

AbstractID: 3364 Title: Evaluation based on breast tomosynthesis of amorphous selenium based full field digital mammography system

Purpose: Our goal is to develop and evaluate breast tomosynthesis of amorphous selenium (*a*-Se) based full field digital mammography (FFDM) system. The clinical value of tomosynthesis will be to provide additional clinical information in order to improve decision making accuracy to either confirm or exclude a suspected abnormality, verify correct target for biopsies and analyze tumor margin better to get knowledge of the possible extent breast cancer.

Method and Materials: The prototype of tomosynthesis full field digital mammography system which is used in evaluation is based on amorphous selenium flat-panel detector technology. The overall thickness of the selenium structure is 200 μ m, and the pixel size on this detector is 85 μ m. The total arc of the breast tomosynthesis system is 60° (-30° to +30°) and tomosynthesis sequence is performed at approximately 1-1.5 times the radiation dose of a conventional mammogram including 15 low-dose exposures. Reconstruction methods will be also discussed.

Results: Based on the experimental results of this study, we believe that FFDM tomosynthesis can be used to determine whether a mammography finding is caused by a real abnormal lesion or by superimposition of normal parenchymal structures to be able to diagnose and analyze the findings properly.

Conclusion: We need to be able to find screening and diagnostic method, which has high sensitivity as well high specificity to avoid unnecessary surgical interventions and to be able to detect breast cancer in its early stage. The technology has already proved its benefits in detecting early breast cancers and the capability of diagnosing breast cancers. Although FFDM tomosynthesis evaluation needs to concentrate on proving that it is clinically successful in the sense of increased sensitivity and specificity, with lower cost of workflow and reduced risk.

Conflict of Interest: Mari Varjonen and Pekka Strommer are employees of Planned Oy.