

Original article:

Study of pathological correlation of Sentinel lymph node biopsy and axillary lymph node dissection

¹Dr RN Patil , ²Dr Dilip K Apturkar* , ³Dr Mudit Banerjee

¹Associate Professor, Department of Surgery, Rural Medical College, Pravara Institute of Medical Sciences, Loni, Tal. Rahata, Dist. Ahmednagar, India

²HOD & Professor , Department of Surgery , Rural Medical College, Pravara Institute of Medical Sciences, Loni, Tal. Rahata, Dist. Ahmednagar, India

³Resident , Department of Surgery , Rural Medical College, Pravara Institute of Medical Sciences, Loni, Tal. Rahata, Dist. Ahmednagar, India

Corresponding author*

Abstract:

Introduction: Sentinel lymph node (SLN) mapping and dissection is a more sensitive and accurate technique for nodal evaluation and has been applied to staging of axillary lymph nodes in patients with breast cancer, providing prognostic information, with less surgical morbidity than with axillary lymph node dissection (ALND)

Methods and materials : A detailed history and clinical examination was conducted. After clinical diagnosis, the patients were subjected to necessary laboratory investigations, radiographs, bilateral sonomammography / x-ray mammography, FNAC/TRUE CUT biopsy. Patient willing to participate in the study having Tis,T1,T2 tumour with palpable breast lump without significantly palpable axillary lymph node who were potentially curable by undergoing axillary lymph node dissection. Patient excluded having large and locally advanced invasive breast carcinoma, having distant metastasis, who have undergone prior axillary or breast surgery or on chemotherapy and pregnant females.

Results: The blue-staining sentinel lymph node was identified in 30 of 50 (60%) procedures. Of the 30 patients in whom sentinel lymph node was identified 1(3.33%) had histologically negative nodes and 29(96.66%) had histologically positive nodes; of the 20 patients who had negative sentinel nodes, 1(5%) had histologic evidence of axillary metastasis, while 19(95%) showed no histologic evidence of axillary metastasis.

Conclusion : The SLN accurately reflects the status of axillary lymph nodes in most patients with breast cancer, and for those with early stage disease it is rapidly emerging as an alternative to conventional axillary dissection. Although SLNB for early breast cancer may be considered state of the art in experienced hands.

Introduction:

Sentinel lymph node (SLN) mapping and dissection is a more sensitive and accurate technique for nodal evaluation and has been applied to staging of axillary lymph nodes in patients with breast cancer, providing prognostic information, with less surgical morbidity than with axillary lymph node dissection (ALND)[1].

Women with locally advanced breast cancer may derive great benefit from a minimally invasive approach to the axilla because the extent of nodal involvement is unlikely to change further treatment[2 , 3]. For clinically palpable nodes, ALND should be performed for therapeutic and local control. The use of sentinel node mapping in pregnancy is controversial. Vital blue dye is contraindicated in pregnant patients, although some have used radioactive colloid alone to map this subgroup of patients[4].

Therefore, SLN is the node most likely to contain metastatic tumour cells. If the SLN is not involved, then other ALND's should have a very low likelihood to be affected by metastasis [5]. However, sentinel lymph node biopsy requires validation by a backup axillary lymph node dissection (ALND) in a defined series of cases before becoming standard practice, to establish individual and institutional success rates and the frequency of false negative.

Sentinel lymph node biopsy may help in determining which patient can avoid axillary lymph node dissection and consequent morbidity due to unnecessary ALND. Most patients have only one of three lymph nodes under the arm. Thus, an average of only two lymph nodes are removed in each patient with a sentinel node biopsy.

Sentinel node biopsy results in a significant reduction in physical and psychological morbidity when compared to axillary clearance. Such favourable consequences seem to apply equally in short and long term evaluation.

Some 5-10% of axilla's initially staged by sentinel lymph nodes as tumour free can eventually termed to be falsely judged.

However, despite the attempts to collect reliable indication and contraindication, controversies still remain on which breast cancer patient should be staged by sentinel node biopsy.

Methods and materials

A detailed history and clinical examination was conducted. After clinical diagnosis, the patients were subjected to necessary laboratory investigations, radiographs, bilateral sonomammography / x-ray mammography, FNAC/TRUE CUT biopsy.

Patient willing to participate in the study having Tis,T1,T2 tumour with palpable breast lump without significantly palpable axillary lymph node who were potentially curable by undergoing axillary lymph node dissection.

Patient excluded having large and locally advanced invasive breast carcinoma, having distant metastasis, who have undergone prior axillary or breast surgery or on chemotherapy and pregnant females.

Inclusion criteria

- Patients with potentially curable breast carcinoma who were undergoing ALND
- Patients who presented with a palpable breast carcinoma
- Patients without clinically palpable axillary lymph nodes.
- Patient with T1 T2 tumours.
- Patient willing to participate in this study.
- Suspicious palpable axillary lymph nodes.

Exclusion criteria

- Patients with prior axillary operations (dissection/excisional biopsy) were excluded
- Large & locally advanced invasive breast cancers

- Prior breast surgery
- Patients who have received preoperative chemotherapy
- Distant metastases
- Pregnancy

Sample size

- 50 patients were selected for the study.

Type of study

- Observational study.

Study duration 2 years

Results:

TABLE 1: Showing histological correlation between sentinel lymph node and other axillary lymph nodes.

	Histopathology(+)	Histopathology (-)	Total no of patients
SLN (Positive)	29 (true positive)	1 (false positive)	30
SLN(Negative)	1 (false negative)	19 (true negative)	20
	30	20	50

The tests were calculated according to the following formula:

Sensitivity= True Positives / True Positives + False Negatives x 100

Specificity = True Negatives / True Negatives +False Positives x 100

Positive predictive value = true positive/ true positive + false positive x 100

Negative predictive value = true negative/ false negative + true negativex 100

Accuracy = true positive + true negative)/ true positive + false positive + true negative + false negative x 100

Sensitivity = 29/30x100 = 96.67%

Specificity = 19/20x 100 = 95%

Positive predictive value = 29/30x100=96.67%

Negative predictive value = 19/20x100 = 95%

Accuracy = 48/50x100 = 96%

Table 2. Findings of Histopathological report of breast specimen.

Sr. no	Findings of Histopathological report of breast specimen.	No of patients (50)	Percentage%
1.	Infiltrating ductal carcinoma.	46	92%
2.	Lobular carcinoma.	2	4%
3.	Mucinous carcinoma.	2	4%

TABLE 3: Complications following axillary lymph node dissection

Complications		No of cases
Immediate	Wound dehiscence	2
	Infection	3
	Haemorrhage	1
	Seroma	9
Late	Lymphedema	2
	Neuralgia	2
	Restricted movement	1

Discussion:

The age of the patients considered for the study was 35 to 80 years. Written informed consent was taken from the patients prior to the surgery for participation in the study. Ethical committee approval was taken prior to the start of study. After clinical diagnosis, the patients were subjected to necessary laboratory investigations, bilateral sonomammography / x-ray mammography, FNAC/TRU CUT biopsy. Patient willing to participate in the study having Tis,T1,T2 tumour with palpable breast lump without significantly palpable axillary lymph node who were potentially curable by undergoing axillary lymph node dissection.

The blue-staining sentinel lymph node was identified in 30 of 50 (60%) procedures. Of the 30 patients in whom sentinel lymph node was identified 1(3.33%) had histologically negative nodes and 29(96.66%) had histologically positive nodes; of the 20 patients who had negative sentinel nodes, 1(5%) had histologic evidence of axillary metastasis, while 19(95%) showed no histologic evidence of axillary metastasis.

Successful SLN localization was more frequent for high-volume surgeons, as expected, but the false-negative rate was unrelated to surgical experience: indeed, one of the three highest-volume surgeons also had the highest false-negative rate (28.6%). [6,7]

SLNB can be performed with a combination of ^{99m}Tc labelled sulfur colloid and a vital blue dye (isosulfan blue) or with a single agent for localization of the sentinel lymph node.

Numerous studies have shown that combination techniques result in the lowest possible false negative rate.

Conclusion

The SLN accurately reflects the status of axillary lymph nodes in most patients with breast cancer, and for those with early stage disease it is rapidly emerging as an alternative to conventional axillary dissection. Although SLNB for early breast cancer may be considered state of the art in experienced hands.

References:

1. McMasters KM, Tuttle TM, Carlson DJ, et al. sentinel lymph node biopsy for breast cancer: a suitable alternative to routine axillary dissection in multi-institutional practice when optional technique is used. *J Clin Oncol.*2000;18(13):2560-6.[PubMed]
2. Giuliano AE. Sentinel lymphadenectomy in primary breast carcinoma: an alternative to routine axillary dissection[editorial]. *J Surg Oncol* 1996;62:75-7. [CrossRef] [Web of Science][Medline] cancerlit;96257854
3. Giuliano AE. Intradermal blue dye to identify sentinel lymph node in breast cancer. *Lancet.* 1997;350:958.
4. Baxter N, McCready D, Chapman JA, Fish E, Kahn H, Hanna W, et al. Clinical behavior of untreated axillary nodes after local treatment for primary breast cancer. *Ann Surg Oncol* 1996;3:235-40. [CrossRef] [Web of Science][Medline]cancerlit;96292641
5. Veronesi U, Galimberti V, Zurrada S, Merson M, Greco M, Luini A. Prognostic significance of number and level of axillary node metastases in breast cancer. *The Breast* 1993;2:224-8. [CrossRef]
6. Giuliano AE, Kirgan DM, Guenther JM, Morton DL(1994) Lymphatic mapping and sentinel lymphadenectomy for breast cancer. *Ann Surg*, 220:391-398.[PubMed]
7. Giuliano AE. Mapping a pathway for axillary staging: a personal perspective on the current status of sentinel lymph node dissection for breast cancer. *Arch Surg.* 1999;134:195-199.[PubMed]