Following extensive trials (longitudinal single and multi-institutional, as well as prospective randomized), sentinel lymph node biopsy (SLNB) has replaced axillary lymph node dissection (ALND) in the surgical management of the axilla [1-4]. The standard recommendation for a patient whose axilla is positive by fine needle aspiration (FNA) or SLNB however is completion ALND [5-6]. Completion ALND has been recommended for local control of any residual disease in the axilla and its possible impact on survival. Some have questioned the need for completion ALND [7-9], particularly in patients with micrometastasis (N1mic), and those with individual tumor cells mostly seen by immunohistochemical stains (N0 (i+)) as defined by the 7th edition of the American Joint Committee on Cancer Staging Manual [10]. Nomograms were developed to predict residual disease in the axilla and assist in selecting patients in whom completion ALND could be avoided [11-17].

Recent data have shown a gradual decrease in the size of tumor at presentation. Furthermore, most studies show that sentinel node seems to be the only positive node in 40%-90% of the patients in whom a completion ALND is performed [18-19].

It is currently a standard of care to irradiate all breast cancer patients who undergo breast conservation. The only group for whom irradiation may be omitted are those patients older than 70 years of age with T1 and estrogen receptor (ER)-positive tumors [20]. The most common modality of radiating the breast is through tangential fields that cover most of the axilla, hence raising the possibility of treating any residual regional disease [21]. Furthermore, adjuvant systemic therapy seems to be routinely delivered to the vast majority of patients who are found to have positive nodes. Some authors have reported on selected patients in whom an axillary dissection was omitted after a positive sentinel node was detected. The rate of regional recurrence did not seem to be increased [22-24].

The American College of Surgeons Oncology Group (ACOSOG) had designed a trial to test the hypothesis that removal of the sentinel node alone may achieve the same local control as the standard level I and II ALND [25-26]. Enrollment to the study started in May 1999 with a plan to accrue 1900 patients. Unfortunately, the trial was closed in December 2004 due to low accrual.

There were 177 institutions participating in this study, with 165 investigators. The study had accrued 891 patients randomized to ALND or no further axillary surgery. Of these, 35 patients (25 on the ALND arm and 10 on the SLND-alone arm) were excluded because they withdrew consent from the study. The study design is presented in Figure 1. A total of 856 patients were available for analysis with the intent to treat 420 in the SLND + ALND arm and 436 in the SLND-alone arm. The assigned surgical treatment did not occur in 43 patients, with 388 patients having SLND followed by ALND, and with 425 patients having SLND only. Patients in both arms of the study were well matched on the basis of clinical and pathologic criteria, including age, stage, tumor size and type, ER and progesterone receptor, presence of lymphovascular invasion, and Modified Bloom-Richardson score.

The median number of nodes excised for the SLND group was 2 (range, 1-3), whereas for the ALND group, a median of 17 nodes were excised (range, 13-22; $p = 0.001$). There was more macro nodal metastases (> 2 mm) in the ALND group,
while the SLND group had more micrometastasis (0.2-2.0 mm). Adjuvant systemic therapy was given to 96% of ALND patients and 97% of the SLND group. Obviously, in the ALND group, 106 of 388 patients (27.4%) had additional non-sentinel positive nodes removed. As the study was prospectively randomized one can assume that a similar number of patients in the SLNB alone group would have had positive non-sentinel nodes left behind.

At a median follow-up time of 6.3 years, the incidence of regional recurrence and local recurrence was similar for the 2 groups. In the SLND-alone group, 4 of 425 (0.9%) patients recurred in the axillary basin compared to 2 of 388 (0.5%) for the ALND group. Local recurrence was also similar, with 8 of 425 (1.9%) patients in the SLND group and 14 of 88 (3.6%) patients in the ALND group reporting local recurrence ($p = 0.47$). In a multivariate analysis, only higher Bloom-Richardson score and age (< 50 years) were predictors of LR recurrence.

Conclusion
In breast cancer patients undergoing breast-conservation therapy and planned post-operative whole breast radiation therapy, completion ALND may not be indicated when only 2 or fewer sentinel nodes are found to harbor metastatic cells.

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