Applying a True Screening Workflow Protocol for Ultrasound Breast Cancer Screening increases Biopsy PPV

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Objectives: Interest grows in ultrasound breast cancer screening (UBCS) as (1) new publications describe a doubling in the sensitivity over mammography alone in dense-breasted patients; (2) mammographically-occult cancers discovered by ultrasound tend to be smaller, with a dramatically lower rate of node involvement; and (3) public pressure pushes for patient education of these facts. UBCS is criticized because of associated false positives (as defined by biopsy PPV).

Methods: Our center employed a UCBC workflow protocol similar to screening mammography (i.e. patients reviewed for normal pathology (not for cancer) and patients with abnormal pathology called back for further non-invasive diagnostic exams before referring them to biopsy). We retrospectively reviewed our PPV 1 (callbacks), PPV 2 (positive biopsy rate) and sensitivity.

Results: After an initial training period of 100 cases, our recall rate was 9%, with a PPV2 of 30%. The callback and biopsies-per-cancer-found rates were similar to our mammography callback and biopsy rates (12% and 38%, respectively). Kelly had similar results in studies where ultrasound was applied as a true screening tool, and not a diagnostic/screen hybrid.

Conclusion: Our data, and published data, supports that false positives with UBCS are a function of procedure workflow, not intrinsic to ultrasound as an imaging modality. As was demonstrated in the 1980s, when a true screening protocol was adopted to mammography, applying a true screening protocol to ultrasound breast cancer screening also increases biopsy PPV.