

## IMPACT OF THE NUMBER OF DISSECTED AXILLARY LYMPH NODES ON SURVIVAL IN BREAST CANCER PATIENTS

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**Conflict of interest:** Nil

### Abstract

**INTRODUCTION:** Locoregional control as well as breast cancer mortality benefit have been shown from adjuvant radiation therapy following breast conservation surgery or following mastectomy with node-positive disease. Partial breast irradiation via external brachytherapy, beam, or intraoperative techniques has been shown to limit the volume of irradiated tissue in select groups of women while preserving efficacy although data on long-term outcomes is limited.

**MATERIAL AND METHODS:** Early stage breast cancer (BC) patients with histologically confirmed invasive breast carcinoma clinically 5 cm or less in size, no palpable adenopathy, and with sentinel nodes were included in the study that received lumpectomy with whole-breast irradiation, and underwent either axillary lymph node dissection (ALND) or sentinel lymph node dissection (SLND) alone. Patients were followed up to three years and assessed for disease recurrence with a history and physical examination every 6 months. **RESULTS:** A total of 86 patients were included in the study. Of the 86 patients 43 were in SLND group and 43 were in the ALND group. In SLND group 40 (93%) received radiation therapy and in ALND group 41 (95%). No difference was noted in the groups in the use of high tangents, nodal irradiation, or no irradiation. Adjuvant systemic therapy was given to 42 (98%) in SLND group and 42 to (98%) ALND group.

**CONCLUSION:** Radiation therapy has an integral role in the management of breast cancer. In SLND group three years disease free survival was 41 (95%) and for ALND group 40(93%).

**KEYWORDS:** AJND, SLND, Breast Cancer and Radiotherapy.

### INTRODUCTION

There is efficacy of radiotherapy in the adjuvant management of breast cancer and dose and fractionation schemas have evolved and are available, each with unique risks and rewards<sup>i</sup>. Locoregional control as well as breast cancer mortality benefit have been shown from adjuvant radiation therapy following breast conservation surgery or following mastectomy with node-positive disease<sup>ii</sup>, <sup>iii</sup>. Studies have shown that, equivalent treatment outcomes with respect to in-breast local control, breast cosmetic, and toxicity of radiotherapy while being more convenient and cost-effective with shortened treatment duration<sup>iv</sup>, <sup>v</sup>.

Findings from the Early Breast Cancer Trialists' Collaborative Group (EBCTCG) meta-analysis show that patients with breast cancer have clinically relevant rates of persistent locoregional disease with and without systemic treatments, after conservation

surgery. Risk factors dependent on several factors which including axillary lymph-node status, tumour grade, tumour size, age, and oestrogen-receptor (ER) status. The analysis shows that radiation is highly successful in eradication of much of this disease. Analyses from this group have shown that the proportional reduction in isolated locoregional recurrence associated with radiation use is 65–75%<sup>vi</sup>. Partial breast irradiation via external brachytherapy, beam, or intraoperative techniques has been shown to limit the volume of irradiated tissue in select groups of women while preserving efficacy although data on long-term outcomes is limited<sup>vii</sup>, <sup>viii</sup>.

The linear quadratic model is a used metric by radiation oncologists to quantify the biologic effect of radiation dose on various tumor types as well as normal tissue<sup>ix</sup>.

**MATERIAL AND METHODS:**

Present study was conducted in the Dept. of radiation Oncology Chirayu Medical College and Hospital, Bhopal.

Early stage breast cancer (BC) patients with histologically confirmed invasive breast carcinoma clinically 5 cm or less in size, no palpable adenopathy, and with sentinel nodes were included in the study that received lumpectomy with whole-breast irradiation, and underwent either axillary lymph node dissection (ALND) or sentinel lymph node dissection (SLND) alone. After stratification based on age, hormone receptor status, and tumor size, patients with 1 or 2 sentinel nodes with metastases detected by hematoxylin and eosin stain were randomized to no further axillary-specific treatment including no axillary third-field irradiation (SLND group) or completion ALND (ALND group). Patients were followed up to three years and assessed for disease recurrence with a history and physical examination every 6 months. The primary aim was overall survival as a measure of noninferiority of no further axillary-specified interventions (SLND alone group) compared with the ALND group. Data collection and statistical analyses was done using SPSS software. Written informed consent from all the patients was taken.

**RESULTS**

A total of 86 patients were included in the study. Of the 86 patients 43 were in SLND group and 43 were in the ALND group.

**Table 1: SLND and ALND group**

Total	SLND	ALND
86	43 (50%)	43(50%)

**Baseline characteristics of the patients**

Characteristics	SLND (n=43)		ALND (n=43)	
<b>Age (mean±SD)</b>	<b>53.6±7.9</b>		<b>57.8 ± 9.4</b>	
<b>Clinical Stage T1 [n(%)]</b>	28	65%	30	70%
<b>Clinical Stage T2 [n(%)]</b>	15	35%	13	30%
Lymphovascular invasion, present	11	26%	14	33%
Lymphovascular invasion, absent	32	74%	29	67%
Ductal carcinoma	35	81%	33	77%
Lobular carcinoma	5	12%	7	16%
Mixed carcinoma	3	7%	3	7%

**Table 2: Lymph node removal in SLND and ALND group**

	SLND	ALND	P value
<b>Lymph node removed</b>	<b>1 to 5 lymph nodes</b>	<b>11 to 19 lymph nodes</b>	
Median	2	16	< .001

Median lymph nodes removed in SLND group was 2 while in ALND was 16. This was statistically significant.

In SLND group 40 (93%) received radiation therapy and in ALND group 41 (95%). No difference was noted in the groups in the use of high tangents, nodal irradiation, or no irradiation. Adjuvant systemic therapy was given to 42 (98%) in SLND group and 42 to (98%) ALND group.

**Table 3: Radiation and Systemic therapy in SLND and ALND group**

Therapy	SLND	ALND
<b>Radiation therapy</b>	40 (93%)	41 (95%)
<b>Systemic therapy</b>	42 (98%)	42 (98%)

For SLND group three years disease free survival was 41 (95%) and for ALND group 40(93%). There was no difference observed in patients who received irradiation, for disease-free survival, overall survival, or locoregional recurrence as compared with those who did not receive irradiation.

**DISCUSSION**

Recently breast cancer can be managed with less radical surgeries. In American College of Surgeons Oncology Group (ACOSOG) group trial, patients with up to two positive lymph nodes (LNs) detected after breast-conserving surgery and sentinel node biopsy) to either the axillary lymph node dissection or observation arm, it was observed that recurrence rate of < 1% was observed in both the groups<sup>x</sup>.

In our study total of 86 patients were included in the study. Of the 86 patients 43 were in SLND group and 43 were in the ALND group. It was observed that in SLND group three years disease free survival was 41 (95%) and for ALND group 40(93%). There was no difference observed in patients who received irradiation, for disease-free survival, overall survival, or loco-regional recurrence as compared with those who did not receive irradiation. In a study by Joo JH et al it was observed that after a median follow-up of 93 months there was no significant differences in the overall survival rates and recurrence rates of patients

who underwent SLND verses those who underwent ALND<sup>xi</sup>.

Axillary lymph node dissections are associated with considerable morbidity. In a study by Giuliano AE et al disease-free survival and locoregional recurrence have been reported, they observed that 10-year disease-free survival was 80.2% in SLND alone group and 78.2% in ALND group. These results were similar with our results as there was no significant difference in disease-free survival between patients treated with SLND alone and ALND. Also they observed that axillary dissection is not necessary for long-term disease control and survival for patients with positive sentinel nodes, even for those with generally late-recurring hormone receptor-positive tumors<sup>xii</sup>.

In our study patients characteristics were well balanced in both the group and there was no statistically significant difference observed in both the group. In the study by Giuliano et al. only a single regional recurrence was observed in the SLND alone group<sup>xii</sup>.

Our study had limitations like not all biological subtypes are represented in large numbers. Also follow up was done only for three years.

## CONCLUSION

Radiation therapy has an integral role in the management of breast cancer. In SLND group three years disease free survival was 41 (95%) and for ALND group 40(93%), no difference observed in patients who received irradiation, for disease-free survival, overall survival, or locoregional recurrence as compared with those who did not receive irradiation. Further large studies are required to confirm the findings.

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