Automated breast ultrasound detects significantly more invasive cancers in dense breasts

While mammography remains the gold standard for detecting breast cancer, research has shown it is not equally effective in all women. In the 40% of with dense breast tissue, mammography can miss up to one third of breast cancers. This may lead to a delay in diagnosis and a worse prognosis for women with dense breast tissue. Mammography has been shown to miss 30% of cancer in dense breasts. Using screening ultrasound for women with dense breasts is helping address this challenge. However, the limitations of traditional hand-held ultrasound (HHUS), which include operator dependency, variability and long acquisition times, make it inefficient for broad-scale breast cancer screening. With the introduction of ABUS (automated breast ultrasound), clinicians are able to address these variables and shorten both exam and read times, while increasing sensitivity with a multi-modality approach.

New findings from a Swedish study show a 57% relative increase in breast cancer detection in women with dense breast tissue when ABUS was used together with mammography.

The system is found to have significantly improved cancer detection in women with dense breast tissue when used together with mammography.

The European Asymptomatic Screening Study (EASY) aimed to evaluate the impact of ABUS in conjunction with full field digital screening mammography (FFDSM) in 1,668 women aged 40-74 with dense breasts. The study showed a 57 percent relative increase in breast cancer detection in dense breast tissue, compared with mammography alone.

"If ABUS would be a part of national screening programmes in dense breasts, more cancers could be detected at an earlier stage. Many countries are working to try to optimize screening so that each woman can get examinations according to her assessed risk," said Dr Brigitte Wilczek, lead researcher on the EASY study.

Dense breast tissue is linked with an increase in the risk of developing cancer. It also makes detecting cancer more difficult. This is because both masses and breast tissue appear white in the mammogram, which makes the search for masses like a search for a snowball in a snowstorm. By contrast, masses appear dark against white tissue with ultrasound technology.

Dense breasts are particularly common in younger women and seems to reduce with age, as on average 74% of women in their 40s, 57% of women in their 50s, 44% of women in their 60s and 36% of women in their 70s have dense breast tissue.

In the study, published in the European Journal of Radiology, FFDSM was first used in the examination followed by a 3D ABUS exam which took 15 minutes to complete per patient. The inclusion criteria for the women in the study was that they be 40 years or older, asymptomatic, and have heterogeneously dense parenchyma or extremely dense breast on assessment by the radiographer in the screening.

"The study shows that it is feasible to implement 3D ABUS into a high volume mammography center and increase the cancer detection rate while maintaining an acceptable low recall rate," said Dr Wilczek.

The recall rate for ABUS and FFDSM combined was only +0.9% compared to FFDSM alone. This is an acceptable low recall rate well within the recommendations of the European guidelines for quality assurance in breast cancer screening.

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FRONT COVER PRODUCT

Invenia™ ABUS automated breast ultrasound

The recently launched new generation of automated breast ultrasound, Invenia ABUS, shifts traditional ultrasound from hardware- to software-based processing which results in excellent image quality, reproducibility and easy operation. The ABUS also includes intelligent imaging algorithms to help produce better image quality for easier identification of lumps, such as the tissue equalization algorithm, nipple shadow compensation, breast border detection and chest wall detection. Invenia ABUS's Reverse Curve Transducer is designed to shape a woman's anatomy and enhances patient comfort during the exam as well as breast coverage. The 15 cm wide filed-of-view, high-frequency transducer automatically creates uniform compression across the entire breast for enhanced anatomical detail and consistent image quality independent of the operator. The ABUS workstation displays 3D volumes and tools for efficient interpretation and analysis.

For 3D ABUS examination of the breasts, the patient is in the supine position. The 3D ABUS screening takes 15 minutes to complete per patient. Invenia ABUS, the latest version of the system, uses powerful software-based imaging architecture combined with intelligent imaging algorithms to provide remarkable image quality and exceptional performance.

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