patient’s body weight suffices). For this reason, the comfort level can be increased within a prone position as well as the amount of privacy the patient has.

Some of the concerns radiologists have with this modality is the amount of false positives. They do not want to add unneeded fear to the patient. A recent study found that the call back rates were actually smaller than previously assumed with novice users producing call back rates at 3%, intermediate at 15.2% and advanced users at 7.1%. There was a decrease of average call back rates after a 3-month learning curve, down from from 24.7% to 12.6%.⁵

Is Automatic Ultrasound as Efficient as Handheld Ultrasound?

The Multicenter Hospital-based Diagnostic Study conducted to test the efficacy of ABUS *versus* hand-held ultrasound. The agreement rate between the two was 94% out of 1,973 studied. 78.6% were classified as breast imaging reporting and data system (BI-

RADS) 4-5 and diagnosed with precancerous lesions or cancer, which was 7.2% higher than HHUS at 71.4%. For Birads 1-2 the false positive was nearly identical between the two modalities and much less than mammography (ABUS: 17%, Mammo: 27.5%).⁶

With the adoption of the notification laws taking place across the country, patients have more access to information related to the topic of density in relation to breasts. It still widely remains the patient’s responsibility to seek out these additional screenings and check around to see what facility offers the screening methods they feel most comfortable with.

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