

Private German Radiology Practice Improves Workflow and Speeds Breast Cancer Diagnostics with AI-Powered Solution for DBT, ProFound AI™

Challenges:

- Increasing use of DBT for 15,000 mammograms annually
- Exponentially longer time required to review DBT images, hampering radiologist efficiency

Solution:

- ProFound AI™ for Digital Breast Tomosynthesis – iCAD, Inc.

Results:

- Recognized a minimum of 50% reduction in reading time
- 1-2 minutes processing time per case, enabling radiologists to quickly provide results to patients
- True confidence in lesion detection

“iCAD’s ProFound AI™ solution has had a significant impact on our workflow. We are able to immediately react if we see something suspicious in a scan alleviating anxiety for our patients. Using the solution will allow us to expand DBT beyond diagnosis because it enables our radiologists to read as many tomosynthesis cases as we currently read with 2D mammography. I consider ProFound AI to be one of the greatest tools in modern radiology.”

The Story of Radiologie am Theater

Radiologie am Theater is a private radiology practice that operates three offices in and around Paderborn, Germany. Since the 2006 debut of the German National Breast Screening Program, the center has offered screening services led by Dr. Axel Gräwingholt, head of the Department of Mammography Screening and clinical co-chair on the guideline group of the European Commission Initiative, on Breast Cancer (ECIBC), an initiative developing new evidence-based recommendations of guidelines for the whole breast cancer care pathway.

The group provides more than 15,000 breast exams each year. Two-thirds of these are screenings, which rely on conventional 2D mammography, while the remaining diagnostic mammographies are partially carried out using digital breast tomosynthesis (DBT). According to Dr. Gräwingholt, the practice expects that tomosynthesis will eventually replace 2D mammography in the screening program, since several trials have shown that cancer detection rates using tomosynthesis are significantly higher than those with 2D digital mammography, particularly for invasive cancers.

DBT, however, comes with some drawbacks, most prominently the time it takes to read the scans. Also, because DBT is so time consuming for radiologists, it has not yet been considered as the primary breast screening procedure, within the German screening program.

“Not only does the examination itself take slightly longer to acquire than a standard 2D mammogram, it dramatically increases reading time because our radiologists must examine hundreds of sliced images of the breast,” Dr. Gräwingholt noted. “The fact that DBT requires more radiologist reading time is all the more acute given the ever-increasing workload, and the current shortage, of radiologists.”



-- Dr. Axel Gräwingholt,
Head of the Department of
Mammography Screening,
Radiologie am Theater,
Paderborn, Germany

Overcoming DBT Hurdles

Thinking about the possible implementation of DBT for screening in the future, Dr. Gräwingholt needed a solution that could support and enhance radiologist readings. His research led him to ProFound AI™ for DBT from iCAD Inc, a global medical technology leader providing innovative AI-based cancer detection and therapy solutions. In comparing ProFound AI to other products on the market, Dr. Gräwingholt noted that iCAD's solution "seems to have superior performance."

The proof was clear when putting the new technology into practice.

"After installation, training on ProFound AI was short, efficient and easy to understand, even for inexperienced users. Our learning curve was very rapid," he said.

Radiologie am Theater began using ProFound AI in May 2018. During this time, ProFound AI has lived up to Dr. Gräwingholt's expectations and industry studies that show how the solution can cut DBT reading time by more than half. More importantly, the iCAD solution helps radiologists quickly identify areas of concern, which require a closer look or further testing. Dr. Gräwingholt noted that using artificial intelligence to systematically and reliably identify "true negatives" will continue to improve his practice workflow.

"By providing probabilities (percentage scores) based on ProFound AI's algorithm's certainty of finding for lesions and the entire tomosynthesis case, this system will enable me to focus my reading time on complex cases that really need close attention," he added.

Delivering Accurate, Reliable Results

ProFound AI's speed also results in a better patient experience.

"I want to see our patients in an efficient and rapid way. The processing time of the algorithm is only one to two minutes per case, so I am able to give my patients undergoing diagnostic imaging accurate, reliable results right away," Dr. Gräwingholt said.

He noted that studies have shown that by using the system, radiologists can benefit from an average increase in sensitivity of 8 percent or in specificity of 6.9 percent. In doing his own retrospective study of many cases from Radiologie am Theater's screening program in which lesions were biopsied and their characteristics verified by pathology, Dr. Gräwingholt found that the effectiveness of ProFound AI in accurately detecting lesions is consistent. Considering that a single reader of tomosynthesis using an AI cancer detection solution would be just as sensitive as the double reading that is done today in most screening settings in total it could be a 25% reduction of reading time for the program.

"It detects significant lesions, including many that might have been missed by the radiologist, and shows the potential of this AI product and future applications," he noted.

The group's radiologists also appreciate the solution because it offers a back-up for their own performance, particularly if they face the reality of their busy workday, which includes many interruptions that could potentially cause them to overlook something of importance, he noted.

"For us, it's not only important to be a center where cancer is reliably detected. From the efficiency point of view, it's also important to reduce the long reading times commonly associated with DBT," Dr. Gräwingholt concluded. "With iCAD's ProFound AI solution, we can free up our radiologists to focus on the more difficult cases and help minimize misdiagnoses or mismanagement."

About iCAD, Inc.

Headquartered in Nashua, NH, iCAD is a global leader in medical technology providing innovative cancer detection and therapy solutions. For more information, visit www.icadmed.com.