Sentinel Lymph Node Surgery in Uncommon Clinical Circumstances

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- Sentinel lymph node • Neoadjuvant chemotherapy
- Breast cancer in men • Multifocal breast cancer
- Internal mammary lymph node • Breast reduction
- Breast augmentation • Prophylactic mastectomy

Surgical staging of the axillary lymph nodes in patients with breast cancer has evolved from axillary lymph node dissection (ALND) to sentinel lymph node (SLN) surgery. Although SLN surgery has become the standard of care for clinically node-negative early-stage breast cancer, controversies exist regarding its applications in some special circumstances. American Society of Clinical Oncology (ASCO) published guideline recommendations for use of SLN surgery in 2005 with a section devoted to SLN in special circumstances.[1] The literature was more limited at that time, and additional data have since been published in these areas. In this article, an update of the information on the role of SLN surgery in uncommon circumstances is provided.

BREAST CANCER IN MEN

In general, men with breast cancer have larger tumors than women have and are more likely than women to have positive nodes.[2] At the time of issuance of the ASCO panel recommendations, data on the use of SLN surgery in men with early-stage breast cancer were limited.[3–10] Therefore, no categorical recommendations about the use of SLN surgery for men with breast cancer were made, despite it being unlikely that SLN surgery would be any less accurate in men than it was in women.[1]

There have been several additional studies with larger numbers of patients showing technical feasibility and accuracy of SLN surgery in men similar to that in women. Boughey and colleagues[2] compared 30 men and 2784 women with breast cancer who underwent SLN surgery. The SLN was identified in 100% of men and in 98.3% of women. The incidence of positive SLNs was higher in men than women (37.0%

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vs 22.3%), although this did not reach statistical significance. In cases with positive SLNs, male patients had increased risk of additional disease in nonsentinel axillary lymph nodes compared with women (62.5% vs 20.7%). Additional data and review of literature by Rusby and colleagues[11] reported combined data from 110 men who had undergone SLN surgery and showed a 96% SLN identification rate. There were no false negatives in the 13 patients with negative SLNs who had undergone concomitant ALND. Gentilini and colleagues[12] reported an identification rate of 100% in 32 men with early breast cancer who underwent SLN surgery. No backup axillary dissection was performed in 26 patients with negative SLNs; however, after a median follow-up of 30 months no axillary recurrence occurred. SLN surgery in 78 men at Memorial Sloan-Kettering Cancer Center reported an SLN identification rate of 97%. Negative SLNs were found in 39 of 76 (51%) patients. In 3 (8%) patients with negative SLNs, a positive non-SLN was identified by intraoperative palpation. At a median follow-up of 28 months, there were no axillary recurrences.[13]

As a result of data comparable to breast cancer in women, although not formally validated, SLN surgery is now advocated as the procedure of choice in men with clinically node-negative breast cancer.[11,12,14] Given the higher rate of SLN positivity in men and higher rate of non-SLN involvement in patients with a positive SLN, intraoperative evaluation of the SLN should be considered in the surgical management of male patients with breast cancer and completion ALND recommended in cases with positive SLN.[2]

PREGNANT PATIENTS WITH BREAST CANCER

Significant fetal radiation exposure may result in malformations, mental retardation, and childhood cancer. The ASCO 2005 guidelines on use of SLN surgery, while acknowledging that the dose of radiation to the fetus was minimal, nevertheless concluded that there were insufficient data to recommend the use of SLN surgery in pregnant women.[1] Understandably, the radiation effects are most harmful during early fetal life at the time of organogenesis. The use of phantom models, based on radiation-absorbed dose calculations in nonpregnant women who have undergone SLN surgery, estimated the fetal absorbed dose to be 0.014 mGy or less, using 0.5 mCi activity (18.5 MBq).[15] In another study, Keleher and colleagues[16] estimated the maximum absorbed dose to the fetus in 2 nonpregnant women using 92.5 MBq tracer activity to be 4.3 mGy. These absorbed doses are well below the acceptable radiation dose to the pregnant woman.[15–18]

More recent guidelines, however, including those on breast and head and neck cancers and melanoma, do not consider pregnancy a contraindication for SLN surgery, especially beyond the first trimester.[19–21] Despite theoretical safety, surgeons are reluctant, and currently studies of the use of SLN surgery in pregnancy are limited to a few case reports and series with few patients.[22–25] At the European Institute of Oncology in Milan, SLN surgery is offered to women with breast cancer diagnosed during pregnancy, and Gentilini and colleagues[25] recently reported on 12 pregnant patients who underwent SLN surgery. The SLN was identified in all patients. Of the 12 patients, 10 had pathologically negative SLNs. One patient had micrometastasis in 1 of 4 SLNs. One patient had metastasis in the SLN and underwent axillary clearance. No detrimental effect on the fetus was observed. There was no overt axillary recurrence in the patients with negative SLNs after a median follow-up of 32 months. Similar results have been reported from the Moffitt Cancer Center where 10 patients with an average gestation of 15.8 weeks underwent SLN surgery. In all cases the SLN was identified and the sentinel node was positive in 50%. Nine patients delivered