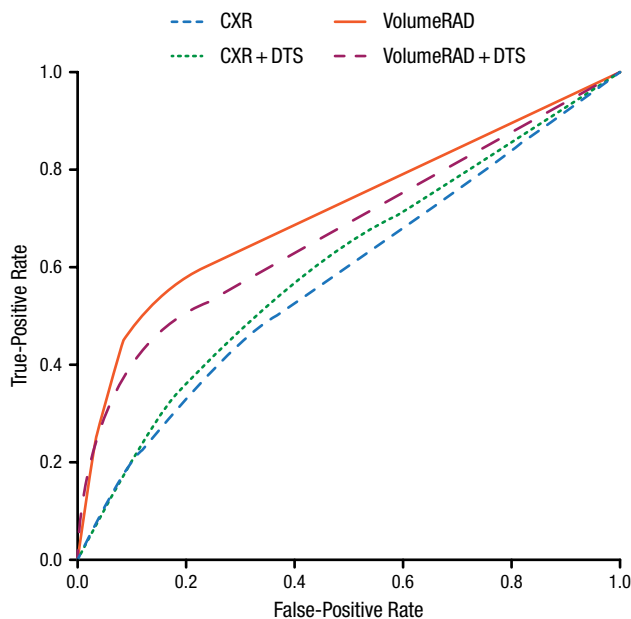Figure 1. Case Management (Further Imaging) ROC

Tomosynthesis requires ($P < .01$) a smaller dose than CT and the same[a] ($P < .01$) minimal relative radiation level (< 0.1 mSv) as 2-view CXR.

ACR, American College of Radiology; CT, computed tomography; CXR, chest x-ray; DTS, digital tomosynthesis; ROC, receiver operating characteristic; VolumeRAD, GE VolumeRAD tomosynthesis.

[a]ACR Appropriateness Criteria® Radiation Dose Assessment Introduction, 2012.

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AUS Predicts Residual Nodal Disease After NAC

Written by Rita Buckley

Axillary ultrasound (AUS) after neoadjuvant chemotherapy (NAC) can help to restage axillary nodal basins for patients with clinical node-positive (cN1) breast cancer, sparing many from the morbidity associated with axillary lymph node dissection (ALND). H. Carisa Le-Petross, MD, University of Texas MD Anderson Cancer Center, Houston, Texas, USA, reported the results of a secondary end point of the American College of Surgeons Oncology Group (ACOSOG) Z1071 trial [Boughey JC et al. *JAMA*. 2013].

The prospective, multicenter ACOSOG Z1071 trial evaluated the false-negative rate (FNR) for nodal staging with sentinel lymph node (SLN) surgery performed after NAC in women initially presenting with biopsy-proven cN1 disease. The study evaluated the likelihood that the FNR in patients with ≥ 2 SLNs examined was $< 10\%$, the rate reported from many studies for women undergoing SLN surgery who present with clinically node-negative (cN0) disease.

ACOSOG Z1071 enrolled 756 women with breast cancer (clinical T0 to T4, N1 to N2, M0) who received NAC and then underwent SLN surgery with ALND. SLN surgery correctly identified the axillary nodal status in 91.2% of patients. The FNR was 12.6% (39 of 310) in patients with cN1 breast cancer with ≥ 2 SLNs resected (90% Bayesian credible interval, 9.85% to 16.05%).

The objective of the secondary end point was to evaluate the correlation between lymph node (LN) features on AUS after NAC with the final nodal pathology at surgery.

Study enrollment could occur prior to, during, or after chemotherapy. All patients were required to have a physical examination and AUS. AUS was performed after completion of NAC, within 4 weeks prior to surgery. This was followed by SLN surgery and ALND.

The study classified the LN morphology as normal or abnormal. AUS images were read locally and reviewed centrally to determine nodal cortical thickness (in millimeters), nodal size, and cortical morphologic features. Dr Le-Petross referenced a previous study in which the cortical morphologic features were used as predictors of metastasis in breast cancer [Bedi DG. *AJR Am J Roentgenol.* 2008].

Of the 756 women enrolled in ACOSOG Z1071, 611 had AUS images available for central review; 370 (60.6%) had residual nodal disease (N+) on final pathology, while 241 (39.4%) had no residual nodal disease (N0).

The analysis of the secondary end point found that of the AUS findings for LNs, the features that significantly predicted residual nodal disease were cortical thickness > 3 mm for N+ ($P < .0001$) and lack of fatty hilum visibility (48 patients [81.4% N+] vs 11 patients [18.6% N0]). LN size was not significant (long axis to short axis ratio, $P = .28$).

To conclude, LN status is an important prognostic factor used to guide local, regional, and systemic treatment decisions. It is important to restage breast cancer and nodal status after NAC and prior to surgery. In N+ patients, AUS performed after NAC can provide information to help determine what type of axillary surgery is indicated after NAC. This could help ensure that only those individuals who may benefit from ALND would be exposed to the potential morbidity of the procedure. Nodal morphology, such as cortical thickness and presence or absence of fatty hilum, should be used to predict the presence of residual nodal disease.

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