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Serial sections of sentinel lymph nodes in breast cancer: How much do you need to cut?

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Background: Extreme variability of pathologic examination of sentinel lymph node (SLN) in patients with breast cancer is reported, although even minimal metastatic involvment may be a significant prognostic factor. We studied the value of two additional levels compared to a standardized three-level serial protocol for SLN.

Materials and Methods: During a six-year period 448 women with primary breast cancer underwent successfull SLN biopsy. 845 SLN's were halved on their longitudinal axis and a conventional section obtained (LEV 0). If no metastatic involvment was diagnosed at this level, SLN's were step sectioned with a six sections at three different levels at 100 micron distance, each stained with hematoxilin-eosin and immunohistochemestry with a cytokeratin panel (LEVEL I−III). Additionally, 151 cases, who were initially defined as node negative by this protocol were further studied, their 210 SLN's retrieved and two additional levels al 100 microns (LEVEL IV−V) reviewed by two different pathologists.

Results: The median age was 65 years (25−89), and the median tumor diameter was 1.5 cm (0.2−5 cm). Conventional analysis of SLN's at LEVEL 0 was positive in 112/448 cases (25%), while the first three levels upstaged patients in 63 cases (14%) (Table). Although this last finding was consistent for each tumor diameter category, the proportion of positive cases upstaged by the serial protocol was 13/23 (57%), 32/84 (38%), 16/56 (28%) and 2/12 (17%) for pT1a+b, pT1c, pT2 and pT3/T4 cancers, respectively ($p = 0.005$). The addition of levels IV-V allowed diagnosis of micrometastases in 3/151 cases (2%) and ITC in 5/151cases (3.3%).Tumor diameter, hormone receptor status and grade did not affect incidence of positive SLN findings on additional analysis.

Conclusions: Step analysis of SLN allows a more accurate breast cancer staging. In our study, a three levels analysis would be the minimum required to diagnose at least 95% of metastases or ITC in the SLN. Additional sections have a very low yield.

Table

	Level					
	0	I	II	III	IV	V
ITC	0.2	5.4	1.9	1	2.6	0.6
MICRO	5.20	3.5	1.5	1	1.2	0.6
MACRO	20.3	0.2	0	0	0	0

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Axillary recurrence in sentinel lymph node negative breast cancer patients

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Background: Sentinel lymph node biopsy (SLNB) was developed to avoid extended axillary dissection in the surgical treatment of breast cancer patients with clinically negative axillary nodes. When SLNB is performed by trained surgeons, it is highly predictive of axillary node status. Major concern with the practice of SLNB is the occurrence of a false-negative SLN. The main purpose of this study is to determine the rate of axillary recurrence in our series of consecutive unselected early breast cancer patients with a negative SLNB from a community-based Breast Cancer Unit.

Materials and Methods: All consecutive patients with a negative SLNB seen between November 1999 and December 2006 have been treated and prospectively followed at our Unit. Information on demographics, pathologic features of the tumor, type of surgery, systemic and loco-regional adjuvant therapies and follow up have been collected and analyzed. All tumor recurrences have been documented and reported.

Results: Eight-hundred and four consecutive patients with negative SLNB did not receive ALDN. Median age was 63 years (range 31−97). After a median follow up of 38.8 months, 36 patients (4.5%) had a recurrence: 21 had distant metastases and 15 had a local-regional relapse only. Among these, 4 had axillary only relapse, 9 had an in-breast recurrence only, and 2 had both. Median time-to-distant-relapse was 39.8 months (range 5.5−72.1), time-to-axillary relapse was 17.8 months (range 5.3−20.5). Patients with axillary recurrence received total axillary dissection, those with in-breast relapse received mastectomy, patients with in-breast and axillary relapse received both. All patient with axillary recurrence eventually received systemic chemotherapy, followed in four of them by second line endocrine therapy. They are all presently alive and free from disease.

Table 1. Breast cancer related events

	Number of patients
Total population of negative SLNB	804
Total relapses	36
Local and regional relapse	
Axilla	4
Breast	9
Breast and axilla	2
Total	15
Distant relapse	
Distant only	20
Distant and axilla	1
Total	21
Second primary tumor	
Controlateral breast cancer	5
Other primary	15
Total	20
Deaths	
Deaths from breast cancer	5
Deaths from other causes	22
Total	27

Conclusions: Data from this series, the largest reported from consecutive patients from a general hospital, showed that at three years isolated axillary node recurrence after negative SLNB is rare (<1%), and is comparable with those reported in selected patients from referral cancer institutions. We therefore confirm that SLNB for the treatment of early breast cancer patients of a community-based hospital is safe and reliable when performed by well trained breast dedicated surgeons.

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The accuracy of sentinel node biopsy after primary systemic therapy is comparable with the results of sentinel node biopsy in breast cancer patients with primary surgery

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Background: Sentinel lymph node biopsy (SLNB) without axillary lymph node dissection (ALND) in SLN negative patients is a standard of care for most breast cancer patients. SLNB for axillary staging after primary systemic therapy (PST) is still contraindicated due to possibly reduced accuracy, while data are lacking. Purpose of this study was to evaluate the accuracy of SLNB after PST.

Material and Methods: 185 breast cancer patients were treated with PST, 160 patients received preoperative chemotherapy and 25 patients received preoperative endocrine therapy. 143/160 patients with preoperative chemotherapy and 22/25 patients with preoperative endocrine therapy were eligible for evaluation. The combination of blue dye and radioactive tracer was used for identification of SLNs. All patients received SLNB and axillary lymph node dissection (ALND).

Results: Pathologic complete response rates and breast conserving therapy rates were 15% and 71.9% in the preoperative chemotherapy group and 0% and 72% in the preoperative endocrine therapy group, respectively. Identification rate, sensitivity, overall accuracy and false negative rate were 81.1% (116/143), 91.7% (55/60), 95.7% (111/116) and 8.3% (5/60) in the preoperative chemotherapy group and 77.3% (17/22), 90.0% (9/10), 94.1% (16/17) and 10.0% (1/10) in the preoperative endocrine therapy group, respectively.

Conclusion: SLNB after primary systemic therapy is accurate and the results are comparable to those of primary SLNB. SLNB after PST could spare ALND in up to 40% of patients with primary positive axillary lymph nodes.