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The Effect of Concomitant Conservative Breast Surgery with Reconstruction on Quality of Life of and Depression in Breast Cancer Patients

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ABSTRACT

Background: Mastectomy leads to moderate to severe degrees of depression and anxiety.

Objectives: This study aimed to evaluate the outcome of breast conservative surgery with breast reconstruction on the quality of life (QOL).

Patients & methods: The current retrospective study included 62 patients with T1, and T2 breast cancer who underwent modified radical mastectomy (MRM) or breast conservative surgery (BCS) with reconstruction. Evaluation of the quality of life, depression as well as post-operative complications was reported and compared.

Results: The current study included 62 female patients with mean age of 43.20 ± 4.49 and 44.36 ± 5.16 in groups A and B respectively. There was a significantly lower mean operative time (P value =0.001) in patients who underwent MRM. There was statistically significant beck depression inventory (BDI) scores in both groups with more improvement in BCS group. Both groups reported statistically significant improvement of psychological well-being, social well-being, and spiritual well-being after 6 months with significant improvement in group A.

Conclusion: Conservative breast surgery with reconstruction offers an oncologically safe alternative for modified radical mastectomy with less impact on the QOL and associated with less depression

Keywords: Cancer breast. Depression, QOL.

INTRODUCTION

Breast cancer is the most common disease to be diagnosed and the primary cause of cancer-related death for women globally [1]. Having a mastectomy causes anxiety and sadness that range from moderate to severe. When a woman with breast cancer undergoes surgery, breast loss can lead to depression. The theory that depression is mostly caused by accepting the potentially fatal implications of the diagnosis is supported by the equal distribution of depression among patients who had mastectomies and those who had lumpectomy [2, 3].

A depressive reaction to losing a breast and an expected sadness due to the possibility of a deadly outcome characterize post-mastectomy sadness [4]. The concept of breast cancer is altered by its care. Rather than the prognosis or handicap, the effect of the type of surgery appears to be mediated by the patient's experience of deformity and changes in sexual and social life. The level of dysfunction and the patient's usage of radiation therapy or chemotherapy had no independent psychological effects on female patients and their physical appearance, which can lead to depression and generally lower a woman's quality of life (QOL) [5].

A negative cosmetic result is more likely if more than 20% of the breast volume is removed [6]. The idea of integrating breast reconstruction with a distinct safety margin after tumor excision gave rise to oncoplastic breast surgery. These operations involve volume replacement or displacement techniques, with a distinct emphasis on prompt reconstruction to improve psychological outcomes [7]. In addition to constructing a mound on the chest wall, the goal of breast reconstruction utilizing various oncoplastic procedures is to achieve symmetry with the contralateral native breast [8].

Complete removal of the malignant tumor with negative resection margins is the ideal oncological result of conservative breast surgery because involved margins are strongly linked to local recurrence [9].

Wide resection, however, may lead to bilateral asymmetry or breast deformity, which could damage the cosmetic result. One benefit of oncoplastic breast surgery with volume replacement techniques is that partial breast reconstruction allows for both a large resection and a satisfactory cosmetic result [10].
In the case of early-stage breast cancer, BCS has quickly emerged as a significant substitute for mastectomy. This has happened as a result of its comparable survival rate when compared to modified radical mastectomy (MRM) and its potential for improved aesthetic results [11].

PATIENTS AND METHODS

The current retrospective study was conducted at General Surgery Department, Benha University Hospital and Benha teaching Hospital throughout the period from January 2020 to August 2023. Follow-up was planned for at least 6 months. Data collection included all patients with T1,T2 breast cancer who underwent MRM or BCS taking in consideration 1:1 ratio

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Exclusion criteria: Patients who received neoadjuvant chemotherapy to avoid the impact of chemotherapy-induced depression to make the evaluation valid.

The current study included 62 patients with BC who were allocated into two groups: Group A include 31 patients had CBS with breast reconstruction. Group B include 31 patients had MRM.

For all eligible patients detailed history was obtained and examination was done. Preoperative investigations included sonomammography, true cut biopsy and metastatic work up. MDT decision was considered.

Operative procedure:

- **Group A:** CBS and immediate reconstruction was done. Following wide local excision and axillary clearance, the safety margin was confirmed by frozen section and reconstruction was done using different techniques including latissimus dorsi flap (LD Flap) **(Figure 1)**, Grisotti technique **(Figure 2)**, lateral mammoplasty **(Figure 3),** batwing procedure **(Figure 4)** and round block techniques **(Figure 5).**
- **Group B:** MRM was done **(Figure 6)**.

Post-operative adjuvant therapy was completed for all patients.

Figure (1): Latissimus Dorsi Flap (LD Flap)

Figure (2): Grisotti technique.

Figure (3): Lateral Mammoplasty

Figure (4): Batwing technique.

Figure (5): Round block technique.

Figure (6): MRM

Outcomes and follow up:

The 1ry outcome was proper management of cases of breast cancer on the basis of oncological safety taking in consideration the aesthetic outcome with minimal postoperative complications. For assessment of the 1ry outcome, the operative time, hospital stay, intraoperative and postoperative complications were reported.

The 2 ry outcome was inducing minimal impact on the quality of life. For the 2 ry outcome, Beck Depression Inventory (BDI) and Quality of Life Instrument-Breast Cancer Patient Version (QOL-BC) questionnaires were used and both questionnaires were repeated at 3-months and 6-months after surgery.

BDI consisted of 21 items, each is awarded with a score ranging from 0 to 3. Total BDI score was range of 0-63: 1-10: normal, 11-16: mild mood disturbance, 17-20: borderline clinical depression, 21-30: moderate depression, 31-40: severe depression and > 40: extreme depression.

BDI ≥17 was considered as cutoff point [12].

(QOL-BC) is 46- items representing the four domains of quality of life including physical well-being, psychological well-being, social well-being and spiritual well-being. 0 = worst outcome and 10 = best outcome. The higher scores in each domain scale represent better health status [13].

Ethical Considerations: The study was conducted following the ethical perspectives of Helsinki Consideration. After approval of the study protocol from The Ethical and Research Committee, Benha University (RC: 2-10-2023). Written fully informed patients' consents were obtained.

Statistical analysis

Version 20 of SPSS Statistics was used to conduct the statistical analysis. A two-way mixed ANOVA was performed to compare the measured variables across the two groups and across different time periods. The participant's demographic data was subjected to the ANOVA test. While, number and percentage were employed to show nominal data, mean and standard deviation were utilized to express numerical data. $P \leq 0.05$ was set as the significance level.

RESULTS

The current study included 62 female patients with mean age of 43.20 ± 4.49 and 44.36 ± 5.16 years for group A and B respectively. Other sociodemographic data and tumor characteristics were illustrated in table (1).

Table (1): Sociodemographic data and tumor characteristics

Variable	Group A n=31 CBS	Group B n=31 MRM	P value
Age Mean ±SD	43.20±4.49	44.36±5.16	0.13
BMI Mean ±SD	29.12±.2.9	28.49±3.7	0.27
Comorbidities			
DM N(%)	4 (12.9%)	3 (9.7%)	0.089
HTN N(%)	2 (6.45 %)	2 (6.45 %)	1.00
IHD N(%)	1 (3.23%)	2 (6.45 %)	0.082
Tumor			
T1 N(%)	6 (19.4%)	5 (16.13%)	0.12
T2 N(%)	25 (80.6%)	26 (83.87%)	0.17

Table (2) showed that there was significant lower mean operative time (P value =0.001) in patients underwent MRM with no reported significant difference regards the postoperative complications and hospital stay.

Table (2): Operative data and postoperative complications

Variable	Group A n=31 CBS	Group B n=31 MRM	P value
Operative time Mean ±SD	219.28±22.725	123 .20±7.85	0.001*
Hospital stay Mean ±SD	2.98±0.87	2.74±0.79	0.14
Post operative complications			
hematoma	1 (3,23%)	1 (3,23%)	1.00
seroma	4 (12.9%)	3 (9.7%)	0.067
Wound infection	2 (6.45 %)	2 (6.45 %)	1.00
Wound dehiscence	1 (3,23%)	2 (6.45 %)	0.054

There was statistically significant BDI scores in both groups with more improvement in BCS group and this was reflected on decrease of the number of normal and mild mood changes of patients in both groups at 6 months specially in group A as presented in table (3).

Table (3): Preoperative and postoperative BDI data

Variables		Group A n=31 CBS	Group B n=31 MRM	P value
Normal (0-10) N(%)	Preoperative	1 (3.23%)	1 (3.23%)	1.00
	3 months post operative	12 (38.8%)	7 (22.6%)	0.001*
	6 months post operative	20 (64.5%)	9 (29 %)	0.001*
	Pre vs 6 months P value	0.001*	0.001*	
Mild mood change (11-16) N(%)	Preoperative	4 (12.9%)	3 (9.7%)	0.12
	3 months post operative	3 (9.7%)	3 (9.7%)	1.00
	6 months post operative	2 (6.45 %)	2 (6.45 %)	1.00
	Pre vs 6 months P value	0.001*	0.072	
Borderline clinical depression (17-20) N(%)	Preoperative	6 (19.4%)	7 (22.6%)	0.91
	3 months post operative	4 (12.9%)	6 (19.4%)	0.001*
	6 months post operative	2 (6.45 %)	5 (16.13%)	0.001*
	Pre vs 6 months P value	0.001*	0.79	
Moderate depression (21-30) N(%)	Preoperative	8 (25.8%)	7 (22.6%)	0.82
	3 months post operative	5 (16.13%)	5 (16.13%)	1.00
	6 months post operative	3 (9.7%)	8 (25.8%)	0.001*
	Pre vs 6 months P value	0.001*	0.87	
Severe depression (31-40) N(%)	Preoperative	8 (25.8%)	9 (29 %)	0.72
	3 months post operative	5 (16.13%)	7 (22.6%)	0.001*
	6 months post operative	3 (9.7%)	5 (16.13%)	0.001*
	Pre vs 6 months P value	0.001*	0.001*	
Extreme depression (>40) N(%)	Preoperative	4 (12.9%)	4 (12.9%)	1.00
	3 months post operative	2 (6.45 %)	3 (9.7%)	0.04*
	6 months post operative	1 (3.23%)	2 (6.45 %)	1.00
	Pre vs 6 months P value	0.001*	0.023*	

Table (4) reported statistically significant improvement of the psychological well-being, social well-being and spiritual well-being after 6 months when compared to the preoperative status in group A. Both groups reported statistically significant improvement of the psychological well-being, social well-being and spiritual well-being after 6 months with significant improvement in group A.

Table (4): Comparison between QOL-BC items in both groups

Variables		Group A n=31 CBS	Group B n=31 MRM	P value
Physical well being Mean± SD Range (0-80)	Preoperative	71.23 ±4.1	70.22± 3.87	0.81
	3 months post operative	57.8 ±3.21	53.8± 4.22	0.17
	6 months post operative	72.54 ±3.66	69.27± 4.66	0.78
	Pre vs 6 months P value	0.912	0.94	
Psychological well being (Mean± SD Range (0-220)	Preoperative	74.34± 8.66	71.87±7.92	0.68
	3 months post operative	71.87± 9.22	72.22± 8.27	0.93
	6 months post operative	165.6± 12.88	83.22±7.9	0.001*
	Pre vs 6 months P value	0.001*	0.061	
Social well being Mean± SD Range (0-90)	Preoperative	72.22± 5.87	69.88± 6.24	0.83
	3 months post operative	55.34± 4.65	46.12± 3.22	0.001*
	6 months post operative	79.66± 4.97	52.23± 4.3	0.001*
	Pre vs 6 months P value	0.001*	0.001*	
Spiritual well being Mean± SD Range (0-70)	Preoperative	44.23± 5.22	43.7± 3.89	0.72
	3 months post operative	46.12± 3.88	42.22± 4.1	0.43
	6 months post operative	61.22± 5.22	43.1±4.66	0.001*
	Pre vs 6 months P value	0.001*	0.12	

DISCUSSION

Breast cancer resembles a convoluted road trip. A lot of things cause patients to suffer during this journey, while some things serve as motivators. Assessing the quality of life (QoL) of cancer patients is crucial since the disease and its treatment may have a direct impact on it [14, 15].

The improvement in disease-free survival brought about by cutting-edge treatment modalities that raise concerns about QoL. In the end, the majority of medical care should be assessed based on how the therapy affects quality of life [16]. While, it is acknowledged that health-related issues and physical issues predominate in the lives of cancer patients, there is no universally accepted definition for QoL because it is a subjective phenomenon. [17]. According to other authors [18] it is "individuals' general sense of personal well-being and their overall satisfaction with life.

As the number of mastectomy procedures performed worldwide rises, breast reconstruction is a continuing focus of interest [19]. In the context of high cancer risk, recent studies have shown rising rates of total mastectomy for both the affected breast and prophylactic surgery [20]. It is highly crucial to the current practice to compare the quality of life after complete mastectomy and breast conservation. In contrast to mastectomy and reconstruction, patients who had breast conservation reported higher levels of satisfaction and psychosocial well-being, according to a retrospective series published by **Al-Ghazal *et al.*** [21].

Numerous publications have noted that localized breast mass resections or total mastectomies might cause negative body image and low self-esteem. Chemotherapy and radiation therapy do result in hair loss and arm pain, which greatly restrict everyday activities [22]. Patients should learn how to cope with these issues as they were forced to deal with them and this is supported by the most recent data, which indicated that both groups' physical activity decreased after three months and subsequently improved after six. It is thought that these changes were caused by the problems associated with the completion of the chemotherapy cycle [23, 24].

In the current study, the psychological and spiritual outcomes considerably improved in patients who got BCS as opposed to those who underwent MRM. This finding is consistent with the findings of several authors who indicated that 20–30% of the patients experienced anxiety and depression [25, 26]. Furthermore, fear was listed as one of the most prevalent emotions in all of the research. Patients feared that their cancer would return or spread to other parts of their bodies. Furthermore, moms who were cancer-free were concerned about their daughters contracting the illness [23].

According to **Heidary *et al.*** [14] and other authors [25], these patients' social lives were in jeopardy. When people identify as "cancer patients" due to social stigma, society begins to act incorrectly. Some patients were unable to execute their tasks correctly. Communities and workplaces could support them in preserving their social role [27].

In the current study, patients who underwent conservative breast surgery with reconstruction showed a significant improvement in their psychological, social, and spiritual well-being after six months when compared to their preoperative status. This improvement can be explained simply by the better aesthetic outcome. This it is consistent with the findings of **Howes *et al.*** [19] **and Fosh *et al.*** [28] who found that women who had undergone breast-conserving surgery for breast cancer had good outcomes of QoL parameters, including psychosocial and sexual well-being.

Depression ranged from minor mood swings to severe depression in both groups in the current study. This is thought to be caused by anxiety regarding the illness and its treatment. Compared to patients who had mastectomies, postoperative depression was significantly reduced after BCS with reconstruction. This is explained by the fact that BCS and reconstruction had less of an impact on the patient's body configuration. Many authors [29, 30] also reported that immediate breast reconstruction reduced the incidence of post-operative depression.

CONCLUSION

BCS combined with reconstruction improved the quality of life (QoL) of breast cancer patients with less depressive symptoms and mood swings than in MRM patients.

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REFERENCES

1. **McGuire A, Brown J, Malone C *et al* (2015):** Effects of age on the detection and management of breast cancer. Cancers, 7 (2): 908-929.
2. **Khan S, Khan N, Rehman A *et al* (2016):** Levels of depression and anxiety post-mastectomy in breast cancer patients at a public sector hospital in Karachi. Asian Pac J Cancer Prev., 17 (3): 1337-1340.
3. **Kim M, Kim S, Kim J *et al* (2017):** Depression in breast cancer patients who have undergone mastectomy: A national cohort study. PLoS One, 12 (4): e0175395.
4. **Van Heeringen C, Van Moffaert M, De-Cuypere G (1989):** Depression after surgery for breast cancer. Comparison of mastectomy and lumpectomy. Psychother Psychosom., 51 (4): 175-179.
5. **Salibasic M, Delibegovic S (2018):** The quality of life and degree of depression of patients suffering from breast cancer. Medical archives, 72 (3): 202-205.
6. **Dahlbäck C, Manjer J, Rehn M *et al* (2016):** Determinants for patient satisfaction regarding aesthetic

outcome and skin sensitivity after breast-conserving surgery. World J Surg Oncol.,14(1):303-9

7. **Cochrane R, Valasiadou P, Wilson A *et al* (2003):** Cosmesis and satisfaction after breast-conserving surgery correlates with the percentage of breast volume excised. Br J Surg., 90: 1505–1509.
8. **Abdelrahman E, Nawar A, Balbaa M *et al* (2019):** Oncoplastic Volume Replacement for Breast Cancer: Latissimus Dorsi Flap versus Thoracodorsal Artery Perforator Flap. Plast Reconstr Surg Glob Open, 30 (10): 2476.
9. **Campbell E, Romics L(2017):** Oncological safety and cosmetic outcomes in oncoplastic breast conservation surgery, a review of the best level of evidence literature. Breast Cancer, 9: 521–530.
10. **Down S, Jha P, Burger A *et al* (2013):** Oncological advantages of oncoplastic breast-conserving surgery in treatment of early breast cancer. Breast J., 19: 56–63.
11. **Koh C, Morrison W (2009):** Functional impairment after latissimus dorsi flap. ANZ J Surg., 79: 42–47.
12. **Beck A, Ward C, Mendelson M *et al* (1961):** An inventory for measuring depression. Archives of general psychiatry, 4: 561-571.
13. **Ferrell B, Dow K, Grant M (1995):** Measurement of the quality of life in cancer survivors. Qual Life Res., 4 (6): 523-531.
14. **Heidary Z, Ghaemi M, Hossein B *et al* (2023):** Quality of Life in Breast Cancer Patients: A Systematic Review of the Qualitative Studies. Cancer Control, 30:1073-8.
15. **Shirali E, Yarandi F, Ghaemi M *et al* (2020):** Quality of life in patients with gynecological cancers: A web-based study. Asian Pac J Cancer Prev., 21 (7): 1969-1975.
16. **Sharma N, Purkayastha A (2017):** Factors Affecting Quality of Life in Breast Cancer Patients: A Descriptive and Cross-sectional Study with Review of Literature. J Midlife Health, 8 (2): 75-83.
17. **Pal H, Singhal A, Aruna T *et al* (2002):** Quality of life in breast cancer patients. Hosp Today, 7: 35-7.
18. **Agarwal G, Pradeep P, Aggarwal V *et al* (20027:** Spectrum of breast cancer in Asian women. World J Surg., 31: 1031-40.
19. **Howes B, Watson D, Xu C *et al* (2006):** Quality of life following total mastectomy with and without reconstruction versus breast-conserving surgery for breast cancer: A case-controlled cohort study. J Plast Reconstr Aesthet Surg., 69 (9): 1184-91.
20. **Mahmood U, Hanlon A, Koshy M *et al* (2013):** Increasing national mastectomy rates for the treatment of early stage breast cancer. Ann Surg Oncol., 20: 1436-43.
21. **Al-Ghazal S , Fallowfield L, Blamey R (2000):.** Comparison of psychological aspects and patient satisfaction following breast conserving surgery, simple mastectomy and breast reconstruction. Eur J Cancer, 36: 1938-43.
22. **Jassim G, Whitford D (2014):** Understanding the experiences and quality of life issues of Bahraini women with breast cancer. Soc Sci Med., 107: 189-195.
23. **Nolan T, Ivankova N, Carson T *et al* (2019):** Life after breast cancer: 'Being' a young African American survivor. Ethn Health, 27: 1-28.
24. **Sung H, Ferlay J, Siegel R *et al* (2021):** Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin., 71 (3): 209-249.
25. **Lopez M, Perret M, Kreling B *et al* (2011):** Quality of life among immigrant Latina breast cancer survivors: Realities of culture and enhancing cancer care. J Cancer Educ., 26 (4): 724-733.
26. **Elise M, Deer B, Herriman R *et al* (2019):** Elucidating emotional closeness within the theory of health-related family quality of life: Evidence from breast cancer survivors. BMC Res Notes, 2 (1): 312-9.
27. **Mokhtari P, Montazeri A *et al* (2020):** Health-related quality of life in breast cancer patients: Review of reviews from 2008 to 2018. Health Qual Life Outcomes, 18 (1): 338-49.
28. **Fosh B, Hainsworth A, Howes B *et al* (2014):** Cosmesis outcomes for sector resection for ductal carcinoma in situ (DCIS). Ann Surg Oncol., 21: 1271-5.
29. **Dean C, Chetty U, Forrest A (2012):** Effects of immediate breast reconstruction on psychosocial morbidity after mastectomy. Lancet, 1: 459-62.
30. **Dahlui M, Azzani M, Taib N *et al* (2023):** Breast conserving surgery versus mastectomy: the effect of surgery on quality of life in breast cancer survivors in Malaysia. BMC Womens Health, 23 (1): 607-18.