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Complications of Therapeutic Reduction Mammoplasty in Management of Breast Cancer among Egyptian Ladies in Delta Region

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Abstract

Background: Surgical management of cancer patients with macromastia holds some issues for surgeons. There are variable oncoplastic options that can be offered for management of each tumor site in relation to the size of the breast. Oncoplastic breast surgery may also include a contralateral reduction mammoplasty to attain symmetry, which may increasethe probability of wound complications.

Aim of Study: The aim of this study were to determine the frequency and types of complications in Egyptian Ladies who underwent therapeutic reduction mammoplasty for breast cancer and detection of possible risk factors and methods of management.

Patients and Methods: This study was a retrospective study implemented in Mansoura oncology center, where the data of all therapeutic mammoplasty patients between July 2017 till Janurary 2020, were analyzed.

We abstracted the complications that occurred to those patients who underwent therapeutic reduction mammoplasty. Also, follow-up visits and survival were recorded.

Results: A total of 87 women underwent 141 oBCS (54 cases underwent a contra lateral symmetrization). Complications occurred in 29 cases (around 33% of the cases). Risk factors for complications occurrence was DM, HTN and nodal infiltration with no statistical significance (p=0.23, 0.47, 0.56 respectively).

Conclusion: While oncoplastic breast surgeries may show a higherrate of complications, there were no significant delay to adjuvant therapy as well as risk of local recurrence.

Key Words: *Oncoplasty – Therapeutic mammoplasty – Breast conservative surgery.*

Introduction

BREAST conservation is considered now a standard of care for a wide range of cases with safety comparable to modified radical masyectomy [1,2]. But surgical management of cancer patients with macromastia holds some issues for surgeons. The main concern is to do a wider safe excision to get both oncologic safety and a good aesthetic outcome [3].

Oncoplastic surgery is an innovation in breast surgery to combine wide local excision of malignant mass with plastic techniques to improve the final shape of the breast without affection of oncologic outcome [4].

There arevariable oncoplastic options that can be offered for management of each tumor site in relation to the size of the breast [3].

Oncoplastic breast surgery may also include a contralateral reduction mammoplasty to attain symmetry, which may increasethe probability of wound complications [5]. As the literature continues to evaluate oncologic and long-term aesthetic outcomes in oncoplastic breast surgery, the aim of this study were to determine the frequency and types of complications in Egyptian Ladies who underwent therapeutic reduction mammoplasty for breast cancer and detection of possible risk factors and methods of management.

Patients and Methods

Our study was a retrospective study implemented in Mansoura Oncology Center, where the data of all therapeutic mammoplasty patients between July 2017 till Janurary 2020, were analyzed.

We abstracted the complications that occurred to those patients who underwent therapeutic reduction mammoplasty. Also, follow-up visits and survival were recorded.

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Inclusion criteria:

All patients with medium-sized to large-sized breasts with early breast cancer admitted to Oncology Center, Mansoura University (OCMU) and suitable for breast conservation enrolled in this study.

Exclusion criteria: Patients with multicentric carcinoma, central breast lesions, inflammatory carcinoma and failure to achieve negative margins after repeated excision were excluded from the study.

Results

A total of 87 women underwent 141 oBCS (54 cases underwent a contra lateral symmetrization. Patient demographics and tumour characteristics are shown in Tables (1,2).

Table (1): Patients characteristics and their clinical data.

	N=87	%
Age at diagnosis/years	46.70±9.15 (30.0-73.0)	
Family history:	N=85	
–ve	79	92.9
+ve	6	7.1
Degree of relatives:	n=9	
First degree	6	66.7
Second degree	1	11.1
Third degree	2	22.2
DM:		
–ve	77	88.5
+ve	10	11.5
Hypertension:		
–ve	67	77.0
+ve	20	23.0
IHD:		
–ve	84	96.6
+ve	3	3.4
Smoking:		
Non-smoker	87	100.0
BMI (Kg/m2)	37.89±5.12 (30.5-50.0)	
Clinical presentation:		
Mass	86	98.9
Skin manifestation	1	1.1
Cup size:	n=72	
B	7	9.7
C	29	40.3
D	33	45.8
B/C	2	2.8
G	1	1.4
Ptosis grade:	n=72	
a	5	6.9
b	33	45.8
c	28	38.9
d	6	8.3
Side:		
Right	42	48.3
Left	45	51.7

Table (2): Tumor characters.

	N=87	%
Neo-adjuvant therapy type:		
–ve	72	82.8
Hormonal	1	1.1
Chemotherapy	14	16.1
Number of cycles of adjuvant therapy:		
Median (IQR)	4.0(3.0-6.0)	
Minimum-maximum	(2.0-8.0)	
Lines of chem and hormonal therapy:	n=12	
AC	6	50.0
EC	1	8.3
FAC	4	33.3
Femara	1	8.3
Site of mass:	n=83	
UOQ	51	61.4
UIQ	14	16.9
Retroare	1	1.2
LOQ	8	9.6
LIQ	7	8.4
At 12 o'clock	2	2.4
Multi-centricity	0	0.0
Multi-focality	n=84 5	6.0
A CR:	n=15	
A	4	26.7
B	5	33.3
C	5	33.3
D	1	6.7
Sonomamagraphy:	n=84	
–ve	3	3.6
+ve	81	96.4
MRI:	n=84	
–ve	77	91.7
+ve	7	8.3
Response to neo-adjuvant therapy:	n=14	
Stationary	4	28.6
Partial	7	50.0
Complete	3	21.4

The oncoplastic techniques used were inferior pedicle 54.4%, superior pedicle and bi pedicled 12.7% each, medial, superior media l (the rest o f the cases).

We used the wise pattern in approxamitely 80% of the cases while used the vertical scar mammoplasty in the rest of the cases.

Complications occurred in 29 cases (around 33% of the cases). Risk factors for complications occurrence was DM, HTN and nodal infiltration with no statistical significance (p=0.23, 0.47, 0.56 respectively). Most of them was managed conservatively while repeat surgical procedure was per-

formed in 16 cases (18% of the cases). No statistical significance was noted for eitherlocal recurrence or overall survival for complicated cases (*p*-value was 0.29 and 0.22 respectively).

Table (3): Risk factors for complications.

	Complications		Test of significance
	–ve N=58	+ve N=29	
Age at diagnosis/ years	46.24±9.80	47.62±7.78	*t*=0.66 *p*=0.511
Family history:			
–ve	54 (96.4)	25 (86.2)	FET
+ve	2 (3.6)	4 (13.8)	*p*=0.174
DM:			
–ve	53 (91.4)	24 (82.8)	Ξ^2=1.41
+ve	5 (8.6)	5 (17.2)	*p*=0.235
Hypertension:			
–ve	46 (79.3)	21 (72.4)	Ξ^2=0.519
+ve	12 (20.7)	8 (27.6)	*p*=0.471
IHD:			
–ve	55 (94.8)	29 (100.0)	FET
+ve	3 (5.2)	0 (0.0)	*p*=0.55
BMI (Kg/m^2)	37.21±5.12	38.77±5.19	*t*=0.821 *p*=0.419
Clinical presentation:			
Mass	57 (98.3)	29 (100.0)	FET
Skin manifestation	1 (1.7)	0 (0.0)	*p*=1.0
Cup size:			
B	5 (10.2)	2 (8.7)	MC
C	20 (40.8)	9 (39.1)	*p*=0.932
D	22 (44.9)	11 (47.8)	
B/C	1 (2.0)	1 (4.3)	
G	1 (2.0)	0 (0.0)	
Ptosis grade:			
a	4 (8.2)	1 (4.3)	MC
b	20 (40.8)	13 (56.5)	*p*=0.58
c	20 (40.8)	8 (34.8)	
d	5 (10.2)	1 (4.3)	
Neo-adjuvant therapy type:			
–ve	49 (84.5)	23 (79.3)	MC
Hormonal	1 (1.7)	0 (0.0)	*p*=0.567
Chemotherapy	8 (13.8)	6 (20.7)	
Number of cycles of Neo-adjuvant therapy:			
Median (IQR)	4.0 (3.0-6.0)	6.0 (6.0-6.0)	z=0.66
Minimum-maximum	(2.0-8.0)	(6.0-6.0)	*p*=0.51
Multi-focality	3 (5.4)	2 (7.1)	FET *p*=1.0
ACR:			
A	1 (11.1)	3 (50.0)	MC
B	4 (44.4)	1 (16.7)	*p*=0.157
C	4 (44.4)	1 (16.7)	
D	0 (0.0)	1 (16.7)	

Table (3): Count.

	Complications		Test of significance
	–ve N=58	+ve N=29	
Sonomamagraphy:			
–ve	3 (5.4)	0 (0.0)	FET
+ve	53 (94.6)	28 (100.0)	*p*=0.547
MRI:			
–ve	52 (92.9)	25 (89.3)	FET
+ve	4 (7.1)	3 (10.7)	*p*=0.681
Response to neo-adjuvant therapy:			
Stationary	4 (40.0)	0 (0.0)	MC
Partial	5 (50.0)	2 (50.0)	*p*=0.155
Complete	1 (10.0)	2 (50.0)	
Type of pedicle used:			
Superior	5 (9.8)	5 (17.9)	MC
Superior-medial	1 (2.0)	2 (7.1)	*p*=0.391
Medial	8 (15.7)	4 (14.3)	
Inferior	31 (60.8)	12 (42.9)	
Inferio-medial	0 (0.0)	1 (3.6)	
Bipedicle	6 (11.8)	4 (14.3)	
Types of pattern:			
Wise Pattern	35 (77.8)	18 (85.7)	Ξ^2=0.57
Vertical	10 (22.2)	3 (14.3)	*p*=0.45
Contralateral surgery:			
–ve	24 (41.4)	9 (31.0)	Ξ^2=0.879
+ve	34 (58.6)	20 (69.0)	*p*=0.482
SLNB:			
–ve	52 (89.7)	27 (93.1)	Ξ^2=0.275
+ve	6 (10.3)	2 (6.9)	*p*=0.60
Number of positive LN:			
1	5 (83.3)	2 (100.0)	FET
4	1 (16.7)	0 (0.0)	*p*=1.0
Axillary clearance:			
–ve	3 (5.2)	1 (3.4)	FET
+ve	55 (94.8)	28 (96.6)	*p*=1.0
Frozen of safety:			
Free	50 (90.9)	23 (92.0)	Ξ^2=0.026
Infiltrated one margin	5 (9.1)	2 (8.0)	*p*=0.87
Hospital stay/days:			
Median (IQR)	2.0 (1.0-4.0)	5.0 (2.0-7.0)	z=2.33
Minimum-maximum	(0.0-9.0)	(2.0-16.0)	*p*=0.02*
Pathology type:			
Mucinous	3 (5.2)	0 (0.0)	MC
Invasive micropapillary	1 (1.7)	0 (0.0)	*p*=0.045*
ILC	0 (0.0)	3 (10.3)	
IDC	54 (93.1)	26 (89.7)	

Table (3): Count.

	Complications		Test of significance
	–ve N=58	+ve N=29	
Pathology grade:			
I	1 (2.0)	0 (0.0)	MC
II	42 (85.7)	22 (91.7)	p=0.677
III	6 (12.2)	2 (8.3)	
Tumour size/mm	30.0 (21.5-35.0) (10.0-70.0)	25.0 (25.0-50.0) (25.0-70.0)	z=0.53 p=0.599
LN harvest	14.0 (10.25-18.0) (1.0-33.0)	13.0 (10.0-16.0) (7.0-20.0)	z=0.235 p=0.815
LN infiltrated	3.0 (2.0-6.0) (1.0-18.0)	7.0 (3.0-11.0) (3.0-13.0)	z=0.574 p=0.566
T stage:			
T0	5 (8.6)	2 (6.9)	MC
T1	6 (10.3)	2 (6.9)	p=0.942
T2	43 (74.1)	23 (79.3)	
T3	4 (6.9)	2 (6.9)	
N stage:			
N0	34 (58.6)	17 (58.6)	MC
N1	11 (19.0)	8 (27.6)	p=0.698
N2	9 (15.5)	3 (10.3)	
N3	4 (6.9)	1 (3.4)	
Y:			
–ve	51 (87.9)	25 (86.2)	χ^2=0.052
+ve	7 (12.1)	4 (13.8)	p=0.82
AJCC staging:			
1A	3 (5.7)	3 (11.5)	MC
1b	1 (1.9)	0 (0.0)	p=0.789
IIA	25 (47.2)	10 (38.5)	
IIB	12 (22.6)	8 (30.8)	
3a	8 (15.1)	4 (15.4)	
3C	4 (7.5)	1 (3.8)	
Biological type:			
HER2 enriched	3 (5.9)	1 (3.7)	MC
Luminal A	29 (56.9)	13 (48.1)	p=0.197
Luminal B	16 (31.4)	7 (25.9)	
Triple negative	3 (5.9)	6 (22.2)	
Use of adjuvant chemotherapy:			χ^2=0.045
No	9(15.5)	4(13.8)	p=0.832
Yes	49 (84.5)	25 (86.2)	
Use of adjuvant hormonal therapy:			
No	12 (22.6)	10 (38.5)	
Yes	41 (77.4)	16 (61.5)	=0. 47

Discussion

Recent improvements introduced in breast cancer managementin the past decade resulted in significant improvement in survival rates. Thus, breast cancer may be considered in many cases now as a chronic disease with more focus on quality of life issues [6].

Our study is a cohort of cases that had an OPS evaluating short-term complications, long term morbidity, time to adjuvant treatment, rate of positive margins, and risk of recurrence.

Oncoplastic techniques usually involves generous skin excision and wider excision margins without comporising the aesthetic outcome Hence, this represents the main difference than the conventional conservative breast surgery [7].

And in the literature, Excision volume has been recorded as the single most important factor to predict both surgical outcomes and deformities [8].

In 2018, the Oncoplastic Breast Consortium consensus expert panel listed the predisposing factors for severe mastectomy skin flap necrosisas follow; location of the incision, retractors induced pressure during surgery, skin flap thickness, and insufficient surgeon experience as relevant risk factors [9-11], all of which can be avoided. In our study, the main predictor of surgical complications were co morbidities (DM and HTN) and nodal infiltration.

Although a bit higher complications was reported with OPS, this did not cause any delay of adjuvant treatment delivery when compared to conventional conservative breast surgery [12].

Regarding oncological safety, our work showed no differences in tumor recurrence, suggesting an overall safety throughout the different surgery groups.

Also, our results were coping with the majority of the current publications, showing no delay in the time to the start of adjuvant treatments [13-15].

The main dilemma of this study was that it was retrospective observational cohort study. These lection bias in this work was related to both patients and surgeons. Younger patients preferred more complicated OPS to have better cosmetic outcome. Surgeons on the other hand tend to perform more simple conservative breast surgeries in older patients with to minimize the risk of complications.

Conclusions:

While oncoplastic breast surgeries may show a higherrate of complications, there were no significant delay to adjuvant therapy as well as risk of local recurrence.

Conflict of Interests:

The authors declare that they have no competing interests.

References

1- FISHER B., ANDERSON S., BRYANT J., MARGOLESE R.G., DEUTSCH M., FISHER E.R., et al.: Twenty-year follow-up of a randomized trial comparing total mastectomy, lumpectomy, and lumpectomy plus irradiation for the treatment of invasive breast cancer. N. Engl. J. Med. [Internet]. Oct 17 [cited 2022 Oct 25], 347 (16): 1233-41. Available from: https://pubmed.ncbi.nlm.nih.gov/12393820/, 2002

2- VERONESI U., CASCINELLI N., MARIANI L., GRECO M., SACCOZZI R., LUINI A., et al.: Twenty-year follow-up of a randomized study comparing breast-conserving surgery with radical mastectomy for early breast cancer. N. Engl. J. Med. [Internet], Oct 17 [cited 2022 Oct 25]; 347 (16): 1227-32. Available from: https://pubmed.ncbi.nlm.nih.gov/12393819/, 2002.

3- CHENG C.W., DAS I.J. and STEA B.: The effect of the number of computed tomographic slices on dose distributions and evaluation of treatment planning systems for radiation therapy of intact breast. Int. J. Radiat. Oncol. Biol. Phys. [Internet], Aug 30 [cited 2022 Oct 25]; 30 (1): 183-95. Available from: https://pubmed.ncbi.nlm.nih.gov/8083113/, 1994.

4- CLOUGH K.B., LEWIS J.S., COUTURAUD B., FITOUSSI A., NOS C. and FALCOU M.C.: Oncoplastic techniques allow extensive resections for breast-conserving therapy of breast carcinomas. Ann. Surg. [Internet]. Jan 1 [cited 2022 Oct 25], 237 (1): 26-34. Available from: https://pubmed.ncbi.nlm.nih.gov/12496527/, 2003.

5- SILVA A.K., LAPIN B., YAO K.A., SONG D.H. and SISCO M.: The Effect of Contralateral Prophylactic Mastectomy on Perioperative Complications in Women Undergoing Immediate Breast Reconstruction: A NSQIP Analysis. Ann. Surg. Oncol. [Internet], Oct 15 [cited 2022 Nov 6], 22 (11): 3474-80. Available from: https://pubmed.ncbi.nlm.nih.gov/26001862/, 2015.

6- SIEGEL R.L., MILLER K.D. and JEMAL A.: Cancer statistics, 2016. CA Cancer J. Clin. [Internet]. Jan [cited 2022 Oct 11], 66 (1): 7-30. Available from: https://pubmed.ncbi.nlm.nih.gov/26742998/, 2016.

7- ANDERSON B.O., MASETTI R. and SILVERSTEIN M.J.: Oncoplastic approaches to partial mastectomy: An overview of volume-displacement techniques. Lancet Oncol [Internet]. Mar. 1 [cited 2022 Oct 10], 6 (3): 145–57. Available from: https://pubmed.ncbi.nlm.nih.gov/15737831/, 2005.

8- CLOUGH K.B., KAUFMAN G.J., NOS C., BUCCIMAZZA I. and SARFATI I.M.: Improving breast cancer surgery: A classification and quadrant per quadrant atlas for oncoplastic surgery. Ann. Surg. Oncol. [Internet]. May [cited 2022 Oct 13]; 17 (5): 1375-91. Available from: https://pubmed.ncbi.nlm.nih.gov/20140531/, 2010.

9- WEBER W.P., HAUG M., KURZEDER C., BJELIC-RADISIC V., KOLLER R., REITSAMER R., et al.: Oncoplastic Breast Consortium consensus conference on nipple-sparing mastectomy. Breast Cancer Res. Treat. [Internet]. Dec 1 [cited 2022 Oct 10]; 172 (3): 523-37. Available from: https://pubmed.ncbi.nlm.nih.gov/30182349/, 2018.

10- COLWELL A.S., TESSLER O., LIN A.M., LIAO E., WINOGRAD J., CETRULO C.L., et al.: Breast reconstruction following nipple-sparing mastectomy: Predictors of complications, reconstruction outcomes, and 5-year trends. Plast Reconstr Surg [Internet]. Mar [cited 2022 Oct 10]; 133 (3): 496-506. Available from: https://pubmed.ncbi.nlm.nih.gov/24572843/, 2014.

11- MATSEN C.B., MEHRARA B., EATON A., CAPKO D., BERG A., STEMPEL M., et al.: Skin Flap Necrosis After Mastectomy With Reconstruction: A Prospective Study. Ann Surg Oncol [Internet]. Jan 1 [cited 2022 Oct 10]; 23 (1): 257-64. Available from: https://pubmed.ncbi.nlm.nih.gov/26193963/, 2016.

12- TENOFSKY P.L., DOWELL P., TOPALOVSKI T. and HELMER S.D.: Surgical, oncologic, and cosmetic differences between oncoplastic and nononcoplastic breast conserving surgery in breast cancer patients. Am J Surg [Internet]. [cited 2022 Oct 10]; 207 (3): 398-402. Available from: https://pubmed.ncbi.nlm.nih.gov/24581764/, 2014.

13- RIETJENS M., URBAN C.A., REY P.C., MAZZAROL G., MAISONNEUVE P., GARUSI C., et al.: Long-term oncological results of breast conservative treatment with oncoplastic surgery. Breast [Internet]. [cited 2022 Oct 11]; 16 (4): 3 87-95. Available from: https://pubmed.ncbi.nlm.nih.gov/17376687/, 2007.

14- CAMPBEL E.J. and ROMICS L.: Oncological safety and cosmetic outcomes in oncoplastic breast conservation surgery, a review of the best level of evidence literature. Breast cancer (Dove Med. Press [Internet]. Aug 4 [cited 2022 Oct 11]; 9: 521-30. Available from: https://pubmed.ncbi.nlm.nih.gov/28831273/, 2017.

15- KRONOWITZ S.J., HUNT K.K., KUERER H.M., STROM E.A., BUCHHOLZ T.A., ENSOR J.E., et al.: Practical guidelines for repair of partial mastectomy defects using the breast reduction technique in patients undergoing breast conservation therapy. Plast. Reconstr. Surg. [Internet]. Dec [cited 2022 Oct 11]; 120 (7): 1755-68. Available from: https://pubmed.ncbi.nlm.nih.gov/18090737/, 2007.

دراسة المضاعفات الناتجة عن الإستئصال التحفظى التجميلى للثدى للسيدات المصريات المصابات بسرطان الثدى بمنطقة الدلتا

سرطان الثدى من أكثر السرطانات شيوعاً بين سيدات مصر، ومع تطر الجراحات، أصبح الهدف من الجراحة هو محاولة الحفاظ على الشكل الجمالى للثدى مع الحفاظ على الاستئصال الأمن للورم. وتعد السيدات ذوات الثدى الكبير من المرضى المعرضين للمضاعفات الجراحية خصوصاً المضاعفات الخاصة بالجروح. تلك المضاعفات التى قد تصبب ارقاً للطبيب المعالج خصوصاً أن تسببت فى تأخير موعد بداية العلاج المكمل أجريت هذه الدراسة بقسم الجراحة بمركز أورام المنصورة تم متابعة الحالات التى أجرت الاستئصال التحفظى التجميلى للثدى فى الفترة بين يوليو ٢٠١٧ وحتى يناير ٢٠٢٠ وذلك بأثر رجعى تم فى تلك الفترة إجراء تلك الجراحات على ٨٧ مريضة وتم متابعة تلك المريضات بالنسبة لمضاعفات ما بعد الجراحة، وفترة النقاهة إلى بداية العلاج المكمل، ونسب حدوث ارتجاع المرض موضعياً.

حدثت المضاعفات فى ٢٩ مريضة (٣٣٪) من المرضى. وأظهرت الدراسة أنه برغم إمكانية حدوث المضاعفات مع تلك الجراحات، إلا أنها لم تؤثر بشكل واضح على إكمال المرضى لعلاجهم المكمل أو على نسب ارتجاع المرض الموضعى.