

Healthcare Sector Workflow & Solutions Division

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Enhancing imaging capabilities with breast tomosynthesis

Siemens releases first mammography systems equipped with 3D tomosynthesis

Siemens Healthcare has now integrated 3D tomosynthesis into its Mammomat Inspiration digital mammography platform. This technology compiles three-dimensional images of the breast and can therefore detect tumors even if hidden by overlapping tissue. This enables a more accurate diagnosis than before and reduces the number of false positive findings. The first Mammomat systems with tomosynthesis have now been installed in Germany and in Belgium.

Dr. Renate Tewaag from Radprax - a group of practices specializing in radiology, nuclear medicine and radiation therapy - was the first radiologist in Germany to use this new Siemens technology. "With tomosynthesis we are witnessing a fascinating further development in digital mammography. This 3D technology offers impressive improvements in the detection of detail, which benefit both patients and radiologists alike: We can be more certain in our diagnosis, while women being examined can feel more reassured," explained Dr. Tewaag. "Tomosynthesis makes mammography less stressful for both the physician and the patient. Based on current first impressions, additional examinations and interventions can be avoided with a clear conscience. Lesions hidden within the dense glandular tissue are identified at an earlier stage."

So far, conventional analog mammography and digital full-field mammography was only able to display the three-dimensional anatomical structure of the breast on a two-dimensional level. This made diagnosis more difficult and limited the possibility of the physician identifying certain types of tumor; since, anatomical structures could overlap and obscure lesions. The 3D tomosynthesis technology in the Mammomat Inspiration overcomes these limitations: The technology acquires several projections of the breast from different angles using a fast detector based on amorphous Selenium (aSe) and uses this raw data to generate a 3D volume set. This enables a better analysis of the type and size of lesions as well as microcalcifications compared to conventional methods.

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Tomosynthesis increases the sensitivity and specificity of mammography, as well as improving tumor differentiation and classification.

Tomosynthesis differs from conventional mammography in the same way that, for example, a CT scan differs from a classical X-ray image. During the examination, the X-ray tube moves in a 50-degree arc around the breast, taking 25 low-dose images. The images are then used as raw data to construct high-resolution 3D images. High spatial resolution and a wide acquisition angle result in the production of mammography images with unparalleled image quality.

The digital Mammomat Inspiration system with basic screening and diagnostic functions has been on the market since the end of 2007 and is widely used in hospitals and medical practices around the world. Mammomat Inspiration offers screening, diagnostics, stereotactic biopsy, and now tomosynthesis for the first time together on a single integrated digital platform. Any hospital or practice can purchase a screening device and add the biopsy and 3D tomosynthesis applications at a later time if necessary. Soon, all installed systems of this type can be upgraded on-site with the tomosynthesis function.

For a press image of 3D tomosynthesis with the Mammomat Inspiration, please visit:

<http://www.siemens.com/med-pictures/3D-Tomosynthesis>

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