

**A STUDY ON PATTERN OF LOCOREGIONAL RECURRENCE AND ITS RELATION TO THE IRRADIATED VOLUME IN PATIENTS WITH CARCINOMA BREAST RECEIVING ADJUVANT RADIOTHERAPY**

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**Introduction**

Locoregional recurrences can occur in upto 5-15% of patients with breast cancer despite treatment with adjuvant radiotherapy.<sup>i,ii,iii,iv,v</sup> 60-95% of which occur in the ipsilateral breast or the chest wall<sup>vi,vii</sup>. Locoregional recurrences are typically associated with an increased risk of concurrent or subsequent systemic relapse<sup>viii,ix</sup>.

Mapping of patterns of regional nodal recurrence and evaluation of different contouring guidelines shows that a significant proportion of recurrences are within the irradiated volume.

**Aim**

To study the incidence and patterns of locoregional recurrence in breast cancer patients who received adjuvant radiotherapy from January 2015 to December 2018 at Malabar Cancer Centre, Thalassery, Kerala.

## Materials and Methodology

The demographic characteristics and disease related details were retrieved from the hospital database. The planning CT scans and the imaging done at the time of recurrences were superimposed to find out if the recurrences are infield (V 95), or outside the irradiated volume.

## Results

Total number of patients irradiated --517, Recurrence --- 12/517(2.3%)

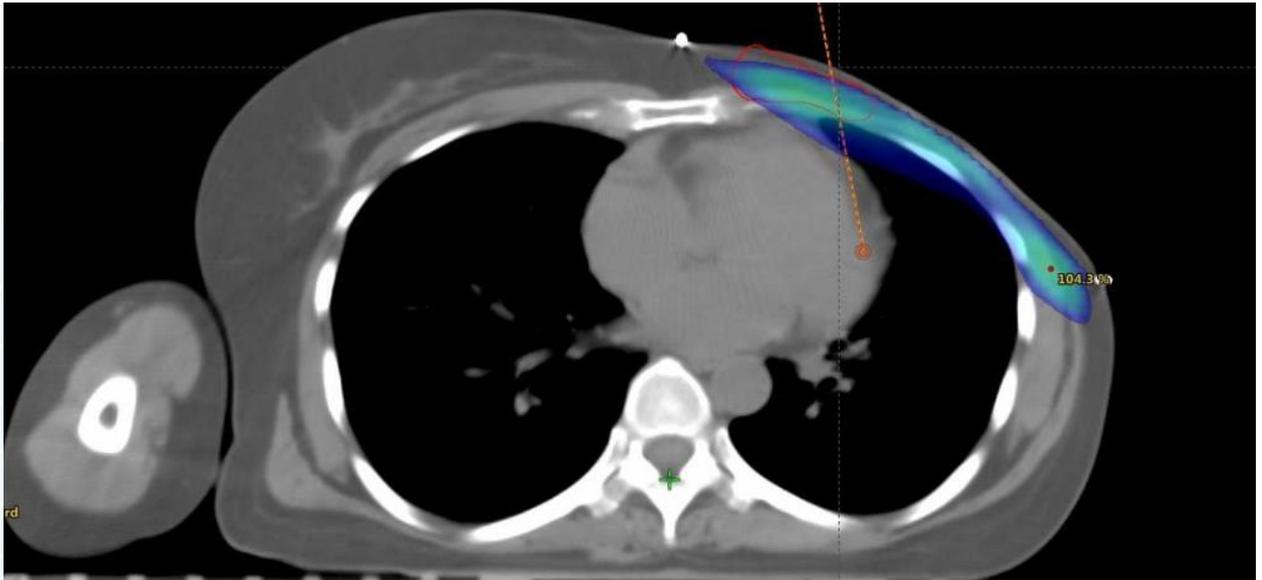
Median follow up -37.5months(18 - 52 m)	Nodal stage of N2 or above-7/12 patients
Median disease free interval - 14.5 months(1- 52 m)	<u>Histology</u>
Locoregional recurrences - 12/517 (2.3%)	Invasive carcinoma Gr2 - 8/12 (66.7%)
Median age - 43.5y (33y-54y )	Lympho vascular emboli - 7/12(58.3%)
Neoadjuvant systemic therapy- 5/12 patients	Perineural invasion - 4/12 (33.3%)
	Extracapsular extension - 7/12(58.3%)
	Luminal A -- 2/12
	Luminal B Her2+ -- 4/12
	Luminal B Her2- -- 2/12
	Triple neg -- 2/12
	Her 2 positive -- 2/12

	Total	Post Mastectomy	Post BCS	Remarks
No.of patients (%)	517(100%)	320(61.9%)	197(38.1%)	MC site of LRR-SCF(n=7) followed by CW (n=5)
Locoregional Recurrence(%)	12/517(2.3%)	10/319 (3.1%)	2/197 (1%)	
<u>Sites of relapse (n)</u>				
Chest wall only	3	3	0	
SCF only	3	3	0	
Axilla only	1	1	0	
IMN only	1	1	0	
CW/SCF/IMN	2	2	0	
SCF/IMN	1	0	1	
SCF/Axilla/IMN	1	0	1	

Relationship of site of locoregional recurrences and the irradiated volume

Case Number	In Field	Out of field	systemic rec	Remarks
1	SCF	-	NO	<ul style="list-style-type: none"> <li>● Infield rec --11/12(91.7%)</li> <li>● Out of field -- 5/12 (41.7%)</li> </ul>
2	Axilla	-	NO	

3	Chest wall	-	NO	<ul style="list-style-type: none"> <li>• All out of field rec in IMN</li> <li>• Associated systemic relapse-- 6/12</li> </ul>
4	SCF, Axilla	IMN	YES	
5	Chest wall	-	YES	
6	SCF	IMN	YES	
7	SCF	-	NO	
8	Chest wall	-	NO	
9	Chest wall, SCF	IMN	YES	
10	Chest wall, SCF	IMN	YES	
11	SCF	-	NO	
12	-	IMN	YES	



Sample case with infield recurrence in the chest wall at the medial end of surgical scar. The site of recurrence is contoured in red. The colour wash for 95% isodose is shown in blue.

## Conclusions

The rate of locoregional recurrence among patients with breast cancer after adjuvant radiotherapy is low in our experience. (12/517 patients, 2.3%). Eleven out of the twelve patients had infield recurrence. About 42% of all the locoregional recurrences involved internal mammary nodes either in isolation or along with other sites. This highlights the importance of internal mammary nodes as a site of locoregional recurrence and hence the need to address the ipsilateral internal mammary chain in all patients receiving adjuvant radiotherapy for advanced breast

cancer. in the light of this information we have decided at our institution to irradiate the ipsilateral internal mammary chain in all such patients.

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<sup>i</sup> Early Breast Cancer Trialists' Collaborative Group (EBCTCG): Effect of radiotherapy after breast-conserving surgery on 10-year recurrence and 15-year breast cancer death: meta-analysis of individual patient data for 10 801 women in 17 randomised trials. *Lancet* 2011;378:1707–1716.

<sup>ii</sup> Christiansen P, Al Suliman N, Bjerre K, Moller S: Recurrence pattern and prognosis in low-risk breast cancer patients – data from the DBCG 89-A programme. *Acta Oncol* 2008;47:691–703

<sup>iii</sup> Bartelink H, Maingon P, Poortmans P, et al.: Whole breast irradiation with or without a boost for patients treated with breast-conserving surgery for early breast cancer: 20-year follow-up of a randomised phase 3 trial. *Lancet Oncol* 2015;16:47–56.

<sup>iv</sup> Sedlmayer F, Sautter-Bihl ML, Budach W, et al.: DEGRO practical guidelines: radiotherapy of breast cancer I: radiotherapy following breast conserving therapy for invasive breast cancer. *Strahlenther Onkol* 2013;189:825–833.

<sup>v</sup> EBCTCG, McGale P, Taylor C et al. Effect of radiotherapy after mastectomy and axillary surgery on 10-year recurrence and 20-year breast cancer mortality: meta-analysis of individual patient data for 8135 women in 22 randomised trials. *Lancet* 2014; 383: 2127–35.

<sup>vi</sup> Wahl AO, Rademaker A, Kiel K, et al.: Multi-institutional review of repeat irradiation of chest wall and breast for recurrent breast cancer. *Int J Radiat Oncol Biol Phys* 2008;70:477–484.

<sup>vii</sup> Danish Breast Cancer Cooperative Group, Nielsen HM, Overgaard M, Grau C, et al.: Study of failure pattern among high-risk breast cancer patients with or without post-mastectomy radiotherapy in addition to adjuvant systemic therapy: long term results from the Danish Breast Cancer Cooperative Group DBCG 82 b and c randomized studies. *J Clin Oncol* 2006;24:2268–2275

<sup>viii</sup> Bedwinek J: Natural history and management of isolated local-regional recurrence following mastectomy. *Semin Radiat Oncol* 1994;4:260–269

<sup>ix</sup> van Tienhoven G, Voogd AC, Peterse JL, et al.: Prognosis after treatment for locoregional recurrence after mastectomy or breast conserving therapy in two randomised trials (EORTC 10801 and DBCG-82TM). EORTC Breast Cancer Cooperative Group and the Danish Breast Cancer Cooperative Group. *Eur J Cancer* 1999;35:32–38.