Making Mammography More Comfortable for the Patient – and More Precise

Mammography can be a source of anxiety for the patient. In Denmark, one university hospital is putting great emphasis on making breast examinations more comfortable, while at the same time enabling more personalized care with improved diagnostic accuracy.

Text: Niels Anner | Photos: Robert Wengler

A quiet, friendly atmosphere pervades at the hospital. As to be expected, still many women who are cared for at the Department of Mammography at Odense University Hospital are nervous or even frightened, according to radiographer Julie Hauge Andersen. Some patients find the compression of the breast during the examination extremely unpleasant, while others fear that the findings could indicate a malignant tumor. Hauge Andersen and her colleague Melika Khanzadeh know that good communication is key in these situations. They explain the examination to the patient and help them understand that the compression of the breast is crucial in order to obtain precise X-ray images. "We explain that the quality of the diagnosis depends on a very clear image," says Khanzadeh. While communication with the patients is vital, the department has also acquired new technology to help enhance the patient experience as well.

Full focus on the patient thanks to a simplified workflow

According to Hauge Andersen and Khanzadeh, they have already seen a number of improvements since the new MAMMOMAT Revelation system was installed. A simplified workflow and improved image quality have made the work of the radiography team easier. Faster results and a smooth transition from 2D mammography to 3D breast tomosynthesis have saved time, says Khanzadeh: "And that is time that we can spend on the patient and making sure the breast is correctly positioned." Optimizing the workflow thus not only provides benefits for the department as a whole, but also helps contribute to enhancing the patient experience.

Optimized compression adjusted to the individual breast

What is vitally important, the radiographers explain, is that the patients feel as comfortable as possible. The flexible height adjustment of the new system helps the facility to enable a more personalized and comfortable examination. Patients notice a big difference when it comes to breast compression, which many find uncomfortable. The new compression paddles with soft edges reduce the pressure on the muscles. "Many patients have told us that they noticed the difference right away," says Khanzadeh. She adds that it is also easier to position the breast with the hand, as there is more room to remove the hand with the rounded paddles. Patients appreciate the gentler compression that the system

More comfortable mammography screenings: radiographer Melika Khanzadeh demonstrates the MAMMOMAT Revelation's patient-friendly design.

allows for. As soon as the paddle meets resistance, the compression slows down automatically and the system adjusts the pressure to the individual breast. This results in optimized image quality while avoiding unnecessary pressure. "We can also use the same compression paddle for 2D and 3D examinations," explains Khanzadeh. "This results in a reduction of necessary steps and a more relaxed examination. And, because we are achieving optimal compression regardless of the patient or technician, we are able to further optimize our workflow."

More flexible workflows reduce the number of hospital visits

Patient numbers are continually increasing at the hospital managed by the Danish public health system. "We have a high throughput of patients," says senior radiologist Lisbet Brønsro Larsen, MD. Every day, women with symptoms such as a lump in the breast are referred to the department for diagnosis. A variety of methods can be efficiently performed on the new system, including mammography, tomosynthesis, and biopsy, and are used to support an accurate diagnosis. This also helps the department in deciding about and scheduling further diagnostic examinations, such as ultrasound. "Especially the use of tomosynthesis will make our work processes more flexible in the future. And patients will not require as many hospital visits," explains Larsen.

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Higher image quality at a reduced dose level

It seems entirely natural to the senior physician that the hospital should use the latest imaging technology. Larsen was already a front-runner over ten years ago when digital mammography had its breakthrough: "Of course, we want to offer our patients the best, most effective and gentlest examination, but we also want to contribute to the further development of clinical diagnostics. MAMMOMAT Revelation offers better image quality than all the previously used systems," Larsen says. The system acquires the tomosynthesis images by taking various projections in an angular range of 50°. As a result, the 3D images are sharper and more detailed, allowing the radiologist to see more lesions than possible with 2D. Furthermore, radiation dose can be reduced by up to 30 percent in 2D mammograms thanks to the software-based anti-scatter solution called PRIME Technology.

Integrated breast density assessment for personalized diagnosis

Once staff are completely familiar with the new system, the plan is to keep introducing additional solutions to further help customize workflows and enable more personalized examinations. Breast density, which is different in every woman, is one example. It is more challenging to image patients with dense breasts. Knowing the breast density can help plan further diagnostics, such as tomosynthesis. With the system, it is now possible to obtain breast density measurement automatically, directly on the acquisition workstation screen. This will help the hospital adapt its workflows. For patients with a high breast density, for example, they will perform tomosynthesis right away. In the past, the patient would have had to schedule another appointment. The hospital will soon adapt its policies accordingly. This development is an advantage for both patients and staff, saving time and providing a diagnosis sooner.

Advanced diagnostics in one system

For Lisbeth Brønsro Larsen, the increased diagnostic accuracy provided by tomosynthesis is a significant benefit. Thanks to the system's 50-degree wide angle, the facility can achieve a high depth resolution, allowing for lesions in dense breast tissue to be detected that are not seen on 2D mammography. With the new system, Larsen's team can also perform biopsies under the guidance of tomosynthesis. This provides great benefit in biopsy targeting, especially when it comes to microcalcifications, which are often small and difficult to biopsy accurately. These services were not previously offered by the department, so patients needed a further appointment in another department, such as MRI. The tissue samples can also be scanned during the same biopsy procedure. With other systems, the tissues needed to be scanned at a different system, adding extra time to the examination. The radiologist and technician can stay with the patient now during the entire procedure and the time the breast is under compression can also be reduced. "The tomosynthesis biopsy examination is extremely accurate and the workflow is easy," says Melika Khanzadeh. "As biopsies can be very stressful for the patients, it is a great solution for us and it reduces the time under compression."

Senior radiologist Lisbet Brønsro Larsen, MD, and radiographer Melika Khanzadeh with the new MAMMOMAT Revelation scanner at Odense University Hospital.

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Melika Khanzadeh, radiographer

A further innovation for Larsen and her team is the possibility of contrast-enhanced X-ray imaging. She plans to carry out a study on functional imaging this fall with selected patients who are being treated for a tumor. The new technology will replace some MRI examinations in future so that patients no longer need a separate hospital visit, explains Larsen. These new multifunctional devices reduce patient waiting times with their associated anxiety and at the same time enable a more precise diagnosis. ●

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