

Breast Density Awareness

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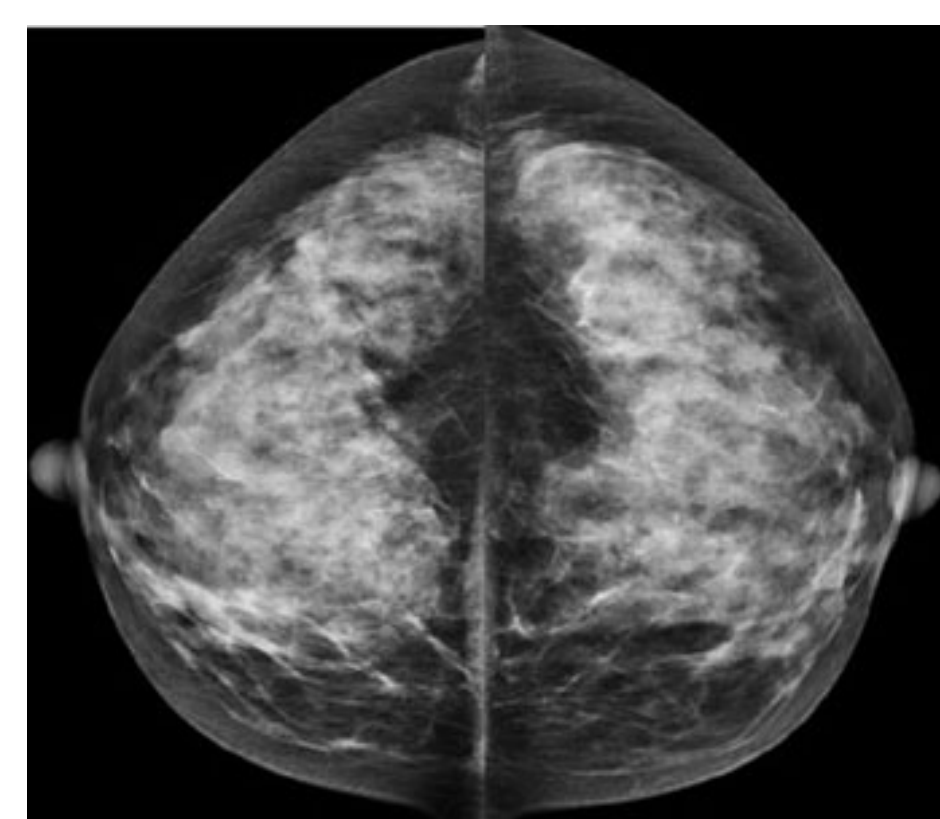
Introduction

- ❖ Breast density can be defined as, "a measure used to describe the proportion of fibroglandular tissue in a woman's breast depicted on a digital mammogram" (Mohamed 2018, pg. 315).
- ❖ In 1992, the Mammography Quality Standards Act (MQSA) was enacted to ensure that all women would have access to quality mammography for the detection of breast cancer in its earliest, most treatable stages (Center, About the Mammography Program, 2018).
- ❖ For the past 25 years, the Mammography Quality Standards Act has required mammography facilities to send each patient a written summary of the mammography report in lay terms. The MQSA requires that the written summary must be sent within 30 days of the mammogram and if the patient's mammogram is interpreted as "Suspicious" or "Highly Suggestive of Malignancy", the facility must make reasonable attempts to communicate these results to the patient and the referring healthcare provider (Center, Direct-To-Patient Mammogram Results, 2018).
- ❖ In addition to the MQSA requirements, the Breast Density Notification Law was created, with 38 states passing the law since January 2020.
- ❖ The Breast Density Notification Legislature states that within the written summary of the mammogram results, the patient's breast density using the American College of Radiology categories must be included for patients to be aware of their own density (Department, 2019).
- ❖ Although state legislature has increased women's knowledge on the topic of breast density and the risks associated with it, it has also brought on challenges for physicians. Primary physicians need education on best practices for management and when the patient should be referred for ultrasound imaging.
- ❖ Research has show that women with a higher breast density are at an increased risk for developing breast cancer (Moothathu, 2017).
- ❖ A limitation associated with mammography is that microcalcifications, which are often the findings suspicious for early diagnosis of breast malignancies, can be obscured by higher breast density (Moothathu, 2017).

Role of Mammography in Breast Imaging

- ❖ **Mammography** is optimal for comparing the ratio of fat to fibroglandular tissue of the breast. It is considered the best screening tool for breast composition and abnormalities. Mammography requires low-dose ionizing radiation in order to evaluate the breast tissue and is cost efficient. Breast tissue with higher density are more difficult to penetrate creating more to detect abnormalities or masses. (Biomarker, 2015). Digital breast tomosynthesis, or 3D mammography, has increased the sensitivity of detection of subtle findings. Tomosynthesis uses an electronic detector system to obtain multiple projection images which are synthesized by the computer to create thin slices of the breast tissue. This allows the radiologist the ability to scroll through the images, reducing tissue overlap and providing earlier detection of abnormalities that may be masked during conventional mammography (Hooley, 2017). Mammography is often complimented by ultrasound and MRI to further characterize areas of suspicion or confirm the composition of the lesion.

Mammogram of Dense Tissue



(Abbreviated, 2018)

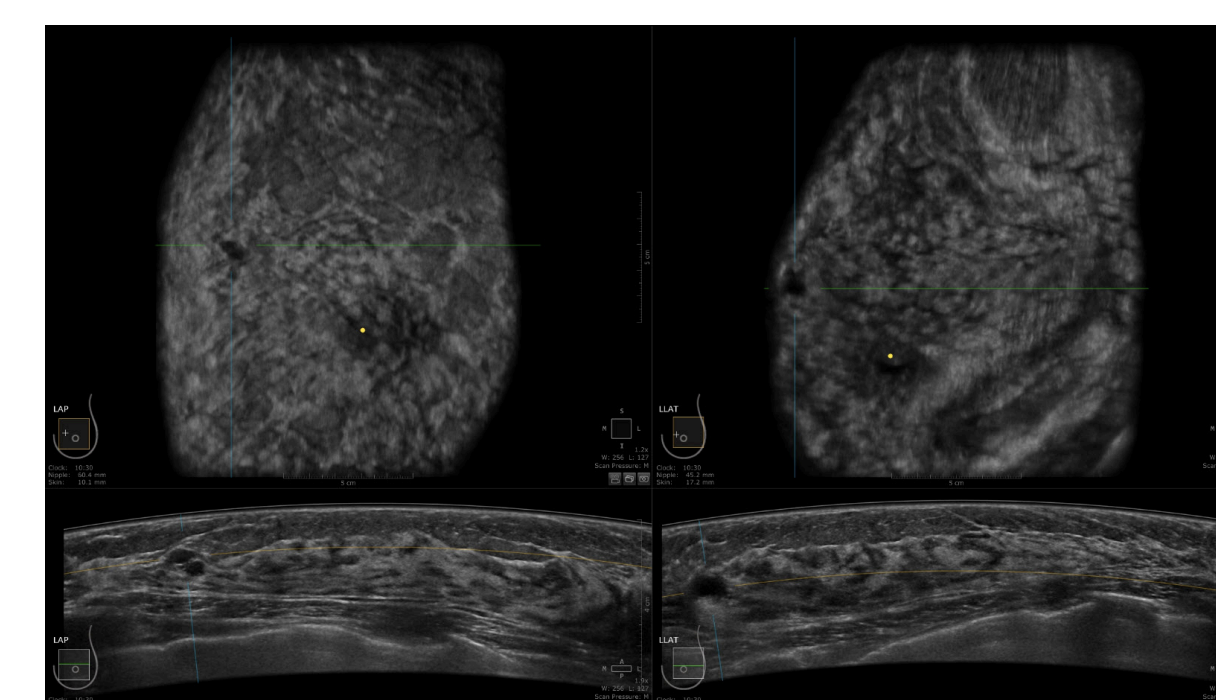
Mammography Limitations

- ❖ Mammographic sensitivity decreases with increasing breast density. This is primarily due to the masking effect of the fibroglandular breast tissue, which can obscure an underlying malignancy (Zhao, 2015).
- ❖ False-negative results. Overall, screening mammograms do not find about 1 in every 5 breast malignancies (Zhao, 2015).
- ❖ Mammography cannot determine the exact size and location of an abnormality (Zhao, 2015).

Role of Sonography in Breast Imaging

- ❖ **Breast Sonography (ultrasound)** is an imaging modality which uses sound waves to produce images of the internal structures of the breast. Ultrasound is currently the most widely utilized supplemental imaging modality appropriate for women with dense breasts and intermediate or average risk, as well as women with a very high-risk (Moothathu, 2017). Ultrasound can better differentiate fluid filled lesions from solid tissue lesions and document characteristics associated with benign versus malignant lesions. Advancing technology and automated breast ultrasound system (ABUS) is a more current technology standardizing breast ultrasound imaging of the whole breast, reduces operator dependency, and allows physicians to school through all breast tissue. Breast ultrasound is widely available, well tolerated by patients, relatively inexpensive, and can detect small, less than 1 cm in size, invasive mammographically occult malignancies (Moothathu, 2017).

Ultrasound of Dense Tissue



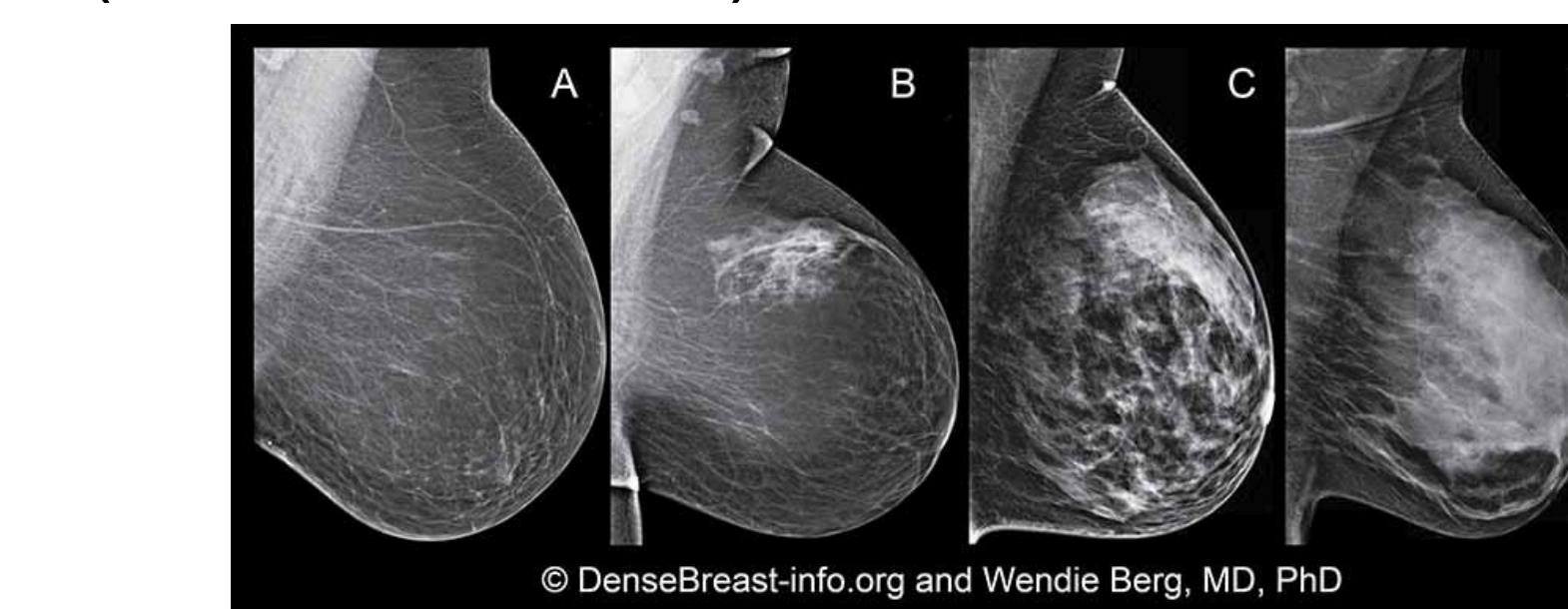
(Nason, 2016)

Sonography Limitations

- ❖ Not sensitive to microcalcifications. Microcalcifications may be present on the mammographic images but not the ultrasound images (Kawamura, 2018).
- ❖ Conventional sonography is user dependent, if the sonographer is to miss an area while scanning, a potential abnormality could be missed (Kawamura, 2018).
- ❖ Length of time required to scan an entire breast. More commonly only the suspicious quadrant or area of the breast is scanned rather than the entire breast (Kawamura, 2018).
- ❖ ABUS is available and less user dependent but it is underutilized.

Categories of Breast Density

- ❖ The BI-RADS mammographic breast density criteria include four qualitative categories of breast density:
 1. Almost entirely fatty
 - Approximately 10% of women
 2. Scattered areas of fibroglandular density
 - Approximately 40% of women
 3. Heterogeneously dense
 - Approximately 40% of women
 4. Extremely dense
 - Approximately 10% of women



(Dense, 2018)

Conclusion

- ❖ Due to the increased risk of breast cancer associated with breast density, it is essential women are knowledgeable on the topic of breast density. It is also important that physicians are informing patients on their breast density category and referring them for additional imaging exams if necessary. Although there are limitations associated with both mammography and breast sonography, using supplemental screening tools is the best way to evaluate a potential breast abnormality. According to a study performed in 2018, 90% of the women agreed that they would prefer to know their breast tissue type. It also showed that having a breast density reporting law enacted by the state increased the likelihood that a women learned their breast tissue type from a mammogram results letter and health care providers spoke with women about receiving supplemental screening (Cappello, 2019). If all states were to pass the Breast Density Notification Legislature, more women would become informed on the risks associated with breast density. Breast density awareness could be improved because of the enactment of the Breast Density Notification Legislature, therefore reducing the number of women affected by undetected early staged breast cancer.