

10-Year Locoregional Recurrence Rates in Young Women with Breast Cancer by Treatment Approach

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Objective

- Young patients (≤ 35 years old) diagnosed with breast cancer have higher rates of locoregional recurrence (LRR) compared to older women.
- Our goal was to examine whether the locoregional treatment approach, breast conserving therapy (BCT), mastectomy alone (M), or mastectomy with adjuvant radiation (MXRT), has an impact on LRR, distant metastasis (DM), and overall survival (OS) in these young patients.

Methods

A retrospective review of women with breast cancer diagnosed at age 35 or younger:

- 668 breast cancers in 652 women.
- Staged using 2002 AJCC guidelines.
- All treated between 1973 and 2006.
- All received definitive treatment with BCT, M, or MXRT.
- Patients received neoadjuvant and/or adjuvant chemotherapy at the physician's discretion.

Results

• Median follow-up for all living patients was 114 months (range, 7 – 411).

• Median age at diagnosis was 33 years (range, 16 – 35).

	# BCT (%)	# M (%)	# MXRT (%)	p-value
All patients	198 (29.6)	236 (35.3)	234 (35.0)	
T-stage				<0.001
T1	89 (44.9)	79 (33.5)	33 (14.1)	
T2	86 (43.4)	110 (46.6)	77 (32.9)	
T3	16 (8.1)	36 (15.3)	71 (30.3)	
T4	7 (3.5)	6 (2.5)	44 (18.8)	
TX	0 (0)	0 (0)	9 (3.9)	
N-stage				<0.001
N0	108 (54.5)	92 (39.0)	22 (9.4)	
N1	53 (27.3)	103 (43.6)	76 (32.5)	
N2	23 (11.6)	28 (11.9)	78 (33.3)	
N3	13 (6.6)	13 (5.5)	58 (24.8)	
Stage group				<0.001
II	54 (27.3)	41 (17.4)	6 (2.6)	
III	101 (51.0)	153 (57.2)	61 (26.1)	
IV	43 (21.7)	56 (23.7)	162 (69.2)	
Unknown	0 (0)	4 (1.7)	5 (2.1)	
Grade				0.021
MBNG I	2 (1.0)	5 (2.1)	2 (0.9)	
MBNG II	66 (33.3)	78 (33.1)	63 (26.9)	
MBNG III	122 (61.6)	130 (55.1)	137 (58.5)	
Unknown	8 (4.0)	23 (9.7)	32 (13.7)	
ER status				0.025
Negative	97 (49.0)	95 (40.3)	82 (35.0)	
Positive	75 (37.9)	91 (38.6)	102 (43.6)	
Unknown	26 (13.1)	50 (21.2)	50 (21.4)	
LVSI				<0.001
Absent	150 (75.8)	166 (70.3)	131 (56.0)	
Present	48 (24.2)	70 (29.7)	103 (44.0)	
Chemotherapy				<0.001
No	33 (16.7)	28 (11.9)	8 (3.4)	
Yes	165 (83.3)	208 (88.1)	226 (96.6)	
Hormone therapy				<0.001
No	123 (62.1)	180 (76.3)	123 (53.6)	
Yes	48 (24.2)	42 (17.8)	74 (31.6)	
Unknown	27 (13.6)	14 (5.9)	37 (15.8)	

• Patients treated with MXRT had more advanced T stage, more advanced N stage, greater LVSI, and more frequent use of chemotherapy than those treated with BCT or M (all $p < 0.001$).

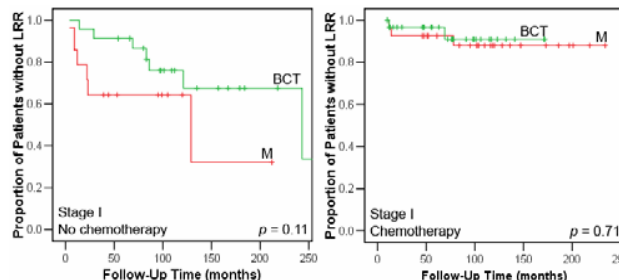


Fig. 2. LRR for patients with Stage I disease by treatment approach, with and without chemotherapy. Patients with Stage I disease who were not treated with chemotherapy had high 10-year LRR rates (M 35.7% vs. BCT 24.0%). Patients with Stage I disease treated with chemotherapy had similar, improved LRR rates when treated with either M or BCT (12.0% vs. 9.0%). Overall, patients with Stage I disease had improved LRR with chemotherapy (27.9% vs. 13.5%; $p = 0.037$).

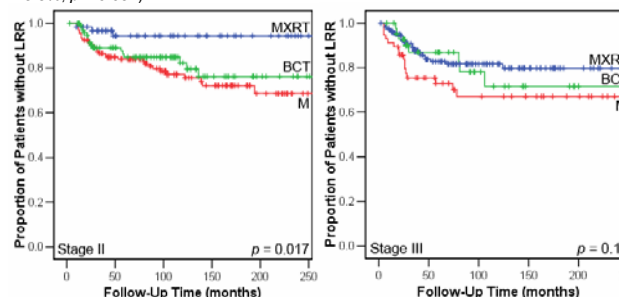


Fig. 3. LRR for patients with Stage II and III disease by treatment approach. Patients with Stage II disease who were treated with MXRT had a statistically significant improvement in LRR compared to both M and BCT (MXRT 5.7%, M 22.8%, BCT 17.7%; $p = 0.017$). Patients with Stage III disease had no statistically significant difference in LRR based on treatment approach.

	BCT	M	MXRT	p-value
All patients	19.7	24.2	15.0	0.049
Stage group				
I	17.5	20.3	37.5	0.511
II	17.7	22.8	5.7	0.017
III	28.4	23.9	18.4	0.133
Unknown	N/A	0	0	N/A
ER status				
Negative	26.0	25.1	15.9	0.452
Positive	11.6	29.1	16.2	0.074
Unknown	17.2	14.1	12.2	0.663
LVSI				
Absent	16.8	23.4	13.0	0.027
Present	29.5	35.6	17.8	0.600
Chemotherapy				
No	21.5	28.6	0	0.125
Yes	19.3	23.6	15.5	0.177
Hormone therapy				
No	19.1	25.0	16.1	0.074
Yes	11.7	22.4	16.7	0.729
Unknown	40.3	45.0	8.5	0.205

For all patients at 10 years, LRR = 19.8%, DM = 39.9%, OS = 64.6%.

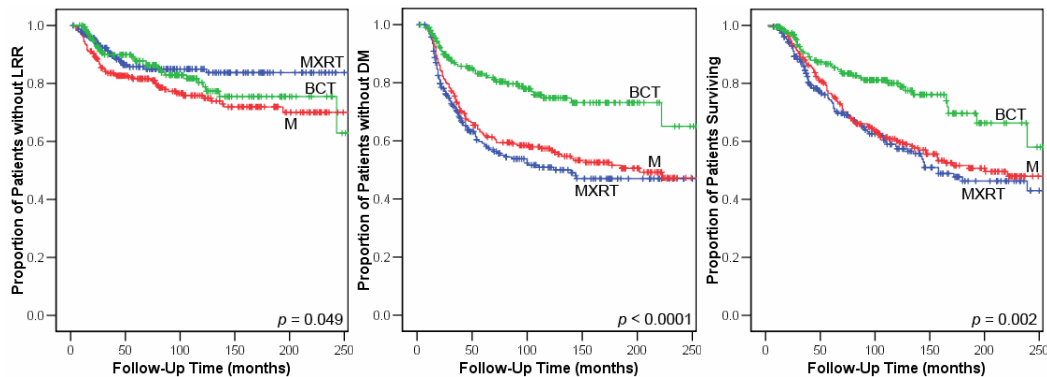


Fig. 1. Outcome of patients by treatment approach ($n = 668$). Although patients treated with MXRT had more advanced disease, 10-year LRR rates were equivalent for MXRT and BCT (15.0% vs. 19.2%), with M alone being significantly inferior (24.2%; $p = 0.049$). Patients treated with MXRT or M, however, had significantly worse rates of DM and OS than those treated with BCT.

Results, continued

• Treatment approach and clinicopathologic variables significantly impact LRR (Table 2).

• For patients with Stage I disease, chemotherapy has a significant impact on LRR. There is no statistically significant difference in LRR based on locoregional treatment approach (Fig. 2).

• For patients with Stage II disease, MXRT results in a statistically significant improvement in LRR compared to M or BCT (Fig. 3).

• Multivariate analysis by Cox regression, including all statistically significant variables on univariate analysis, identified negative prognostic variables for LRR as:

Variable	HR	95%CI
Mastectomy alone	1.71	1.18 – 2.47
N3 nodal disease	2.52	1.58 – 4.03

Conclusions

➢ Young patients (≤ 35 years old) with breast cancer have aggressive disease with high rates of locoregional recurrence.

➢ Locoregional failures continue to increase over time with long follow-up after BCT.

➢ For the entire cohort, those treated with mastectomy alone have a much higher rate of LRR than do those treated with mastectomy and adjuvant radiation or BCT.

➢ For patients with Stage I disease:
 ➢ Chemotherapy improves LRR.
 ➢ BCT appears to be equally effective as mastectomy alone.

➢ For patients with Stage II disease:
 ➢ Treatment strategy has the largest impact on LRR compared to other stages.
 ➢ LRR is improved with MXRT compared to BCT or mastectomy alone despite worse prognostic features in this cohort.
 ➢ These patients may benefit from more aggressive local therapy at the time of diagnosis.
 ➢ Young age (≤ 35 years old) should be evaluated as a potential indication for post-mastectomy radiation, especially in patients with Stage II disease.