

Reoperation Rate Post Breast Conservative Surgery. How to be Reduced?

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ABSTRACT

Background: Reoperation following breast conservative surgery for breast cancer patients is not uncommon. Patients who undergo breast-conserving surgery (BCS) may require reoperation to obtain clear margins, which causes delays in adjuvant treatment and poor aesthetic results. However, patient and treatment-related factors associated with re-excision are not well defined. The aim of this study was to evaluate factors affecting reoperation rate of breast conservative surgery. **Methods :** We surveyed all women undergoing breast conserving surgery between March 2011 to July 2015 at Ain Shams University Hospitals and 2 private hospitals in Jeddah regard their breast disease (n =218). The medical records were reviewed to determine the rate of reoperations, which was done following BCS, and to obtain patient age, tumor size, radiological findings and tumor pathology. **Results:** In this study, 74.4% of women required only breast conservative surgery once, and 25.6% required reoperation following an initial attempt at BCS where 76.8% of them required re-excision lumpectomy and 23.2% required a mastectomy. Factors significantly correlated with reoperation post breast conservative surgery were the ductal pathology, tumor size, and multicentric or multifocal tumor. **Conclusions:** Re-operation is not uncommon, and is significantly correlated with ductal pathology, tumor size and multicentric or multifocal tumor as radiological findings. Attention to these risk factors can improve the quality of care delivered to BCS patients by decreasing the cost and morbidity associated with multiple re-excision procedures.

Keywords: Breast-conserving surgery-Reoperation, Breast cancer.

INTRODUCTION

The choice of breast conservative surgery is preferred surgical treatment over mastectomy for women with early breast cancer. It depends upon many factors as tumor size, the size of the breast, tumor pathology and extent of cancer^(1,2). Primary breast conserving surgery may result in incomplete excision of cancer or inadequate clearance margins, which both require women to have reoperation to the breast⁽³⁾. Therefore, women who have positive surgical margins following BCS are advised to undergo reoperation of the breast, either re-excision of lumpectomy cavity or mastectomy prior to adjuvant therapy^(4,5). Reoperation after breast conserving surgery has various undesirable consequences as it may delay adjuvant treatment and it is associated with increased rates of local and distant recurrence⁽⁶⁾. This is usually done as soon as possible to get elimination of all gross, microscopic disease and residual cancer in the surgical bed following lumpectomy which increases the risk of future recurrence⁽⁷⁾. Preoperative chemotherapy may reduce the size

of the tumor to allow efficient breast conservative surgery, but a slightly higher risk of local recurrence exists compared with mastectomy^(8,9). It is important to identify factors associated with reoperation in order for clinicians to adjust their treatment approach and reduce a load of such procedures on the health care system due to associated costs and morbidity⁽¹⁰⁾. The aim of this study is to evaluate factors affecting reoperation rate of breast conservative surgery.

PATIENTS AND METHODS

Between March 2011 to July 2015 all women (n=218 patients), who underwent breast conservative surgery as well as subsequent breast surgeries were collected at Ain Shams University Hospitals in Egypt and two private hospitals in Jeddah, KSA.

The obtained data were included patient age, radiological findings, tumor size, operative report, and tumor pathology. We limited the definition of reoperation to procedures done within three months to avoid inclusion of operations done for early recurrence. Patient age was categorized into

the following groups: less than 40 years, 41-60 years and more than 60 years. The size of the tumor was evaluated as less than 2cm, 2-4 cm, and more than 4cm. Other factors obtained from medical report related to patient disease as the presence of microcalcifications in breast imaging, Multifocal or multicentric disease were identified. Tumor pathology was categorized as ductal, lobular or other tumor histopathology. The ethical approval was obtained from our hospital review board.

Statistical Methodology and Analysis:

Analysis of data was done by IBM computer using SPSS (statistical program for social science version 16) as follows:

- Description of quantitative variables as mean, SD and range
- Description of qualitative variables as number and percentage
- Chi-square test was used to compare qualitative variables between groups.
- Unpaired t-test was used to compare two groups as regard quantitative variable ⁽¹¹⁾

P value >0.05 insignificant

P<0.05 significant

P<0.001 highly significant

RESULTS

Women who underwent BCS at the mentioned hospitals between March 2011 and July 2015 were included in this study (n= 218 patients). The mean age was 51.7±8.5 years (range 30-75years) as shown in table (1).

162 patients (74.4%) underwent breast conservative surgery once and got completely cured, while 56 patients (25.6%) underwent reoperation either re-excision lumpectomy or mastectomy. From those patients who require reoperation, 13 patients (23.2%) underwent mastectomy while 43 patients (76.8%) underwent re-excision lumpectomy. Moreover, 39 patients (90.7%) from those need re-excision lumpectomy got complete cure while 4 patients (9.3%) underwent further mastectomy as shown in table (2).

The relation between reoperation and various variable factors such as patient age, tumor size, multicentric or multifocal, tumor pathology and micro-calcification were discussed in table ⁽³⁾.

The mean age for the patients who underwent reoperation (reoperation group) was 50±4.6 years,

while it was 52±7 years in the patients that didn't undergo reoperation (non-reoperation group) with no significant difference. As regard the tumor size, there was a statistically significant difference between the two groups as the *t* value was 47 and the *P* value was 0.000HS. When the tumor size was less than 2 cm, no reoperation was needed in 65 patients (40.1%), while it was needed in 11 patients (19.6%). Also, when the tumor size measure 2-4 cm, 68 patients (41.9%) didn't undergo reoperation while 18 patients (32.1%) underwent reoperation. In contrast to that, in tumor size more than 4 cm, 27 patients (48.2%) underwent reoperation, while 29 patients (17.9%) did not.

17 patients (40.47%) who had evidence of multicentricity or multifocality underwent reoperation, while 25 patients (59.52%) didn't undergo reoperation. But if there was no multicentricity or multifocality, 39 patients (22.15%) underwent reoperation while 137 patients (77.84%) didn't undergo reoperation. The *t* value was 5.3 and *P* value was 0.02 S which is statistically significant. Concerning tumor histopathology, the *t* value was 12.2 and *P* value was 0.04S which was statistically significant. In ductal pathology, 41 patients (73.3%) underwent reoperation, however 100 patients (61.7%) didn't undergo reoperation. In comparison, in lobular pathology, 14 patients (25%) underwent reoperation, but 49 patients (30.2%) did not. Lastly, only one patient (1.7%) with other pathology underwent reoperation (table 3).

As regard to micro-calcifications there was no significant difference detected between the reoperation and non-reoperation groups (table 3).

Table (4): shows relation between mastectomy and different variables.

The mean age in group of patients who underwent mastectomy was 51±4.2 years, while in the other group it was 53±3.5 years with no significant difference. As regards the tumor size, there was a significant difference between mastectomy and non-mastectomy groups as the *t* value was 29 and *P* value was 0.000HS. If the tumor size was less than 2cm, one patient (1.32%) was required mastectomy. But, if the tumor size was between 2-4 cm and more than 4cm, 5 patients (5.82%) and 11 patients (19.64%) underwent mastectomy respectively (table 4). When the tumor was multicentric or multifocal, 13 patients (30.95%) underwent mastectomy

while 29 patients (69.05%) did not. But when it was not multicentric or multifocal, 4 patients (2.27%) underwent mastectomy while 172 patients (97.72 %) did not undergo mastectomy with a significant difference as the *t* value was 23 and *P* value was 0.000. HS. With a tumor pathology factor there was significant difference as the *t* value was 27 and *P* value was 0.000HS as a group of 12 patients (17.15%) with lobular pathology underwent mastectomy while 58 patients (82.85%) was not submitted to mastectomy. In comparison with ductal pathology group 5 patients (3.74%) underwent mastectomy and other pathology group where mastectomy was not done in 129 patients (96.26%) and 14 patients (100%) respectively (table 4).

15 patients (11.02%) with microcalcification and 2 patients (2.44%) without microcalcification underwent mastectomy while, 121 patients (88.98%) with microcalcification and 80 patients (97.56%) without microcalcification did not undergo mastectomy.

Table (1): Distribution of the studied group as regard general data

<i>Variables</i>	<i>Age</i>
Mean ± SD	51.7±8.5
Range	30 - 75

Table (2): Distribution of the studied group as regard type of surgery

<i>Variables</i>	<i>No</i>	<i>%</i>
Conservative surgery	218	100%
Complete cure	162	74.4%
Re-surgery	56	25.6%
Mastectomy	13	23.2%
Re excision	43	76.8%
Final outcome of re-excision		
Complete cure	39	90.7%
mastectomy	4	9.3%

This table shows that 74.4% of the studied cases had complete cure.

Table (3): Relation between re-surgery versus different variables using chi-square test.

<i>Variables</i>	<i>Re-surgery</i>		<i>t</i>	<i>P</i>
	No	Yes		
Age	52±7	50±4.6	0.58	0.40NS#
Size			47	0.000HS
<2	65(40.1%)	11(19.6%)		
2-4	68(41.9%)	18(32.1%)		
>4	29(17.9%)	27(48.2%)		
Multicentric			5.3	0.02S
No	137(77.84%)	39(22.15%)		
Yes	25(59.52%)	17(40.47%)		
Pathology			12.2	0.04S
Ductal	100(61.7%)	41(73.3%)		
Lobular	49(30.2%)	14(25%)		
Others	13(8.1%)	1(1.7%)		
Microcalcifications			9.5	0.03S
No	69(42.5%)	12(21.4%)		
Yes	93(57.1%)	44(18.6%)		

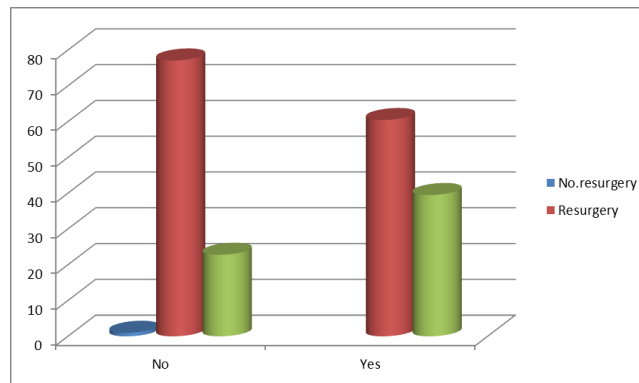


Figure (1): Show relation between tumor size and reoperation in form of re excision biopsy or mastectomy

Table (4): Relation between mastectomy versus different variables

Variables	Mastectomy		t	P
	Yes	No		
Age	53±3.5	51±4.2	0.89	0.30NS#
Size			29	0.000HS
<2	75(98.68%)	1(1.32%)		
2-4	81(94.18%)	5(5.82%)		
>4	45(80.35%)	11(19.64%)		
Multicentric			23	0.000HS
No	172(97.72%)	4(2.27%)		
Yes	29(69.05%)	13(30.95%)		
Pathology			27	0.000HS
Ductal	129(96.26%)	5(3.74%)		
Lobular	58(82.85%)	12(17.15%)		
Others	14(100%)	0		
Microcalcifications			2.3	0.40NS
No	80(97.56%)	2(2.44%)		
Yes	121(88.98)	15(11.02%)		

This table shows significant difference between both groups as regard multicentric tumor which more frequent with redo and size >4cm in addition to lobular pathology by using chi-square test.

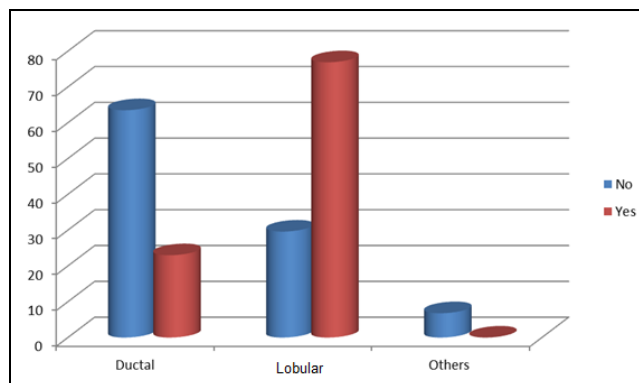


Fig. (2): Show relation between mastectomy and pathology type.

DISCUSSION

Reoperation following breast conserving surgery for breast cancer can result in a poorer cosmetic outcome compared with mastectomy, and it proves that reoperation is associated with increased rates of local and distant recurrence^(12,13).

This study has identified several significant factors that may place BCS patients at an increased risk for multiple excisions. Attention to those factors that increase the risk for multiple excisions can improve the care delivered to BCS patients by decreasing the financial and health problems associated with multiple re-excision procedures. In this sample of women underwent BCS, 74.4% of study cases had complete cure after the initial attempt of breast conservative surgery. Nearly 25.6% of these women required reoperation either re-excision lumpectomy or mastectomy where 76.8% of this group underwent re-excision lumpectomy while 23.2% of them underwent mastectomy. Women who had tumors showed ductal pathology were more likely to undergo re-excision lumpectomy compared with others who had tumors with lobular pathology. In addition, if the tumor size was more than 4 cm, there was more liability for re-excision lumpectomy. Finally, our result proved that multifocal or multicentric disease had a significant effect on reoperation either re-excision or mastectomy. We also observed an increased risk of mastectomy for a woman with lobular tumors, tumor size more than 4cm and multicentric character. A lobular disease is associated with difficulty to appreciate the full extent of the disease on a physical examination or mammography^(14,15). Additionally, lobular tumors have the tendency to be larger tumors at presentation further increasing the risk of BCS failure⁽¹⁶⁾.

Although previous authors have described a correlation between positive margins and larger tumor size, larger tumor size adds more difficulties upon procedure for surgeons attempting to preserve the breast⁽¹⁷⁾. Reported reoperation rates after primary breast conserving surgery vary considerably. Some centers series found rates varying from 17% to 68%⁽¹⁸⁻²¹⁾. The UK NHS Breast Screening Program reported a 22% therapeutic reoperation rate for invasive disease and a 26% rate for isolated non-invasive

disease among a sample of UK surgeons in 2007-2008⁽²²⁾. Overseas, a study from the Netherlands, which combined data from 16 hospitals on 961 patients reported a reoperation rate of 28.9%, around 50% of these reoperations were mastectomies⁽²³⁾. Another study using data on 2206 women who had invasive disease from four specialized centers in the United States, reported that 23% of women had one reoperation, 9% had two reoperations, and 1% had three reoperations⁽²⁴⁾. A study from Germany of 565 women reported an overall reoperation rate of 21.4% and 29% for women with and without an in situ component⁽²⁵⁾. All those previous results are comparable with our results.

The choice between breast-conserving surgery and mastectomy, therefore, depends on balancing the need to achieve complete excision of the tumor with the patient's preferences about cosmetic appearance⁽²⁶⁾. Our results highlight the importance of awareness about reoperation rate after primary breast conserving surgery when choosing their primary treatment. We focused on breast reoperation rates and did not include subsequent operations to the axilla, and we required primary and subsequent procedures to have the same laterality to avoid including contralateral procedures as reoperations.

CONCLUSIONS

Reoperation after breast conservative surgery is not uncommon and is significantly correlated with tumor pathology, tumor size, multicentric or multifocal tumor as radiological findings. Attention to these risk factors can improve the quality of care delivered to BCS patients by decreasing the cost and morbidity associated with multiple re-excision procedures.

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