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Scientific Formal (Paper) Presentations

CODE: SSK01-02

SESSION: SSK01

Implementing Digital Breast Tomosynthesis (DBT) in a Screening Population: PPV1 as a Measure of Outcome

Date/Times

- **DATE: Wednesday**
- **TIME: 10:40-10:50 AM**
- **LOCATION: Arie Crown Theater**

PARTICIPANTS

- Emily F Conant MD - Consultant, Hologic, Inc.
- Fei Wan undefined - Nothing to disclose.
- Mathew Thomas BS - Nothing to disclose.
- Marie Synnestvedt undefined - Nothing to disclose.
- Susan P Weinstein MD - Nothing to disclose.
- Susan G Roth MD - Nothing to disclose.
- Despina Kontos PhD - Nothing to disclose.
- Anne Marie McCarthy undefined - Nothing to disclose.
- Nandita Mitra undefined - Nothing to disclose.

SUBSPECIALTY CONTENT

- Breast (Imaging and Interventional)

PURPOSE

DBT has been reported to decrease both false positive recalls from screening and to improve cancer detection rates. The purpose of this study is to compare the impact of DBT on PPV1 in a prospective screening population.

METHOD AND MATERIALS

In October 2011, we began screening all of our patients with DBT and thus far, have imaged over 17,000 women. For the group and for each of six radiologists, all trained in DBT interpretation, the following metrics were compared for the 16 months of DBT screening and for the year prior of digital mammography (DM) screening: Total volume of cases read, recall volumes and rates, cancer detection rate and PPV1. PPV1 was defined as the proportion of positive screening mammograms (0, 4 or 5) from which cancer was diagnosed.

RESULTS

Thus far, outcome data for 15,633 women imaged with DBT have been compared to the prior year of 10,753 patients imaged with DM. The average recall rate for the group of 6 readers decreased from 10.40% to 8.78%. After generalized estimating equation based on adjustment to account for variability in the readers' volumes over time, the recall rate was significantly higher under DM versus DBT with an OR = 1.23, 95% CI: [1.07, 1.40](p=0.002). By reader, DM recall rates ranged from 15.32-5.72%; DBT recall rates ranged from 13.03-4.84%. 5 of the 6 readers decreased their recall rates; 1 reader had no change. Overall, the cancer detection rate increased from 3.51 to 5.24/1000 with DBT (p>0.05). 4 of the 6 readers increased their cancer detection rate; 2 readers had minimal decreases (both had decreases in recall). The one reader with an overall stable recall rate increased her cancer detection rate from 3.4 to 6.3/1000. The DM PPV1 for the readers ranged from 2.5 to 12.1%. With DBT, 5 of the 6 readers increased their PPV1 significantly (new range from 4.7 to 11.7%). 1 reader had no significant change in PPV1 but a slight drop in recall. The overall PPV1 increased for the group was from 4.1% to 6.0% (p=0.044).

CONCLUSION

The implementation of DBT in a large screening program demonstrated a reduction in recall rates and an increase in cancer detection rates that varied by reader. The balance of these outcomes for each reader, as measured by PPV1, showed significant improvements for 5 of 6 readers and stability for 1 reader.

CLINICAL RELEVANCE/APPLICATION

Screening outcomes as measured by PPV1 improved with DBT implementation in a large, prospective population.