Patricia Goodemote, MD, and Deana Mitchell, DO
Eglin Air Force Base Family Medicine Residency, Eglin AFB, Fla

William Nichols, MLS
Eglin Air Force Base, Fla

What is the best way to screen for breast cancer in women with implants?

Evidence-based answer

Mammography is best. It is considered as effective for screening women who have undergone augmentation mammoplasty as those who have not (strength of recommendation [SOR]: **B**, limited number of retrospective and prospective cohort studies). This question has not been well studied, however.

FAST TRACK

Mammography is considered as effective for screening women who have breast implants as for those who do not

Evidence summary

Breast augmentation is one of the most popular plastic surgeries in the United States; an estimated 291,350 such procedures were performed in 2005.[1] Breast cancer occurs in 1 of every 8 women; a projected 32,000 women who received breast implants in 2003 will develop cancer.[1] Available research has focused on retrospective and prospective designs because of the ethical limitations of experimental designs. No US studies directly compare mammography with alternate screening methods, such as sonography or magnetic resonance imaging.

With implants: Lower screening sensitivity but similar prognosis

Studies show that augmentation decreases the sensitivity of screening mammography but doesn't affect breast cancer prognosis.[2] A 2004 prospective cohort study of 986,270 women found that, among asymptomatic women diagnosed with breast cancer (40 augmented, 238 nonaugmented), the sensitivity of screening mammograms was lower in women with breast implants (45%; 95% confidence interval [CI], 29.3%–61.5%) than those without (66.8%; 95% CI, 60.4%–72.8%); *P*=.008).[2] Similarly, in symptomatic women diagnosed with breast cancer (41 augmented, 145 nonaugmented), screening sensitivity was lower in the augmented women (73.2%) than the nonaugmented women (81.4%)—although the results weren't significant (*P*=.25).

Despite lower screening sensitivity, breast tumors in asymptomatic women, whether augmented or not, had similar characteristics, except for larger tumor size (3 mm) at diagnosis in augmented women. Symptomatic women with breast implants had cancers that were smaller, lower-grade, and more likely to be estrogen receptor dependent and invasive (*P*=.052) compared with nonaugmented women. The authors concluded that augmentation doesn't influence the prognostic characteristics of tumors, and they recommended screening mammography at appropriate intervals.

Two other prospective cohort studies produced similar findings. A 2006 study of 4082 breast cancer patients concluded that mammography yielded a false-

negative rate of 41.4% in augmented patients compared with 8.8% in nonaugmented patients ($P<.0001$).[3] However, both augmented (n=129) and nonaugmented (n=3953) women had a comparable prognosis at diagnosis. The authors of the studies suggested diagnostic mammography for augmented patients and correlation with physical exam findings.

An earlier study of 2956 cancer patients found that mammography detected an abnormal breast mass in 66.3% of augmented women compared with 94.6% of nonaugmented women ($P=.001$).[4] No significant differences were noted in cancer characteristics at diagnosis or survival rates ($P=.78$). The authors of this study concluded that mammography should be used for augmented women until a more effective screening tool is found.

Sonography vs mammography: The jury is still out

Although studies comparing screening methods have not been performed in the United States, a small Taiwanese study directly compared ultrasound to mammography in 105 women without breast implants. This retrospective cohort study found sonography to be a more useful diagnostic tool than mammography in Taiwanese women.[5] Sonography had the highest sensitivity (87.5%) compared to physical examination (50.0%) and mammography (25.5%).

Sonography was recommended as the imaging tool for Asian women with smaller, denser breasts. However, it is unclear whether this result applies to US women or women who have undergone breast augmentation surgery.

Training in implant imaging is needed

Mammography appears to be the most effective screening method for women with breast implants. Despite the small differences in cancer characteristics at diagnosis between augmented and nonaugmented women, overall prognosis and survival rates are no different.[1-3,6] This is true whether a screening mammogram or diagnostic mammogram is used. In any case, all available findings suggest that clinicians who perform mammography should be trained in imaging the augmented breast.[6-8]

Recommendations

The National Cancer Institute indicates that the best screening method for augmented women is mammography performed at a facility with employees trained in implant imaging.[7] The American College of Radiology's practice guidelines affirm that mammography is the best imaging tool available.[8] The American College of Obstetrics and Gynecology and the US Preventive Services Task Force don't comment on screening augmented women. ■

Acknowledgments

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FAST TRACK

Breast augmentation decreases the sensitivity of screening mammography but doesn't affect breast cancer prognosis