Pattern of Local-Regional Recurrence in Patient with Early Breast Cancer after Mastectomy: An Analysis of 357 Cases at King Chulalongkorn Memorial Hospital

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A retrospective review was performed on 357 patients with early stage I-IIIA operable breast cancer who were treated with mastectomy and referred to the clinic at the Division of Radiation Therapy, Department of Radiology, King Chulalongkorn Memorial Hospital between Jan 1991 and Dec 2001. Patients characteristics, treatment modalities and pattern of local and regional failure were evaluated. The median and mean age in the present study were 49 and 50.2 years, respectively. Stage I, II and IIIA were 10.9%, 79.6% and 9.5%, respectively. One hundred and ninety-seven patients (55.2%) received postoperative radiation therapy (RT). Adjuvant chemotherapy was given in 247 patients (69.2%) while 122 patients (34.2%) received adjuvant hormonal therapy. Sixty one patients (17.1%) received both adjuvant chemotherapy and hormonal therapy. However, 12.6% (45/357) did not receive any adjuvant treatment. Median follow up time was 42.6 months (range 6-136 months). Ipsilateral supraclavicular node and chest wall were the most common sites of local-regional recurrence. The chest wall recurrence rate was 10.4% (37/357), which was 16.9% (27/160) in the non postoperative radiation (No RT) group and 5.1% (10/197) in the postoperative radiation (RT) group. For ispilateral supraclavicular node, the recurrence rate was 10.6% (38/357), which was 15.6% (25/160) and 6.6% (13/197) for non RT and RT groups, respectively. The incidence of ipsilateral axilla, ipsilateral internal mammary node and ipsilateral infraclavicular node recurrence rate were 4.2%, 3.6% and 0.8%, respectively.

Overall, chest wall and ipsilateral supraclavicular node were the most common sites of local-regional recurrence in early stage operable breast cancer who underwent mastectomy. Postoperative adjuvant radiation therapy decreased the risk of local-regional recurrence.

Keywords : *Local-regional recurrence, Early stage breast cancer, Mastectomy*

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Breast cancer is the most common malignancy affecting women in North America and Europe. In 2003, approximately 203,500 new cases of invasive breast cancer were diagnosed in the United States [1]. In Thailand, breast cancer has also become a major impact on the health problem of Thai women. It is the second most common cancer in women following cervical cancer. The estimated incidence rate was increased from 16.3 in 1994 to 17.2 in 1997 per 100,000 women [2,3]. At King Chulalongkorn Memorial Hospital, breast cancer was also the second most common cancer among women. In 2001, there were 374 new breast cancer patients comprising 22.6% of female malignancies [4].

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Currently postoperative adjuvant therapy is considered an essential part of the management of early stage breast cancer. Randomized studies have shown that adjuvant systemic chemotherapy and/or hormonal therapy improved 5 and 10 years survival rate in both pre and post menopausal women [5,6]. Tamoxifen, given to estrogen receptor positive patients for 5 years, reduced recurrence and mortality rate by 47% and 26%, respectively [6]. The addition of tamoxifen to chemotherapy also produced substantial improvement in survival [5]. However, until recently the use of postoperative adjuvant radiotherapy has been a subject of debate. Early randomized studies showed that postoperative radiotherapy might reduce locoregional recurrence but not improve survival [7]. However, two recent randomized trials showed that postoperative

radiotherapy reduced locoregional recurrence and prolonged survival in premenopausal women with high-risk lymph node positive breast cancer [8,9].

In view of the potential benefit of post-operative radiotherapy and the lack of published data on this adjuvant treatment in the Thai population, more specific information is required. In this retrospective review, the authors analyzed the pattern of local-regional recurrence in Thai women with early stage breast cancer (stage I-IIIA) who underwent mastectomy.

Material and Method

The authors reviewed the clinical records of 811 patients who were diagnosed as having breast cancer in the clinic at the Radiation Therapy Unit, Department of Radiology, King Chulalongkorn Memorial Hospital between January, 1991 and December, 2001. Two hundred and forty-six patients were treated with conservative breast therapy. Sixty patients had locally advanced breast cancer and were treated with neoadjuvant chemotherapy, Fifty-six patients had presented with inflammatory breast cancer or metastatic disease. Ductal carcinoma in situ was diagnosed in 36 cases. Fifty-six patients did not receive any specific treatment. Therefore, 357 early stage (I-IIIA) breast cancer patients who underwent mastectomy were analyzed in the present study.

Clinical information including age, menopausal status, signs and symptoms with duration of presentation were collected. All patients had pathological reports of the tumor and lymph node status, histopathology and grading of the tumor. The majority of patients also had hormone receptor status studied by immunohistochemistry method. Pathological staging according to AJCC 1997 [10] were used in the present report.

Treatment

All patients were treated with some form of mastectomy (modified radical mastectomy or total mastectomy plus axillary lymph node disssection).

Since this is a retrospective review, there was a mixed group of adjuvant treatment.The authors' policy of adjuvant treatment between the reviewed period is summarized in Table 1. Adjuvant radiation therapy was given to the chest wall by tangential fields using cobalt-60 or 6 MV linear accelerator. Mostly, the prescribed dose was 50 Gy / 25 fractions in 5 weeks at isocenter. Supraclavicular lymph node field was usually treated in patients with 4 or more positive axillary lymph nodes involvement. The prescribed dose was 50 Gy / 25 fractions in 5 weeks at 3 centimeters beneath the skin. Internal mammary and axillary node fields were omitted in our practice. Systemic adjuvant chemotherapy was used in high risk patients. The regimens were CMF (Cyclophosphamide 600 mg/m^2, Methotrexate 40 mg/m^2 and 5 Fluorouracil (5FU) 600 mg/m^2 intravenous every three weeks) and FEC (5FU 600 mg/m^2, Epirubicin 60 mg/m^2 and Cyclophosphamide 600 mg/m^2 intravenous every three weeks) for six cycles. Regarding hormonal therapy, Tamoxifen 20 mg/day was usually prescribed for patients with positive estrogen (ER) and/or progesterone (PgR) receptor. Tamoxifen was given for 5 years and started after completion of adjuvant chemotherapy and radiation therapy.

Table 1. Policy of adjuvant treatment scheme in early breast cancer patients who underwent mastectomy between 1991 and 2001 in King Chulalongkorn Memorial Hospital

Adjuvant radiation therapy
1. chest wall alone in
- close margin $\leq$ 2 mm
- positive resected margin
- large tumor (T3) without axillary node involvement
2. chest wall + supraclavicular lymph node field in
- high risk with axillary node positive $\geq$ 4 lymph nodes
Adjuvant chemotherapy in
- positive axillary lymph nodes
- tumor size > 1 cm
- high grade tumor
- negative ER and PgR
Adjuvant hormonal therapy in
- positive ER and/or PgR

Statistical Analyses

The cellected data was stored in numeric form in Excel Version 10. The authors applied the SPSS software statistic program for analysis. The total local-regional recurrence was evaluated and analyzed comparing between patients who received postoperative radiation (RT) and no postoperative radiation (No RT). Time to local-regional recurrence was also evaluated.

Results

Patient Characteristics

The distribution of patient characteristics is demonstrated in Table 2. The median age of 357 patients who underwent mastectomy in this report was 49 years and mean age was 50.2 years (range 27-92 years). Three hundred and forty-one patients (95.5%) presented with a lump in the breast. Pathological T1, T2 and T3 tumor were found in 20.2%, 66.9% and

Table 2. Patient characteristics

	n	(%)
Age		
< 35	30	8.4
≥ 35-49	157	44.0
50-69	151	42.3
≥ 70	19	5.3
Pathological T-stage		
T1	72	20.2
T2	239	66.9
T3	46	12.9
T4	-	-
Stage grouping		
I	39	10.9
IIA	139	37.0
IIB	152	42.6
IIIA	34	9.5
Grade		
Unknown	157	44.0
Known grade	200	56.0
G1	17	8.5
G2	113	56.5
G3	70	35.0
Estrogen receptor		
Unknown	118	33.1
Known	239	66.9
Negative	103	43.1
Positive	136	56.9
Progesterone receptor		
Unknown	142	39.8
Known	215	60.2
Negative	113	52.6
Positive	102	47.4
Margin of resection		
> 2 mm	328	91.9
≤ 2 mm	16	4.5
Positive margin	11	3.1
Unknown	2	0.6

12.9% of the patients, respectively. Regarding the nodal status, 43.7% were negative axillary lymph node whereas 56.3% were positive axillary lymph node. According to AJCC 1997 pathological staging, there were 10.9%, 27.0%, 42.6% and 9.5% of patients grouped in stage I, IIA, IIB and IIIA, respectively. According to 357 mastectomy patients, there were 91.9% (328/357) with complete surgical resection, 4.5% with close surgical resected margin (≤ 2 mm), 3.1% with positive surgical margin and 0.6% with unknown surgical margin. The median number of axillary node dissection was 15 nodes (range 1-45 nodes). The correlation between T-stage and number of positive axillary lymph node is shown in Table 3. One hundred and eighty-seven (52.4%) of the patients were younger than 50 years, while 8.4% were under age 35.

The adjuvant therapy in the present study is shown in Table 4. Adjuvant radiation therapy was given to 55.2% (197/357) of all patients, whereas adjuvant chemotherapy was given to 69.2% of the patients. Of those who received chemotherapy, CMF regimen was the mostcommon regimen used in 61.1%, while anthracycline-based regimen was used in 35.2%.

Regarding hormonal receptor status, results of hormonal receptor study were available in 248/357 (69.5%) cases. Of these patients, ER and/or PgR were positive in 62.1% (154/248). ER and PgR were both negative in 37.9% (94/248). Therefore, 30.5% (109/357) of cases did not have results of ER/PgR studies. Adjuvant hormonal therapy was given to 34.2% (122/357) of all patients.

Patients who did not receive any adjuvant therapy after mastectomy were 12.6% (45/357). There were 17.1% (61/357) of patients who received both adjuvant chemotherapy and hormonal therapy.

Local-Regional Recurrence

Local recurrence was defined as recurrence of a tumor in the chest wall. Regional recurrence was defined recurrence at ipsilateral supraclavicular, axilla, internal mammary and infraclavicular lymph node. Time to local regional recurrence was defined from date of mastectomy to date of evidence of local regional relapse.

Table 3. Correlation between T stage and number of positive axillary lymph nodes

	N 0 n (%)	N 1-3 n (%)	N 4-9 n (%)	N ≥ 10 n (%)	positive node (unspecified)	Total n
T1	39 (54.2%)	20 (27.8%)	10 (13.9%)	2 (2.8%)	1 (1.3%)	72
T2	100 (41.8%)	62 (25.9%)	48 (20.1%)	23 (9.6%)	6 (2.6%)	239
T3	17 (36.9%)	5 (10.9%)	16 (34.8%)	8 (17.4%)	0 (0%)	46
Total	156	87	74	33	7	357

Note: N 0: No axillary lymph node involvement, N 1-3: one to three positive nodes
N 4-9: four to nine positive nodes, N ≥ 10: ten or more positive nodes
Positive node (unspecified): Positive lymph node but unspecified number

Table 4. Adjuvant therapy

Adjuvant Treatment	n	(%)
Adjuvant radiation		
No	160	44.8
Yes	197	55.2
Adjuvant chemotherapy		
No	110	30.8
Yes	247	69.2
CMF	151	61.1
Anthracycline-based	87	35.2
Other	9	3.6
Adjuvant Hormonal treatment		
No	235	65.8
Yes	122	34.2
Tamoxifen	118	96.7
Others	4	3.3
Both chemotherapy and Hormonal treatment	61	17.1
No any adjuvant treatment	45	12.6

After a median follow-up of 42.6 months (range 6-138 months), total local regional recurrence occurred in 22.1% (79/357). Most of the local-regional recurrence occurred in the no postoperative radiation group, which was 34.4% (55/160). While local-regional recurrence in patients received postoperative radiation was 12.2% (24/197). The median time to local-regional recurrence was 27.4 months (range 7.1-122 months).

The pattern of locoregional recurrence was similar in both no postoperative and postoperative radiation (Table 5). The common sites for total locoregional recurrence in the present study were chest wall and ipsilateral supraclavicular lymph node which developed in nearly the same number, 37/357 (10.4%) and 38/357 (10.6%), respectively. While ipsilateral axilla, internal mammary and infraclavicular lymph node were less common sites for recurrence, accounting for 15/357 (4.2%), 13/357 (3.6%) and 3/357 (0.8%), respectively.

Table 5. Sites of locoregional recurrence with or without postoperative radiation

Site of Recurrence	No RT % (160 pts)	RT % (197 pts)	Total 357 pts
Chest wall	16.9 % (27/160)	5.1 % (10/197)	10.4 % (37/357)
Ipsilateral SPC node	15.6 % (25/160)	6.6 % (13/197)	10.6 % (38/357)
Ipsilateral axilla node	5.6 % (9/160)	3.0 % (6/97)	4.2 % (15/357)
Ipsilateral IMN	6.3 % (10/160)	1.5 % (3/197)	3.6 % (13/357)
Ipsilateral IFN	1.3 % (2/160)	0.5 % (1/197)	0.8 % (3/357)

Note: IMN: internal mammary node, IFN: infraclavicular node

Chest wall recurrence increased with T-stage in the no postoperative radiation group. The recurrence rate was 13.5%, 17.0% and 37.5% for T1, T2 and T3 stage, respectively. While the recurrence rate was much lower in the postoperative radiation group, which was 0.0%, 4.3% and 10.5% for T1, T2 and T3 stage.

Chest wall recurrence was higher in axillary node positive compared to axillary node negative patients. In the non postoperative radiation group, chest wall recurrence was 13.6% and 24.0% in node negative and node positive, respectively. In the post-operative radiation group, chest wall recurrence was 0.0% and 6.8% in node negative and node positive patients.

Table 6 shows the rate of chest wall recurrence according to AJCC 1997 staging. There was a high rate of chest wall recurrence in stage IIB and IIIA who did not receive postoperative radiation. The group who received postoperative radiation showed low recurrence of the chest wall, except for stage IIIA where chest wall recurrence was more than 10%.

Ipsilateral supraclavicular lymph node recurrence increased with T-stage in the non post-operative radiation group. The recurrence rate was 1.9% for T1, 20.0% for T2 and 50% for T3 stage. While in the postoperative radiation group, there was no difference in supraclavicular recurrence rate which was 5.0%, 7.2% and 5.3% for T1, T2 and T3 stage, respectively.

Additionally, the supraclavicular recurrence rate in the non postoperative radiation group was higher in node positive than node negative patients, which was 32.0% and 8.2%, respectively. However, there was no difference in supraclavicular node recurrence for the postoperative radiation group, which was 8.7% for axillary node negative and 6.0% for node positive groups.

Table 7. shows supraclavicular lymph node recurrence rate according to AJCC 1997 staging. This study shows a high rate of supraclavicular node recurrence in stage IIB and IIIA, 43.3% and 57.1% in the nonpostoperative radiation group. The supraclavicular lymph node recurrence rate was low in the postoperative radiation group varying from 50.0% (1/2), 6.5%, 4.9% and 11.1% for stage I, IIA, IIB and IIIA, respectively.

The overall rate of ipsilateral axillary recurrence was 4.2% (15/357). While five percent occurred in axillary node positive patients, 3.2% (5/156) occurred in axillary node negative (N0) patients. The total rate of ipsilateral internal mammary node recurrence was

Table 6. Chest wall recurrence and staging (AJCC 1997)

Stage AJCC 1997	Chest wall recurrence %	
	No RT (160)	RT (197)
I (39)	13.5 % (5/37)	0.0 % (0/2)
IIA (132)	13.9 % (12/86)	0.0 % (0/46)
IIB (152)	23.3 % (7/30)	4.1 % (5/122)
IIIA (34)	42.9 % (3/7)	18.5 % (5/27)
Total	16.9 % (27/160)	5.1 % (10/197)

Table 7. Ipsilateral supraclavicular lymph node recurrence and staging (AJCC 1997)

Stage AJCC 1997	Supraclavicular node recurrence %	
	No RT (160)	RT (197)
I (39)	2.7 % (1/37)	50.0 % (1/2)
IIA (132)	8.1 % (7/86)	6.5 % (3/46)
IIB (152)	43.3 % (13/30)	4.9 % (6/122)
IIIA (34)	57.1 % (4/7)	11.1 % (3/27)
Total	15.6 % (25/160)	6.6 % (13/197)

3.6% (13/357), 1.5% (3/197) in the postoperative radiation group and 6.3% in the non postoperative radiation group. There was no difference in the rate of internal mammary recurrence between patients with negative and positive axillary node. Very few patients developed recurrence in ipsilateral infraclavicular node (0.8% or 3/357).

Distant metastasis

Overall distant metastatic rate was 34.2% (122/357) for the whole group. The median time for development of distant metastasis was 24.5 months (range 0.5-125 months). The common site for distant metastasis were lung, bone, liver and brain which was 15.7%, 14.8%, 9.5% and 4.2%, respectively.

Discussion

This is a retrospective study in Thai women with operable stage I-IIIA breast cancer who underwent mastectomy with or without postoperative radiation therapy. This review showed that locoregional recurrence was relatively common, especially in the non postoperative radiation group.

Patients with a tumor > 2 cm or lymph node involvement are at the highest risk. About 20-30% of patients in this group had chest wall or regional lymph node recurrence. The locoregional recurrence rate in patients with axillary lymph node involvement who received combined chemotherapy and radiotherapy reported by Overgarrd et al was 9% [8]. Ragaz et al [9] enrolled only lymph node positive post-mastectomy patients in their randomized study comparing combined chemotherapy and radiotherapy to chemotherapy alone. The locoregional recurrence rate was 11.6% and 20.5%, respectively. Fisher et al[11] reported on 735 patients with lymph node positive breast cancer receiving only adjuvant chemotherapy, the locoregional recurrence rate was 20%. The recurrence rate of control arm of randomized studies ranged from 23.6% to 56%[8,9,12-14] Fowble et al [15] have demonstrated that chemotherapy alone was not adequate for local control for patients with a large tumor or four or more positive lymph nodes involvement. Also, the report by Stefanik D, et al[16], Sykes HF, et al[17] and Bonadonna G, et al[18] showed adjuvant systemic chemotherapy $\pm$ Tamoxifen without postoperative radiation in high risk operable breast cancer could not decrease the locoregional recurrence rate. Even the use of high dose chemotherapy with autologous bone marrow transplantation for high risk breast cancer could not decrease the locoregional recurrence rate [19]

Many randomized clinical trials comparing mastectomy with or without postoperative radiation in operable breast cancer showed postoperative radiation in high risk operable breast cancer reduced local-regional recurrence in about a half to two-third of the patients [20-23].

Since this is a retrospective study, the patients in the group who received postoperative radiation had higher T-stage and more positive axillary lymph nodes involvement (Table 8). The total locoregional recurrence rate was 22.1% (79/357). It was 34.4% (55/160) in no postoperative radiation group and 12.2% in postoperative radiation group. The present recurrence rate was reported in the form of total locoregional recurrence which is comparable to many randomized studies ranging from 23.6% to 56% [8,12,13,24] in the group without postoperative radiation.

Table 8. T and N stage vs postoperative radiation

Stage	No RT (160)	RT (197)
T-stage		
T1 (72)	52	20
T2 (239)	100	139
T3 (46)	8	38
N-stage		
N0 (156)	110	46
N1-3 (87)	31	56
N4-9 (74)	9	65
N≥10 (33)	5	28
N+ unknown (7)	5	2

The locoregional recurrence rate in patients who received postoperative radiation, 12.2% in the present study was also similar to reports in many randomized control trials [8,9,14].

In the present study, the majority of locoregional recurrence occurred at the chest wall and supraclavicular lymph node which is similar to other reports in the literature [11,13-15].

With regard to radiation therapy, our practice did not include axillary lymph node and internal mammary lymph nodes in the radiation field because there was insufficient evidence to support its benefit [25-27]. The risk of isolate internal mammary lymph node and axillary lymph nodes failure in the untreated patients with early stage breast cancer was low [20,28-30]. The present report showed the rate of internal mammary and axillary lymph nodes recurrence was 3.6% and 4.2%, respectively.

A randomized study suggested that local control was better with the combination of postoperative radiotherapy and chemotherapy than either treatment alone.[31]

The National Comprehensive Cancer Network (NCCN) guideline[32] recommended to use postoperative radiation for locoregional treatment after mastectomy with level I and II axillary dissection in patients who have 4 or more positive axillary nodes, primary tumor > 5 cm or resected margin (s) positive. Postoperative radiation was considered in patients who have 1-3 positive axillary nodes or patients who have negative node and tumor $\leq$ 5 cm and close (< 1 mm) resected margins. It is not recommended to use postoperative radiation for patients who have negative node and tumor $\leq$ 5 cm and resected margin $\geq$ 1 mm. Postoperative radiation to internal mammary node is recommended only for patients who have clinical or pathological nodes positive, otherwise the treatment to the internal mammary field is at the discretion of the radiation oncologist.

From the results of the present study, the authors recommend giving postoperative radiation to Thai female breast cancer patients who underwent mastectomy and level I and II axillary dissection who were pathological stage IIB and higher.

Conclusion

Locoregional recurrence rate is relatively high in Thai female patients with operable breast cancer who underwent mastectomy and level I and II axillary dissection, particularly in pathologically stage IIB and higher. Postoperative radiation to these groups of patients is recommended. The most common site of locoregional recurrence are chest wall and supraclavicular lymph node.

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รูปแบบการกำเริบของโรคเฉพาะที่ในผู้ป่วยมะเร็งเต้านมระยะเริ่มแรก ที่ได้รับการรักษาด้วยการผ่าตัดเต้านม : วิเคราะห์ผู้ป่วย 357 ราย ในโรงพยาบาลจุฬาลงกรณ์

ประเสริฐ เลิศสงวนสินชัย, ชวลิต เลิศบุษยานุกูล, กฤษณ์ จาฏามระ, กาญจนา โชติเลอศักดิ์, นรินทร์วรวุฒิ, ชลเกียรติ ขอประเสริฐ

การศึกษาย้อนหลังในผู้ป่วยมะเร็งเต้านมระยะเริ่มแรก จำนวน 357 ราย ที่ได้รับการผ่าตัดเต้านม และส่งมาปรึกษาที่สาขารังสีรักษา ภาควิชารังสีวิทยา โรงพยาบาลจุฬาลงกรณ์ ระหว่างเดือนมกราคม 2534 ถึงเดือนธันวาคม 2544 ได้ทำการศึกษาคุณลักษณะของผู้ป่วย การรักษาที่ผู้ป่วยได้รับและรูปแบบการกำเริบของโรคเฉพาะที่ อายุเฉลี่ยและอายุมัธยฐานของผู้ป่วยกลุ่มนี้เท่ากับ 50.2 ปี และ 49 ปี ตามลำดับ ระยะของโรคระยะที่ 1, 2 และ 3 คิดเป็น 10.9%, 79.6% และ 9.5% ตามลำดับ มีผู้ป่วยจำนวน 197 ราย ที่ได้รับการฉายรังสีหลังการผ่าตัด คิดเป็น 55.2% ผู้ป่วย 247 ราย หรือ 69.2% ได้รับการรักษาเสริมด้วยเคมีบำบัด และผู้ป่วย 122 ราย (34.2%) ได้รับการรักษาเสริมด้วยฮอร์โมนบำบัด ผู้ป่วย 61 ราย (17.1%) ได้รับทั้งเคมีบำบัดและฮอร์โมนบำบัด มีผู้ป่วย 45 ราย (12.6%) ไม่ได้รับการรักษาเสริมใด ๆ หลังการผ่าตัด ผลการติดตามผู้ป่วยเฉลี่ย 42.6 เดือน (ช่วงระหว่าง 6-136 เดือน) พบมีการกำเริบของโรคเฉพาะที่บริเวณหน้าอก และต่อมน้ำเหลืองไหปลาร้าข้างเดียวกันบ่อยที่สุด อัตราการกำเริบของโรคที่หน้าอกคิดเป็น 10.4% (37/357) โดยพบเป็น 16.9% ในกลุ่มที่ไม่ได้รับการฉายรังสีหลังผ่าตัด และ 5.1% ในกลุ่มที่ได้รับการฉายรังสีหลังผ่าตัด สำหรับการกำเริบของโรคที่ต่อมน้ำเหลืองบริเวณไหปลาร้าคิดเป็น 10.6% (38/357)โดยพบ 15.6% และ 6.6% ในผู้ป่วยที่ไม่ได้รับการฉายรังสี และได้รับการฉายรังสีหลังผ่าตัดตามลำดับ อุบัติการณ์กำเริบของโรคที่ต่อมน้ำเหลืองบริเวณรักแร้, ต่อมน้ำเหลือง internal mammary และต่อมน้ำเหลืองใต้กระดูกไหปลาร้า คิดเป็น 4.2%, 3.6% และ 0.8% ตามลำดับ โดยสรุปการกำเริบของโรคเฉพาะที่ในผู้ป่วยมะเร็งเต้านมระยะเริ่มแรกที่รักษาด้วยการผ่าตัดเต้านม พบมากบริเวณหน้าอกและต่อมน้ำเหลืองบริเวณไหปลาร้า การฉายรังสีรักษาหลังการผ่าตัดเต้านมช่วยลดอุบัติการกำเริบของโรคเฉพาะที่ได้