

**RECURRENCE PATTERN FOLLOWING BREAST-CONSERVING SURGERY FOR EARLY BREAST CANCER**Govindaraj E<sup>1</sup>, P. Ravikumar Reddy<sup>2</sup>, Rajashekar S. B<sup>3</sup>, Anand Patil<sup>4</sup>**HOW TO CITE THIS ARTICLE:**

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**ABSTRACT: OBJECTIVE:** To study the Local Recurrence and metastasis pattern after Breast-Conserving Surgery for early breast cancer. **MATERIALS AND METHODS:** From 2010 to 2014 in department of surgery in VIMS Bellary, 70 patients with stage I or II invasive breast carcinoma were treated with breast-conserving surgery, radiation and chemotherapy. In this study we investigated the prognostic value of clinical and pathological factors in early breast cancer patients treated with BCS. All of the surgeries were performed by a single surgical team. Recurrence and its risk factors were evaluated.

**KEYWORDS:** Breast Cancer; Breast Conserving Surgery; Recurrence, Metastasis.

**INTRODUCTION:** Breast conserving treatment (BCT), including primary tumor excision, axillary node dissection (Determined in advance or decided following sentinel node sampling) and external beam radiation treatment (RT) and chemotherapy to the breast, is considered standard of care for women with early-stage breast cancer in most countries. Six prospective randomized clinical trials comparing BCT to mastectomy in stage I-II invasive breast cancer did not show any significant difference between the long-term overall survivals of two treatments.<sup>(1)</sup>

An important incidence of ipsilateral breast tumor recurrence (IBTR) for stage 0, I and II patients following BCT.<sup>(2)</sup> has been observed after 20 years of follow-up: 8.8% following quadrantectomy plus RT.<sup>(3)</sup> and 14.3% following tumorectomy plus RT.<sup>(4)</sup> In particular, IBTR rates are remarkably high in patients omitting the radiation treatment: 23% at 10 years following quadrantectomy.<sup>(5)</sup> and 39% at 20 years following tumorectomy.<sup>(4)</sup>

The main treatment of breast cancer is surgery, including breast conserving surgery (BCS) or mastectomy. BCS means resection of tumor with clear margins and acceptable cosmetic outcome. Lymph node involvement and tumor size are known as the most important clinical prognostic factors in breast cancer.<sup>[5]</sup> In the past, molecular markers such as p53 have been investigated for determining prognosis but the result of these studies are sometimes not identical.

This may be due to genetic diversity of patients and heterogeneity in malignant tumors.<sup>[6,7,8]</sup> In this study, we evaluated the local recurrence and metastasis of the patients treated with BCS for breast cancer considering clinical and pathological grading.

**MATERIALS AND METHODS:** From 2010 to 2014, 70 patients with stage I or II invasive breast carcinoma were treated with breast-conserving surgery, and chemotherapy and radiation. The patients who had previous primary cancers or presented with metastasis initially or had inflammatory breast carcinoma and the patients who underwent modified radical mastectomy were excluded from our study.

None of the patients had any evidence of metastases as assessed by physical examination, chest X-ray, blood chemistries, radiological. Cancer was diagnosed mainly by FNAC/core needle biopsy.

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The lesions were staged according to the TNM Classification: 22 patients were T1, 32 patients T2, 12 patients T3, 2 patients Tis and 2 patients Tx. The lymph node status 39 patients were N0, 18 patients were N1, 3 patients in N2. Histological grading, 36 patients were grade 1, 24 patients were grade 2, 10 patients were grade 3.

All 70 patients were submitted to local excision of the tumor with a margin of 1 or 2cm of normal tissue. Axillary lymph nodes dissection of I and II level was performed. In all of the patients the excision specimen was histologically examined and the surgical margins were free of tumor with the closest margin from the tumor measuring 2 millimeters. 30 patients were treated with external beam radiation therapy. 30 patients were treated with external beam radiation therapy+ boost, 10 patients didn't take radiotherapy. 40 patients took neoadjuvant therapy, 21 patients on AC regimen, 15 on FEC, 4 on taxanes. The mean follow-up of patients was 4 years.

### RESULTS:

Age	No. of Patients
20-25	2(2.8%)
25-35	4(5.7%)
35-45	20(28.5%)
45-55	19(27.1%)
55-65	20(28.5%)
65-75	4(5.7%)
75+	1(1.4%)

**Table 1: Age Distribution**

Out of 70 patients, 20(28.5%) patients each were in age group 35-45 and 55-65 age Only 1(1.4%) patients was above 75 years. Major distribution was between 35-65 age group.

Lymph Node Staging	No. of Patients
N0	39(55.8%)
N1	28(40%)
N2	2(2.8%)
N3	1(1.4%)

**Table 2: Lymph Node Staging**

Out of 70 patients, 39(55.8%) were in N0, 28(40%) were in N1, 2(2.8%) were in N2 and 1(1.4%) were in N3. Most of them were clinically in N0.

T Staging	No. of Patients
T1	22(31.4%)
T2	32(45.7%)
T3	12(17.1%)
Tis	2(2.8%)
Tx	2(2.8%)

**Table 3: T Staging**

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Out of 70 patients, 22(31.4%) in T1, 32(45.7%) in T2, 12(17.1%) in T3 2 patients were consider as Tx as they underwent surgery lumpectomy previously came for axillary clearance and patients were in Tis According to modified bloom and Richardson grading system.

Grading	No. of patients
Grade 1	36(51.4%)
Grade 2	24(34.2%)
Grade 3	10(14.2%)

**Table 4: Grade of Tumor**

Out of 70 patients, 36(51.4%) had grade 1, 24(34.2%) had grade 2, 10(14.2%) had grade3. Follow -up was 4 years. Over the events studied, we observed 4 loco regional recurrences, 1 distant metastases.

Size	Recurrence
T1	Nil
T2	2(2.8%)
T3	3(4.28%)

**Table 5: Recurrence in T Stage**

At the end of 4 years follow up, among all the T1 cases, there were no recurrence, among the T2 only 2(2.8%) recurred and among T3 , 3(4.28%) cases recurred.

Out of 12 patients of T3 disease 3(25%) showed recurrence. 32 patients of T2 disease 2(6.25%) showed recurrence.

Lymph Node	Recurrence
N0	Nil
N1	2(2.8%)
N2	2(2.8%)
N3	1(1.4%)

**Table 6: Recurrence in Lymph Node**

At 4years follow up, among the total number of N0 cases no recurrence was noted N1 disease 2 patients showed recurrence, N3 disease 1 patients showed recurrence.

Recurrence pattern noted with different grades of tumor are as follows.

Grade	Recurrence
Grade1	Nil
Grade2	3(4.2%)
Grade3	2(2.8%)

**Table 7: Recurrence in Histological Grade**

They suggest that the risk of loco regional recurrence was higher for women with higher tumor grade, with an extensive intraductal component or with nodal invasion.

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Median follow-up was 4 years. Over the two non-independent events studied, we observed 4 loco regional recurrences, 1 distant metastases.

During the serial follow up of cases, in first 6 months, there was one recurrence ipsilateral breast tumor recurrence (IBTR) noted, probably reason for which was too close margin during resection and patient didn't take radiotherapy there was no recurrence noted in next 6 months.

In the second year of follow up, there was only one recurrence in the supraclavicular lymph node, probable reason being N positive disease the third year had 2 recurrences, both in axilla, both were N2 disease While during the last year of follow up there was only 1 metastasis to bone, this was of high grade tumor with N positive disease.

**DISCUSSION:** BCT is a safe alternative to mastectomy provided that the tumor is completely excised.

The importance of achieving clear margins in all dimensions is undisputed.<sup>(8)</sup> Even a focally positive margin is associated with a 2-3-fold increase in the risk of local recurrence(LR),<sup>(9)</sup> despite the addition of radiation to the breast. While quadrantectomy is too radical and disfiguring for the management of small tumors,<sup>(8)</sup> 10mm of healthy breast tissue or fat between cancer cells and the lines of excision has been widely accepted as a safe margin.<sup>(10),(11),(12)</sup>

The correct orientation of the specimen using sutures or metal tags together with the corresponding site in the breast is important to establish the extent of tumor clearance in relation to specific margins.

Freedman et al.<sup>(13)</sup> showed that the risk of LR after BCT rises from 7% at 10 years in those with negative margins to 14% in patients with close margins, irrespective of whether the margin was involved by DCIS or invasive cancer.

The importance of obtaining clear margins, even if this requires further surgery, cannot be underestimated. When clear margins are achieved by re-excision the IBTR is identical to that in women in whom clear margins were obtained at the initial operation.<sup>13</sup> in our study 4(5.7%) patient suffered an loco regional recurrence and 1(1.5%) distant metastasis.

In BCT, omission of radiation can result in IBTR rates of 30-40%, which then necessitates salvage mastectomy and possible compromise on long-term survival.<sup>(14)</sup> While radiation therapy is essential, boost radiation where complete tumor excision is achieved is controversial.

Although the boost dose may impair cosmetic outcome slightly, there is evidence that it reduces the risk of LR.<sup>18</sup> In our study 30 patients did not receive boost dose due to non-feasibility our institution and cost. In our study there is no difference in outcome i.e. LR with or without boost dose

Several studies have found that positive microscopic margins, gross multifocality, and an extensive intraductal component are associated with a higher risk of recurrence in the conserved breast. Additionally, larger tumor size and lymphatic vessel invasion have been reported as risk factors for ipsilateral breast tumor recurrence (IBTR).

Poor differentiation of the tumor has been one of the most consistent factors associated with local and distant recurrence.<sup>1,6,7</sup> This pathologic characteristic reveals the intrinsic biologic aggressiveness of the tumor.

In our study we noted 1 patient (1.5%) had recurrences probably because of close margins, 2 patients (2.8%) recurrences because of high grade of tumor (grade3).

Six large, randomized trials have demonstrated the equivalence in survival for breast cancer patients treated with mastectomy or breast conservation therapy.<sup>(9,10,11-14)</sup>

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The local recurrence rate in these trials has varied between 3.<sup>11</sup> and 19%.<sup>12</sup> In the present study, the local recurrence rate was 5.7%, which is within the range reported in the literature.

**CONCLUSION:** BCT is a safe alternative to mastectomy provided that the tumor is completely excised. Our study confirms that positive resection margins or close resection margins, nodal status, grade of the tumor, size of the tumor are important factors affecting recurrence and metastasis.

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