



## ORIGINAL ARTICLE

# SURGICAL MANAGEMENT OF Tx BREAST CANCER: IS BREAST CONSERVATION AN OPTION?

By

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### Abstract

**Aim:** Unfortunately, lumpectomy is still the most diagnostic tool for breast carcinoma in Egypt. Management of Tx breast carcinoma is still a controversial issue. Most of these patients are doomed to undergo mastectomy.

The aim of this study is to analyze patients with Tx breast carcinoma after having their definitive treatment as regard residual disease in the lumpectomy cavity and factors affecting it.

**Methods:** 60 patients with Tx breast carcinoma who had lumpectomy for a localized breast lump and were proved to be invasive breast cancer were subjected to this study. They were operated from January 2001 to December 2007. Pathologic and patient characteristics were all reviewed.

**Results:** In this sample, the median age of the patients was 45 year, and the median tumor size was 3 cm. 52 patients (86.7%) had mastectomy and 8 patients (13.3%) had conservative breast therapy (CBT). Residual disease was present in 22 patients (36.7%). Margins less than 5 mm had residual tumors in 90.9% of cases. Tumors larger than 2.5 cm in diameter showed residual disease in 52.9% of cases. The other independent factors as age, sex, laterality and grade of tumor had no statistically significant effect on residual tumor.

**Conclusion:** Mastectomy is not the only option for management of Tx breast cancer. Breast conserving therapy is still a valid option provided that a wide safety margin is excised with definitive negative margins.

**Keywords:** Carcinoma of breast, lumpectomy, residual disease.

### INTRODUCTION

Breast conserving surgery is the preferred surgical treatment over mastectomy for women with early stage breast cancer.<sup>(1-3)</sup> However; successful treatment requires elimination of all gross and microscopic disease. Residual cancer in the surgical bed following lumpectomy increases the risk of future recurrence. Therefore, women who have positive surgical margins

following lumpectomy are advised to undergo either re-excision of the lumpectomy cavity or mastectomy prior to receiving additional adjuvant therapy.<sup>(4-7)</sup>

Most of patients undergoing lumpectomy will require additional excision for residual cancer. Mastectomy should not be done routinely for these patients and re-

excision lumpectomy could be done safely. Such procedure can increase the risk of wound infection, delay the initiation of adjuvant chemotherapy and radiation therapy, increase postoperative anxiety, and result in worse aesthetic outcomes.<sup>(8-10)</sup> However, there are no clear guidelines for an appropriate number of excision attempts, and risk factors for re-excision are not well defined. Nonetheless, it is important to identify factors associated with re-excision lumpectomy in order for clinicians to adjust their treatment approach, and potentially reduce the burden of such procedures on the health care system due to associated cost and morbidity.<sup>(11)</sup>

The aim of this study is to correlate the precise tumor-margin width with rates of residual disease on re-operation and to analyze predictors of compromised margins and of residual disease. This may aid surgeons in the development of policies regarding margin protocol.

To study this, we surveyed women who underwent lumpectomy followed by either breast conserving therapy (BCT) or mastectomy over a 7 year period to describe the patient- and treatment-related factors associated with re-excision lumpectomy and mastectomy following initial lumpectomy.

## PATIENTS AND METHODS

The study population comprised 60 patients who presented to the surgeon over a 7-year period (January 2001 to December 2008) and they have done lumpectomy for a localized breast lump and were proved to be invasive breast cancer.

Our dependent variables included the report of lumpectomy, and the report of mastectomy or re-excision lumpectomy following attempted breast-conserving surgery.

Several independent variables related to the patient and the disease were obtained: patient age, the presence of micro-calcifications on breast imaging, nearest margin of lumpectomy specimen, multifocal or multicentric disease, histology, tumor grade, the presence of ductal carcinoma in situ (DCIS) in the surgical specimen, tumor size, and disease stage.

Patient age was categorized into the following groups: less than 40 years, 41 to 50 years, 51 to 60 years, 61 to 70 years, and 71 and older. Tumor size was categorized as: less than 1 cm, 1.0 to 1.9 cm, 2.0 to 2.9 cm, 3.0 cm to 3.9 cm and 4 cm or larger. Tumor grade was grouped in the following way: low-grade or well-differentiated tumors (G1), intermediate-grade or moderately differentiated tumors (G2), and high-grade or poorly/undifferentiated tumors (G3).

Mammography was done to all patients to detect residual microcalcification if present. All the required laboratory investigations were done in addition to metastatic workup. Patients were followed till December

2008 with a minimum follow up period of 12 months.

All patients received their adjuvant treatment according to the final pathology and tumor stage.

**Statistical Analysis:** Data was analyzed using SPSSwin statistical package version 16. Numerical data were expressed as mean  $\pm$  standard deviation, median and range. Qualitative data were expressed as frequency and percentage. For quantitative data, comparison between two groups was done using either student t-test or Mann-Whitney test as appropriate. Chi-square test was used to examine the relation between qualitative variables. Odds ratio with the 95% confidence interval (CI) was calculated for independent factors that might affect residual tumors.  $p$ -value  $< 0.05$  was considered significant.

## RESULTS

In this sample of patients who underwent surgery after lumpectomy in the form of modified radical mastectomy in 52 patients (86.7%) and wide local excision with axillary dissection in 8 patients (13.3%), the age ranged from 30 to 70 years with a mean of  $45.7 \pm 9.4$ ; and a median of 45 years. 26.7% were 40 years or younger, 43.3% were 41 to 50 years, 20% were 51 to 60 years, 6.7% were 61 to 70 years, and 3.3% were older than 70 years. There were 56 female (93.3%) and 4 male (6.7%). Tumors were more common in left breast (70%).

The tumor size ranged from 1.5 cm to 7 cm, with the median of 3 cm and mean of  $3.3 \pm 1.5$  cm. All patients had invasive duct carcinoma; 44 (73.3%) classical variant, 6 (10%) medullary carcinoma, 6 (10%) intraductal carcinoma with microinvasion and 4 (6.7%) intracystic invasive papillary adenocarcinoma. Tumors were low grade (G1) only in 6.7% while 60% were GII and 23.3% were GIII.

Residual tumors at lumpectomy cavity were present in 22 patients (36.7%). Factors associated with the presence of residual tumors are shown in Table 1. Residual tumor is present more frequently with the classical variant of invasive duct carcinoma, larger tumors and narrow margins. Margins less than 5 mm had residual tumors in 90.9% of cases. Tumors larger than 2.5 cm in diameter showed residual disease in 52.9% of cases. The median size of tumors with no residual disease in the lumpectomy cavity is 2 cm while the median size of tumors that had residual disease is 4 cm with significant  $p$  value Table 2.

The other independent factors as age, sex, laterality and grade of tumor had no statistically significant effect on residual tumor.

Follow up of patients revealed no cases of local recurrence; neither after mastectomy nor conservative breast surgery. Eight patients (13.3%) developed distant metastasis, lung (4); bone (4); liver (2); and pleural effusion (2).

**Table 1. Factors influencing the presence of residual disease.**

	No Residual Disease	Positive Residual	P value	Odds Ratio (95% CI)
<b>Surgical Margin</b>				
< 0.5 cm	2 (9.1%)	20 (90.9%)		180
≥ 0.5 cm	36 (94.7%)	2 (5.3%)	< 0.001	(23.5-1377.1)
<b>Pathological Type</b>				
IDC	24 (54.5%)	20 (45.5%)		5.8
Others	14 (87.5%)	2 (12.5%)	0.019	(1.2-28.8)
<b>Tumor size</b>				
> 2.5 cm	16 (47.1%)	18 (52.9%)	0.003	6.2
≤ 2.5 cm	22 (84.6%)	4 (15.4%)		(1.8-21.8)

## DISCUSSION

In this sample of women undergoing surgery after lumpectomy for invasive breast cancer, 22 patients (36.7%) had residual tumor at the lumpectomy cavity.

It was observed that; breast carcinoma occur at an early age than in the literature as 70% of the cases were less than 50 years and the median age was 45 year. This is comparable to the study done by Omar et al on Egyptian patients with breast cancer and found that the median age was 46 year, one decade earlier than in Europe and North America, and that most of the patients were premenopausal.<sup>(12)</sup>

It was also observed that; the incidence of residual tumor at the lumpectomy cavity is more common with large tumors, and with narrow safety margin, and that BCT could be done safely in patients treated first by excisional biopsy then proceeding to definitive treatment in the form of wide local excision and axillary dissection.

The concept that patients with Tx breast carcinoma after lumpectomy is better to undergo mastectomy due to field contamination is changed and studies has demonstrated that a microscopic tumor-margin width criterion of <2 mm is associated with a high risk of residual disease, and this risk decreases progressively for each additional millimeter of margin obtained. Obtaining a preoperative diagnosis of breast cancer and then

attempting to achieve wider therapeutic margins at the time of operation can considerably reduce the risk of residual disease.<sup>(13)</sup>

Most studies analyzing margin status consider a tumor margin distance of <1 mm<sup>(14-19)</sup> or <2 mm<sup>(20-21)</sup> to represent a compromised margin. The importance of tumor margin distance is underscored by substantial evidence that positively involved margins constitute a highly significant predictor of local recurrence (LR)<sup>(14,15,22-28)</sup> as a result of the increased probability of residual disease, and that a negative free margin is accepted to start adjuvant treatment. Singletary reviewed 34 studies on margin status and LR, in which a total of >15,000 patients were assessed, In 30 of 34 reviewed studies, persistent microscopic inadequate or macroscopic inadequate surgical margins were highly significant for LR compared with negative margins (p=0.0001), depicting the relevance of margin status on the outcome of BCT.<sup>(5)</sup> In a study by Jobsen et al. of approximately 2,300 patients, the LR rate was found to be related to positive margin status and young age.<sup>(29)</sup>

Our study proves that the more the safety margin of the tumor, the less the incidence to have residual tumor, and it was observed that safety margin less than 5 mm was associated with high incidence of residual tumor (90.0%), and this incidence decreased markedly with margins more than 5mm.

**Table 2. Size of tumors in cases with and with no residual disease.**

	No Residual Disease	Positive Residual	P value
<b>Tumor size (cm)</b>			
Median (Range)	2.0 (1.5-7.0)	4.0 (2-7.0)	0.001

It was also observed that the incidence of residual tumors occur more frequently with large tumors and tumors less than 2 cm were associated with no residual tumor while tumors more than 4 cm were usually associated with residual tumor.

Clinically, predictors of residual disease may be more important than predictors of compromised margins. The studies that have tried to correlate primary tumor characteristics with the risk of residual disease have identified tumor size,<sup>(20,30,31)</sup> nodal positivity,<sup>(20,32)</sup> grade,<sup>(30)</sup> method of detection,<sup>20</sup> and EIC<sup>(23,32,33)</sup> as factors associated with residual carcinoma. Young age was also noted as a risk factor for residual disease in studies by Smitt et al.<sup>(23)</sup> and Wazer et al.<sup>(21)</sup> It has been suggested that this may be a result of an attempt by surgeons to conserve more of the breast in younger women. With the 5-mm protocol, this may not be an adequate explanation for this finding.<sup>(22)</sup>

We did not find in this study that age, sex, and grade has an effect on residual disease. This is explained by the 5-mm protocol, and that usually 5mm as a safety margin is adequate to have a negative margin with no residual disease.

The statistically significant factors that had an effect on residual tumors were; size, histology, and safety margin of the primary tumor.

In conclusion: We believe that, according to this study, that not all patients with Tx breast cancer need to undergo mastectomy; Breast conserving therapy is still a valid option provided that a wide safety margin is achieved in the final treatment.

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