

## LOCAL RECURRENCE OF BREAST CANCER AFTER MASTECTOMY VS. MASTECTOMY WITH RECONSTRUCTION: A RETROSPECTIVE REVIEW OF A CANCER INSTITUTE

### Original Article

### Mastektomi / Mastektomi ve Rekonstrüksiyon Uygulanan Olguların Lokal Rekürrens Yönünden Karşılaştırılması

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#### ABSTRACT

The primary focus of this study is to evaluate the oncological outcome after mastectomy with or without reconstruction and to study if there is an association in local recurrence between mastectomy without reconstruction and mastectomy with reconstruction. A retrospective review of the medical records of 2,800 was evaluated between 1993- 2003. Patients who underwent mastectomy with and without reconstruction were analyzed by means of local recurrences. Of the 2,800 cases, 831 choose to have mastectomy for surgical treatment. There were 95 (11%) patients that choose reconstruction. In all, 33 (4%) local recurrences were observed. Of the 33 cases, 4.0% (30) were mastectomy only while 3.1% (3) were mastectomy with reconstruction. A statistical analysis showed no difference between the groups ( $p>0.05$ ). Our study hopes to add to the current data that reconstruction is a safe procedure after mastectomy. Our data support the continued use of breast reconstruction without fear of influencing the oncologic outcome regarding local recurrences.

**Keywords:** *breast cancer, reconstruction, local recurrences.*

#### ÖZET

**Amaç:** Meme kanseri kadınlarda en sık görülen kanser türü olmaya devam etmektedir. Meme kanseri tedavisi kadar yeri ve önemi nedeniyle rekonstrüksiyonu da öncelik arz etmektedir. Bu durumda meme rekonstrüksiyonun onkolojik açıdan bir dezavantajı olup olmadığı sorulagelmıştır. Bir çok merkez bu anlamda oranlarını bildirmiştir. Bu çalışma bir kanser merkezinde uygulanan mastektomi sonrası meme rekonstrüksiyonunun onkolojik sonucunu değerlendirmek için yapılmıştır.

**Materyal-Metod:** Bu çalışmaya 1993-2003 yılları arasında meme kanseri nedeniyle tedavi gören 2,800 hasta dahil edilmiştir. Hastalar retrospektif olarak incelenmiş ve hastaların yaşı, tümör tipi ve boyutu, evresi, mastektomi ve mastektomi sonrası rekonstrüksiyon yapılıp yapılmadıkları kayıt edilmiştir.

**Bulgular:** 2,800 olgudan 831'inde tedavi olarak mastektomi uygulanmıştır. Bunların 95 (% 11)'ine rekonstrüksiyon uygulanmıştır. Tüm olguların 33 (% 4)'ünde local nüks gözlenmiştir. Bu 33 olgunun 30 (% 4)'üne sadece mastektomi uygulanmışken 3 (% 31)'üne mastektomi ve rekonstrüksiyon uygulanmıştır. İki grup arasında istatistiksel farklılık bulunmamıştır ( $p>0.05$ ).

**Sonuç:** Bu çalışmada çıkan sonuçlar mastektomi sonrası rekonstrüksiyonun sadece mastektomi ile karşılaştırıldığında nüks yönünden farklı olmadığını göstermektedir. Oranlar bu konudaki raporlara paralellik göstermektedir. Sonuç olarak uygun olgularda mastektomi sonrası rekonstrüksiyon hastanın ruhsal sağlığına olumlu katkıda bulunurken onkolojik açıdan alternatifine göre bir dezavantaj göstermemektedir.

## INTRODUCTION

Breast cancer is the leading cause of cancer and the third leading cause of cancer mortality, behind lung and colorectum, for women in the United States.<sup>1</sup> The lifetime incidence risk of breast cancer is 1 in 8, while the lifetime risk of death due to breast cancer is 1 in 28.<sup>2</sup> Breast cancer incidence as well as mortality rates are above average in certain states<sup>(1-3)</sup>.

Treatment options for breast cancer are various. While the treatment decisions have much to do with the type of tumor, size, and extent of the disease, patient preference is also a determinant (4, 5). The two types of surgical options are breast conserving surgery and mastectomy. Breast conserving surgery consists of lumpectomy, segmental excision, quadrantectomy and partial mastectomy (6). Mastectomy options include skin sparing,

nipple sparing, subcutaneous, simple and modified radical (7-9).

Women choosing mastectomy faced with the possibility of reconstruction. There are non-surgical alternatives to reconstruction such as a prosthesis and special clothing. Nevertheless, surgical reconstruction became popular for the last four decades (7-12). There are many options and combinations for reconstruction. Mainly, these are categorized into two groups either immediate or late reconstruction based on the interval between mastectomy and reconstruction.

Regardless the mode of the treatment, there is always the possibility of recurrence. The primary focus of this study is to compare local recurrence of breast cancer after mastectomy with and without reconstruction.

## Materials and Methods

A 10-year retrospective review was performed using Hospital Tumor Registry data. The tumor registry is a database that tracks and maintains a database of all individuals with cancer, including breast cancer. The individuals are entered at the time of diagnosis and followed up on a yearly basis. Any missing data was then obtained through medical chart review. After review board approval, the medical records were reviewed. All females who underwent mastectomy as treatment for breast cancer from 1993 to 2003 were included in this study. Other data reviewed include age at diagnosis, type of tumor, size, stage, treatment received, type of mastectomy, and type of reconstruction.

Patient groups consisted of those who had mastectomy without reconstruction and mastectomy with reconstruction. Reconstructions consisted of immediate or delayed with tissue expander and implant, transverse rectus abdominis musculocutaneous flaps, latissimus dorsi flap, or combination of implant with tissue flap were included.

Tumor registry and charts were reviewed for any local recurrence of breast cancer. Local recurrence is defined as recurrence in the ipsilateral breast tissue involving any soft tissue, musculocutaneous tissue, or chest wall tissue. Local recurrences presented with subjective symptoms such as an existence of a new mass, change of color or appearance within the area of mastectomy or

reconstructed breast was found by physical examination while other local recurrences was detected by computed tomography or magnetic resonance imaging. Further evaluation with core needle excisional biopsy was routinely done. Follow up ranged from 8 months to 10 years. Only patients with three years or more of follow up were included in this series.

A statistical analysis was done using Fisher's Exact test (Statistical Package for Social Science-SPSS for Windows 10.0, Microsoft) to determine whether there was a difference in local recurrence of breast cancer after mastectomy with and without reconstruction. Chi-Square test was used to test the effects of tumor stage on recurrences.

## Results

Approximately 2,800 patients extracted from the Hospital Cancer Tumor Registry database belong to the interval of 1993-2003.

### Mastectomy Patients:

Of the 2,800 cases, 831 choose to have mastectomy for surgical treatment. Of the mastectomies, 662 (80%) chose modified radical and 169 (20%) chose simple mastectomy. There were 95 (11%) patients that chose reconstruction, leaving 736 (89 %) choosing non-reconstruction (Table I). Mean age in patients who underwent mastectomy at the time of diagnosis is 62 years (range 29-96). The size of tumor at mastectomy is on average 2.6 cm. Adjuvant treatment varies as follows: 350 (42%) hormone therapy, 292 (35%) chemotherapy, and 142 (17%) radiation therapy (Table I).

	Percent (%)	Number
Type of Tumor		
Ductal	64	535
Mixed	12	101
Insitu	11	93
Lobular	7	57
Other	5	45
<b>TOTAL</b>	<b>100</b>	<b>831</b>
Stage of Tumor		
0	11	96
I	35	290
II	39	321
III	10	87
IV	2	15
Unknown	3	22
<b>TOTAL</b>	<b>100</b>	<b>831</b>
Mastectomy Type		
Simple mastectomy	20	169
Modified radical	80	662
<b>TOTAL</b>	<b>100</b>	<b>831</b>
Reconstruction (Rx) status		
Without Rx	89	736
With Rx	11	95
<b>TOTAL</b>	<b>100</b>	<b>831</b>
Adjuvant Treatment status		
Hormonotherapy	42	350
Chemotherapy	35	292
Radiation therapy	17	142
<b>TOTAL</b>	<b>100</b>	<b>831</b>
Other data		
Mean age (years)	62	
Size of tumor (cm)	2.6	

**Table I:** Patient demographics of the 831 patients who choose to have mastectomy for surgical treatment.

### Local Recurrences:

In all, 33 (4%) local recurrence cases were observed. Age at diagnosis in recurrence group was 62 years. Stage of tumor in the recurrence group compared to all mastectomies group is seen in( Table II). In the recurrence group tumor average was 3.6 cm. Of the 33 cases, 4% (30) were mastectomy only while 3.1 % (3) were mastectomy with reconstruction. All reconstruction cases with local recurrences were found to be delayed reconstructions.

Stage	Recurrence group		All mastectomies group	
	(%)	Number	(%)	Number
0	6	2	11	96
1	21	7	35	290
2	52	17	39	321
3	21	7	10	87
4	0	0	2	15
Unknown	0	0	3	22
Total	100	33	100	831

**Table II:** Stage of tumor in the recurrence group is compared to all mastectomies group.

Local Recurrences in Non-Reconstructed Cases:

Local recurrence with mastectomy only group contained 30 cases. This group staging was shown in Table III.

Stage	Mastectomy without Rx		Mastectomy with Rx	
	Percent	Number	Percent	Number
0	3	1	0	0
1	17	5	66	2
2	53	16	34	1
3	27	8	0	0
4	0	0	0	0
Total	100	30	100	3

**Table III:** Tumors by stage of the local recurrences cases for non-reconstructed mastectomy and reconstructed mastectomy patients (Rx: reconstruction).

Recurrence occurred on average at 26 months after mastectomy. Mean age at initial diagnosis was 63 years. Average initial tumor size was 3.6 cm. Adjuvant treatment after mastectomy is as follows: 47% (14) hormone therapy, 47% (14) chemotherapy, and 10% (3) radiation therapy.

Local Recurrences in Reconstructed Cases:

In the mastectomy with reconstruction group, there were 3 recurrences. Two had delayed TRAM + implant reconstruction and both were DCIS (stage 0). One patient had implant reconstruction and had a mixed lobular/ductal tumor. Average initial tumor size was 3.4 cm. Recurrence occurred between 7 months to 7 years after mastectomy. Average age at diagnosis was 41 years.

Treatment	Percent (%)	Number	Tm size (cm)	Age (years)	Recurrence (%)	Number
Mastectomy	100	831	2.6	62 (29-96)	3.9	33
Without Rx	80	736	3.6	63	4.0	30
With Rx	20	95	3.4	41	3.1	3

**Table IV:** Comparison of recurrences in patients that reconstructed and unreconstructed after mastectomy (Rx: reconstruction).

Fisher’s Exact test revealed no statistically significant difference between local recurrences in reconstructed and non-reconstructed groups (p= 0.123). Chi-Square test revealed no statistically significant difference between the stages of breast cancer found between the patients recurrences occurred and all mastectomy patients (p=0.089, Table II). Chi-Square test revealed no statistically significant difference between the stages of breast cancer in patients reconstructed and unreconstructed after mastectomy (p=0.228, Table III).

**DISCUSSION**

The primary focus of this study is to evaluate the oncological outcome after mastectomy with or without reconstruction and to study if there is an association in local recurrence between mastectomy without reconstruction and mastectomy with reconstruction. Patients with local recurrence are further analyzed to try to correlate specific factors that put them at risk for local recurrence. A retrospective review of the medical records of 831 patients undergoing mastectomy for breast cancer was conducted. The type and stage of tumor, treatment received, type of reconstruction and local recurrence, if occurred, was assessed. The type of reconstruction was also categorized as well as timing of reconstruction i.e. immediate vs. delayed.

Methods of breast reconstruction after mastectomy can be divided into three broad categories: reconstruction with autologous tissue, reconstruction with a prosthesis and reconstruction with a combination involving both autologous tissue and a prosthesis.(13) Mastectomy with immediate or delayed reconstruction is a widely used procedure that has been shown to be safe, even in the setting of advanced cancers. (14, 15) Immediate reconstruction is often desirable because the

breast form is immediately restored. Also, not having to deal with the mastectomy defect provides obvious psychological benefits. The down side of immediate reconstruction is the effects of possible further treatment. Chemo or radiation therapy after reconstruction may compromise the cosmetic result.(13) Many recent studies look at the safety of immediate reconstruction after mastectomy after concerns about delayed detection and further treatment. Delayed reconstruction is the second option for reconstruction. In delayed, women can have more time to decide on the type of reconstruction. It also allows time for the tissue to heal after possible radiation treatment. What is the best route to follow is a question of debate? In general, a preoperative evaluation by a multidisciplinary team is recommended in order to get an oncologically and surgically safe appropriate treatment for breast cancer patients.(10)

Sandelin and colleagues looked at cases of immediate reconstruction after mastectomy regarding local recurrences. Of the 203 patients, 13 (6.5%) were observed to have local recurrence(14). A larger study by Langstein, et al (15). looked at 1,694 patients that underwent immediate reconstruction after mastectomy and found 30 (2.3%) local recurrence rates. These studies did not compare rates with non-reconstructed patients. Other studies that have looked at local recurrence after immediate reconstruction and compare with non-reconstructed showed similar recurrence rates. Murphy et al(16) looked at 1262 breast over a 10 year period and found 11 (0.7%) total recurrence rate with 2 (0.3%) in the immediate reconstruction group and 9 (0.7%) in the non reconstructed group. Our recurrence rate was 4%, while published overall recurrence rates vary from 1 to 8% (16-23). Our results showed that there is no difference in recurrence rates between women who have mastectomy only (4%) and mastectomy with reconstruction (3.1%). This is also consistent with data published from other institutions.(18-20, 23).

Characteristics associated with local recurrence are related to higher stage, larger tumor size at initial diagnosis (larger than 2 cm), node-positive disease, high grade in tumor differentiation, presence of skin fixation or clinical invasion, gross invasion of the deep fascia, ulceration of the skin, breast edema.(19, 24, 25).Average time to

recurrence, 25 months, is consistent with other published reports.(18, 19, 21, 23). Although it is beyond the scope of this study we believe it is worthy to mention about the detection and evaluation of the local recurrences in reconstructed breast. As with non-reconstructed breast, physical exam followed by computed tomography or magnetic resonance imaging is a useful method of detection of local recurrences in reconstructed breasts. This should follow by microscopic evaluation of the suspicious masses either with core biopsy or excisional biopsy. Our data support the continued use of breast reconstruction without fear of influencing the oncologic outcome. Limitations of this study are small sample size, and follow up time as most reconstructions have occurred from 1996 to present and most recurrence cases occurred in the earlier half of the study group.

## CONCLUSION

Reconstruction after mastectomy is a safe and accepted procedure. It is also an important aspect of treatment to many patients. Our study hopes to add to the current data that reconstruction is a safe procedure after mastectomy. Different treatment centers have difference rates of recurrence due to difference in patient preferences and treatment protocols. Nevertheless, we failed to show any statistically significant difference between different treatment centers.

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Ethical Approval: We have read and complied with the policy of the journal on ethical consent. This work has been approved by the hospital ethical committee.

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