Breast Cancer Res Treat (2012) 133:537–544
DOI 10.1007/s10549-011-1792-8

PRECLINICAL STUDY

Quality of life among Egyptian women with breast cancer after sparing mastectomy and immediate autologous breast reconstruction: a comparative study

Adel Denewer · Omar Farouk · Sherif Kotb · Ahmed Setit · Seham Abd El-khalek · Mosab Shetiwy

Received: 26 April 2011 / Accepted: 15 September 2011 / Published online: 29 September 2011

Abstract Breast reconstruction is considered as an integrated part of the modern breast surgery. The aim of this study is to evaluate whether immediate autologous breast reconstruction influences QOL and patient satisfaction outcomes among Egyptian women with breast cancer in comparison to the traditional mastectomy. This is a prospective study in which 200 Egyptian women with non metastatic breast cancer were included; group I (100 patients) underwent sparing mastectomy with immediate autologous breast reconstruction and group II (100 patients) underwent traditional mastectomy. The patient satisfaction with breast reconstruction was evaluated by special questionnaire and the reasons given by traditional mastectomy patients for not having breast reconstruction were recorded. Both breast impact of treatment scale (BITS) and body satisfaction scale (BSS) were evaluated in both groups. Patient satisfaction with breast reconstruction had a high mean score of 14.44 out of total degrees of 20 and most of them voted yes for having the same reconstruction again if they were offered it and would recommend reconstruction to other patients. No difference was found between the two groups as regard the BITS score. However, the BSS score showed a higher score among the reconstruction group. Egyptian ladies with breast cancer show better QOL and body image satisfaction outcomes following immediate breast reconstruction.

Keywords QOL · Breast cancer · Sparing mastectomy · Immediate autologous breast reconstruction

A. Denewer · O. Farouk (✉) · S. Kotb · A. Setit · M. Shetiwy
Surgical Oncology Department, Oncology Center, Mansoura University, Mansoura, Egypt
e-mail: dr_omarfarouk@yahoo.com

S. Abd El-khalek
Clinical Oncology & Nuclear Medicine Department, Mansoura University, Mansoura, Egypt

Introduction

Quality of life is a multidimensional construct that refers to a person's perceived quality of her/his physical, psychological, social, and existential functioning [1]. It consists of physical and psychological health, level of independence, social relationships, environment, and the spiritual domain [2, 3].

QOL has become an integral item and important outcome measure in the treatment of breast cancer patients during the last years and has been assessed in many clinical trials to evaluate the effects of specific lines of treatment, especially surgery, which is differing according to many variables including the tumor characteristics and patient cosmetic desires.

Greater availability of newer reconstructive options in breast cancer treatment provides improved cosmetic outcomes for breast cancer survivors. Many authors have compared patient satisfaction and the psychological adjustment of mastectomy to breast conservation and/or breast reconstruction and they found that better results could be achieved with breast reconstruction [4].

However, little study has been done in comparing outcomes for Egyptian women receiving traditional mastectomy alone versus sparing mastectomy with immediate breast reconstruction. Therefore, in the present study we have evaluated quality of life, body image, and patient satisfaction comparing between traditional mastectomy

alone and sparing mastectomy with immediate autologous breast reconstruction, putting in consideration the special epidemiologic characters of breast cancer and the cultural, emotional, and educational environment in Egypt.

Patients and Methods

Participants

This is a prospective study conducted in the Oncology Center–Mansoura University during the period from June 2009 till December 2010, in which women suffering from non-metastatic breast cancer, within 2 months–2 years from their primary surgery and who agreed to participate in the study were included. They were divided into two groups; group I included 100 patients who underwent sparing mastectomy with immediate autologous breast reconstruction, group II included 100 patients who underwent traditional mastectomy.

Exclusion criteria

- Women who were older than 65 years
- Metastatic patients
- Women who underwent surgery less than 2 months ago, because regardless of the type of surgical procedure, during the first month after surgery, women reported having less overall body satisfaction, less satisfaction with the appearance of their chest area, and a decrease in their QOL in the physical health domain [5].
- Women who underwent surgery more than 2 years ago, because the psychological impact of mastectomy decreases with time [6].
- Patients with chronic debilitating diseases e.g., heart disease, diabetes, COPD…etc., because they could face permanent changes in life-style and social stigma [7].
- Patients who have adverse life events in the past 3 months like problem with work, sickness or death of parents, financial problem, husband had extra-marital affair, sickness or death of husband or moving house.

Procedure and measures

Patients interviews were carried out, which were structured and based on special questionnaires designed to measure the breast impact of treatment scale, body image, and satisfaction with their own choice of treatment and the overall treatment received was recorded, after the patient signed a verbal and written consent.

Socio-demographic data were collected including patient's age, level of education, occupation, fear of recurrence, and the degree of relation to their partners. Reasons given by mastectomy patients (group II) for not having breast reconstruction were recorded. Moreover, the patient satisfaction with breast reconstruction (group I) was evaluated by special questionnaire (Table 1) weighed in 5 points scale (1 = Not at all, 2 = A little bit, 3 = Satisfied, 4 = Often and 5 = Always). Total score ranges from 5 to 20.

Breast impact of treatment scale (BITS)

BITS assess the cognitive aspect of intrusive and avoidant response to the hypothesized traumatic event of surgical treatment of breast cancer. Intrusive response questions evaluate pervasive thoughts as "things I see or hear remind me that my body is different". Avoidant response questions measured limited cognitive experience, subjective awareness of emotions surrounding the event, as "I feel self conscious about letting my partner see my scar" [8].

BITS, which is modified in our study to suit the culture characteristics of women in the Egyptian community, is composed of a 13 item questionnaire (Table 2), each item is weighed in 5 points scale (1 = not at all, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always). Total score ranges from 13 to 65. This score indicates the severity of body image distress as following: 13–25 mild, 26–43 moderate, and $\geq$44 severe ranges.

Body satisfaction scale (BSS)

BSS measures the evaluative aspect of postoperative external body satisfaction with appearance and the weight [9].

BSS items were weighed in a 5 point satisfaction/dissatisfaction scale with a lower score indicating greater body satisfaction and a higher score indicating greater body dissatisfaction (Table 3).

Statistical analysis

Data were analyzed using the statistical package for the social sciences to test the statistical significant difference between the two groups. The mean $\pm$ standard deviation (SD) and frequency and proportion describe the qualitative data. Chi-square test was conducted to investigate qualitative data. Student *t*-test was conducted to investigate quantitative data between the two groups. Significant level of *P* value is $\leq$0.05.

Table 1 Patient satisfaction with breast reconstruction

	1 = Not at all	2 = A little bit	3 = Satisfied	4 = Quite a bit	5 = Very much
1 How satisfied are you with your reconstruction?					
2 Do you think your breasts look similar?					
3 Do you think your breasts feel similar?					
4 Do you regard your reconstructed breast as a natural part of your body?					
Please circle Yes or No		Yes		No	
1 Would you have the same reconstruction again?					
2 Would you recommend reconstruction to other patients?					
3 Did you receive enough information about your reconstruction?					

Table 2 BITS Items

		1 = Not at all	2 = Rarely	3 = Sometimes	4 = Often	5 = Always
1	How my body has changed pops into my mind.					
2	I have waves of strong feelings about the way my body looks.					
3	I think about how my body used to look.					
4	Things I see or hear remind me that my body is different now.					
5	When I see other women, I think that my body appears different than theirs.					
6	I feel uncomfortable about being seen naked.					
7	I am bothered by feelings or thoughts of body disfigurement.					
8	I am reminded of my breasts when I pick out clothes to wear.					
9	I don't want to deal with how my body looks.					
10	I avoid letting myself get emotional when I think of how my body has changed.					
11	I try not to think about the size and shape of my breasts.					
12	I avoid looking at and/or touching my breasts.					
13	I feel self-conscious about letting my partner (person with whom I am sexually intimate) see my breasts. (Even if you do not have a partner now, rate how you believe you would feel).					

Results

Two hundred Egyptian women with breast carcinoma were included in this study; group (I) included 100 patients who underwent sparing mastectomy with immediate autologous breast reconstruction, group (II) included 100 patients who underwent traditional mastectomy. Patient characteristics are summarized in (Table 4).

Their ages ranged from 22 to 65 years; group (I) showed relatively and significant younger ages (Range; 22–58 years and mean ± SD; 39.02 ± 8.71) than group II (Range; 26–77 years and mean ± SD; 51.5 ± 10.74). Moreover, group (I) showed premenopausal majority (60%), while the majority in group (II) were postmenopausal (65%). The body built among group (I) was statistically near ideal (Wt; 82 ± 11.57 kg and length; 164.9 ± 11.58 cm) more than group II (Wt; 88.06 ± 23.64 kg and length; 157.51 ± 17.95 cm).

Group (I) showed higher educational levels, occupation chances, marriage status, and higher supportive relation with the partner than group (II), all these results among the reconstruction group (I) as a whole were statistically higher significant ($P < 0.0001$) than traditional mastectomy group (II). On the other hand, there were no significant differences between both groups as regard; breast cup size, fear from recurrence, and histopathologic characteristics (Table 5).

No difference was found between the two groups as regard the BITS score; while group (I) showed a mean score of 30.14 (moderate distress of body image), the other group (II) showed a nearly similar score with a median of 30.63 (Table 6). However, the BSS score showed a

Table 3 BSS items

		1 = Not at all	2 = A little bit	3 = Some what	4 = Quite a bit	5 = Very much
1	I try to hide my body					
2	I feel self conscious when clothed					
3	I feel self conscious when unclothed					
4	I avoid looking at my scars from breast surgery					
5	I am afraid of touching the scars from breast surgery					
6	I am satisfied with the shape of my body					
7	I feel less feminine since my operation.					
8	I feel comfortable when I exercise					
9	I feel comfortable in a bathing suit					
10	I would feel comfortable changing in a public change room					
11	I avoid close physical contact such as hugging					

significant difference between the two groups (*t*-test; 0.003), as a higher score reveals greater body satisfaction; group I revealed a mean score of 31.94 while group II showed a mean score of 29.08 (Table 6).

Satisfaction with breast reconstruction (group I) had a high mean score of 14.44 out of total degrees of 20; 74% of them voted yes for having the same reconstruction again if they were offered it, 86% would recommend reconstruction to other patients, and when they asked about receiving enough information about the operation before surgery 76% said they did.

The reasons given by traditional mastectomy patients (group II) for not having breast reconstruction were the following: 26% of them were worried about complications, 26% thought that it was not important to do reconstruction, 23% were too old to do this operation, and 11% did not want further surgery (Table 6).

As regards the impact of the time passed since operation and its effect on the QOL and patient satisfaction outcomes; by application of ANOVA and Pearson χ^2 tests, it had no significant effect on both BITS and BSS scores among both main groups.

Moreover, all patient characteristic variants had no effect on the QOL and patient satisfaction outcomes except the age among the traditional mastectomy group; the mild BITS score subgroup showed an older mean age of 55.9 years, the moderate BITS score subgroup showed a mean age of 51.4 years while the severe BITS score subgroup showed a younger mean age of 41.4, but among the reconstruction group the age failed to show any significant relation with the BITS outcome.

Breast cup size had no significant effect on the BITS score of the reconstruction group, however, it had a significant effect as regards BSS score and the choice of reconstruction i.e., patients with smaller breast cup size (A and B) had lower BSS scores and would vote yes for having the same reconstruction again if they were offered it, more than those with larger breast cup size (C and D).

Discussion

Care cannot be of high quality unless the patient is satisfied [10]. Price, who describes body image as "the totality of how one feels and thinks about one's own body and appearance." She incorporates for the first time the 3 elements of body image: (1) body reality—"the body as it really exists"; (2) body ideal—"subjective picture of each person on how the body should look and perform"; (3) body presentation—"how the body is presented to the outside environment" [11].

The breast is unique for women as it is associated with reproduction and nurturing as well as sexual appeal. Women with breast cancer have to deal not only with the trauma of disfigurement but also with the fear of rejection from their partners and loss of femininity [10]. Breast cancer treatment has been suggested to change body reality and body ideal, and may affect body presentation [11, 12]. Negative perceptions of body image among breast cancer survivors include dissatisfaction with appearance and surgical scars, reluctance to see one's naked body, and feelings of diminished sexual attractiveness [13–15].

Several studies have suggested that body image and feelings of attractiveness are improved following breast reconstruction [16–18], although mood state, uncertainty, distress, and overall QOL do not differ significantly [19–21].

A prospective study that compared three breast cancer–associated surgical procedures (lumpectomy, mastectomy alone, and mastectomy with subsequent breast

Table 4 Patient characteristics

	Group I	Group II	Total	*P* value ($P < 0.05$ is significant)
Number	100	100	200	
Age (Years)				
Mean ± SD	±8.71	51.5 ± 10.74		0.000
Range	22−58	26−65		
Wt (Kg)	82 ± 11.57	88.06 ± 23.64		0.023
Length (cm)	164.9 ± 11.58	157.51 ± 17.95		0.001
Time passed since operation:				
Subgroup (A) = 2 months	24	18	42 (21%)	
Subgroup (B) = 6 months	32	29	61 (30.5%)	
Subgroup (C) = 1 year	14	12	26 (13%)	
Subgroup (D) = 1½–2 years	30	41	71 (35.5%)	
Breast cup size				
Cup A	4	11	15 (7.5%)	
Cup B	48	24	72 (36%)	
Cup C	42	52	94 (47%)	
Cup D	6	13	19 (9.5%)	
Level of education				0.000
Low or nil	26	65	91 (45.5%)	
Middle	54	30	84 (42%)	
High	20	5	25 (12.5%)	
Occupation				0.000
House wife	72	95	167 (83.5%)	
Employed	28	5	33 (16.5%)	
Marital status				0.000
Married	90	70	160 (80%)	
Single	8	0	8 (4%)	
Divorced	0	8	8 (4%)	
Widowed	2	22	24 (12%)	
Relation with partner				0.000
Single	10	30	40 (20%)	
Not supportive	8	14	22 (11%)	
Supportive	32	40	72 (36%)	
Very supportive	50	16	66 (33%)	
Menopausal status				0.000
Premenopausal	60	35	95 (47.5%)	
Postmenopausal	40	65	105 (52.5%)	
Fear from recurrence				
No	30	44	74 (37%)	
Yes	70	56	126 (63%)	

reconstruction), assessed QOL of patients 1, 3, 6, 12, 18, and 24 months after initial diagnosis was established. The results showed that patients who underwent lumpectomy or mastectomy with reconstruction had no better QOL than those who had mastectomy alone [22]. Women who underwent breast reconstruction experienced greater mood disturbances as well as poorer feelings of well-being following surgery, an effect that persisted for 18 months after surgery. The postoperative pain, length of surgery, and the length of hospitalization, and the absence from everyday activities tend to be greater with breast reconstruction. The fact that these factors impart a detrimental effect on QOL, especially in the short term, may be responsible for this finding [22].

Table 5 Tumor histopathologic characteristics and treatment choices

	Group I	Group II	Total	*P* value ($P < 0.05$ is significant)
Number	100	100	200	
Pathologic type				
DCIS (non-comedo)	0	1	1 (0.5%)	
DCIS (comedo)	2	0	2 (1%)	
IDC	84	91	175 (81.5%)	
ILC	10	4	14 (7%)	
Medullary carcinoma	4	1	5 (2.5%)	
Tubular carcinoma	0	1	1 (0.5%)	
Invasive papillary carcinoma	0	1	1 (0.5%)	
Adenoid cystic carcinoma	0	1	1 (0.5%)	
Tumor grade				
I	14	1	15 (7.5%)	
II	74	87	161 (80.5%)	
III	12	12	24 (12%)	
Staging				
Stage 0	2	1	3 (1.5%)	
Stage I	4	4	8 (4%)	
Stage II	52	42	94 (47%)	
Stage III	42	53	95 (47.5%)	
Type of operation				
NSM + IBR	52	0		
SSM + IBR	48	0		
MRM	0	99		
Radical mastectomy	0	1		
Chemotherapy				
Negative	12	3	15 (7.5%)	
Positive	88	97	185 (92.5%)	
Hormonal therapy				
Negative	62	48	110 (55%)	
Positive	38	52	90 (45%)	
Radiotherapy				0.000
Negative	84	24	108 (54%)	
Positive	16	76	92 (46%)	

However, in the present study there is no difference between women who choose traditional mastectomy and those who choose breast reconstruction as regards the BITS score, which indicates the severity of surgery impact itself whatever its type on the body image distress, while the BSS score showed a greater body satisfaction following breast reconstruction which is confirmed by the high mean score of satisfaction with breast reconstruction (14.44 out of total degrees of 20), in addition the majority voted yes for having the same reconstruction again if they were offered it (74%) and would recommend reconstruction to other patients (86%).

Women who seek reconstruction tend to be younger than women who do not, as they are more likely to be well educated, affluent, and married or in a relationship [20]. These outcomes agree with our results; we found that the Egyptian ladies who choose breast reconstruction are younger and had higher educational levels, occupation chances, marriage status, and higher supportive relation with partner than those who choose traditional mastectomy.

The present study showed that there were no significant differences between both groups as regard fear from recurrence. Some studies confirmed our results, when researchers compared HRQOL measurements, no differences were seen as regards the variable that evaluated patients' fear of recurrence. However, the reconstruction group had a less than expected benefit on body image and they were more likely to feel that breast cancer had a

Table 6 Quality of life and satisfaction outcomes

	Group I	Group II	*P* value ($P < 0.05$ is significant)
Number	100	100	
BITS score (range: 13–65)			0.870
Mean ± SD	30.14 ± 8.92	30.63 ± 9.83	
BITS score description			
Mild = (13–25)	36	34	
Moderate = (26–43)	52	52	
Severe (≥44)	12	14	
BSS score (range: 11–55)			0.003
Mean ± SD	31.94 ± 6.54	29.08 ± 7.08	
Satisfaction with breast reconstruction (Range: 5–20)			0.000
Mean ± SD	14.44 ± 3.65		
Would you have the same reconstruction again?			
Yes	74		
No	26		
Would you recommend reconstruction to other patients?			
Yes	86		
No	14		
Did you receive enough information about your reconstruction?			
Yes	76		
No	24		
Reasons given by traditional mastectomy patients for not having breast reconstruction			
Did not want further surgery		11	
Not important/not a problem		26	
Too old		23	
Alone		8	
Worried about complications		26	
Diabetic		3	
No time/impossible		3	

negative impact on their sex lives. The fear of recurrence is a parameter that affects all patients, irrespective of the treatment type; it seems to affect QOL assessment more than the choice of surgery [23–25].

In the present study, the time passed since operation has no effect on the QOL and patient satisfaction outcomes among both surgical groups. The majority of studies agree that among all the surgical groups, at least 1 year after the surgery, the psychosocial or health-related QOL are less determined by the primary surgery and more influenced by other factors such as age, exposure to adjuvant therapy, and other health problems [10, 26, 27].

Conclusion

Egyptian ladies who choose immediate breast reconstruction are younger and had higher educational levels, occupation chances than those had traditional mastectomy. They had higher patient satisfaction and better BSS score.

Acknowledgments The authors would like to thank all resident surgeons who assisted in the present study: Ahmad Abd Allah, Osama El-Damshety, Mahmoud Abd El-Aziz, Amer Mosaad, Ramy Magdy, Amro El-Alfy, Amro Hussam, Amro Abo-Zaid, and Islam Hany.

Conflict of interest None.

References

1. Anderson RT, Aaronson NK, Wilkin D (1993) Critical review of the international assessments of health-related quality of life. Qual Life Res 2:369–395
2. Cella DF (1995) Methods and problems in measuring quality of life. Support Care Cancer 3(1):11–22
3. Cella DF and Bonomi AE (1995). Measuring quality of life: 1995 update. Oncology 11(9):47–60 (Suppl)

4. Nano MT, Gill PG, Kollias J, Bochner MA, Malycha P, Winefield HR (2005) Psychological impact and cosmetic outcome of surgical breast cancer strategies. ANZ J Surg 75:940–947
5. Parker PA, Youssef A, Walker S, Basen-Engquist K, Cohen L, Gritz EllenR, ER WeiQX, Robb GL (2007) Short-term and long-term psychosocial adjustment and quality of life in women undergoing different surgical procedures for breast cancer. Ann Surg Oncol 14(11):3078–3089
6. Ganz PA, Schag CAC, Lee JJ, Polinsky ML, Tan S (1992) Breast conservation versus mastectomy: is there a difference in psychological adjustment or quality of life in the year after surgery? Cancer 69:1729–1738
7. Devins DM, Binik YM (1996) Facilitating coping with chronic physical illness. In: Zeidner M, Endler NS (eds) Handbook of coping: theory, research. Wiley, New York, pp 640–696
8. Frierson GM, Thiel DL, Andersen BL (2006) Body change stress for women with breast cancer: the breast-impact of treatment scale. Ann Behav Med 32(1):77–81
9. Andersen BL, LeGrand J (1991) Body image for women: conceptualization, assessment, and a test of its importance to sexual dysfunction and medical illness. J Sex Res 28:457–477
10. Stavrou D, Weissman O, Polyniki A, Papageorgiou N, Haik J, Farber N, Winkler E (2009) Quality of life after breast cancer surgery with or without reconstruction. J Plast Surg 9:161–168
11. Price B (1990) A model for body-image care. J Adv Nurs 15: 585–593
12. Scott D, Eisendrath S (1986) Dynamics of the recovery process following initial diagnosis of breast cancer. J Psychosoc Oncol 3:53–68
13. Hopwood P (1993) The assessment of body image in cancer patients. Eur J Cancer 29A:276–281
14. Ganz PA, Greendale GA, Petersen L, Kahn B, Bower JE (2003) Breast cancer in younger women: reproductive and late health effects of treatment. J Clin Oncol 21:4184–4193
15. Beckmann J, Johansen L, Richardt C, Blichert-Toft M (1983) Psychological reactions in younger women operated on for breast cancer. Amputation versus resection of the breast with special reference to body-image, sexual identity and sexual function. Dan Med Bull 30(suppl 2):10–3
16. Mock V (1993) Body image in women treated for breast cancer. Nurs Res 42:153–157
17. Pusic A, Thompson TA, Kerrigan CL (1999) Surgical options for the early-stage breast cancer: factors associated with patient choice and postoperative quality of life. Plast Reconstr Surg 104:1325–1333
18. Stevens LA, Mcgrath MH, Druss RG, Kister SJ, Gump FE, Forde KA (1984) The psychological impact of immediate breast reconstruction for women with early breast cancer. Plast Reconstr Surg 73:619–628
19. Hart S, Meyerowitz BE, Apolone G, Mosconi P, Liberati A (1997) Quality of life among mastectomy patients using external breast prostheses. Tumori 83:581–586
20. Rowland JH, Desmond KA, Meyerowitz BE, Belin TR, Wyatt GE, Ganz PA (2000) Role of breast reconstructive surgery in physical and emotional outcomes among breast cancer survivors. J Natl Cancer Inst 92:1422–1429
21. Wellisch DK, Dimatteo R, Silverstein M (1989) Psychosocial outcomes of breast cancer therapies: lumpectomy versus mastectomy. Psychosomatics 30:365–373
22. Nissen MJ, Swenson KK, Ritz LJ, Farrell JB, Sladek ML, Lally RM (2001) Quality of life after breast carcinoma surgery: a comparison of three surgical procedures. Cancer 91:1238–1246
23. Fallowfield LJ, Hall A (1991) Psychosocial and sexual impact of diagnosis and treatment of breast cancer. Br Med Bull 47:388–399
24. De Haes JC, Van Oostrom MA, Welvaart K (1986) The effect of radical and conserving surgery on the quality of life of early breast cancer patients. Eur J Surg Oncol 12:337–342
25. Curran D, Van Dongen JP, Aaronson NK et al (1998) Quality of life of early-stage breast cancer patients treated with radical mastectomy or breast-conserving procedures: results of EORTC trial 10801. The European Organization for Research and Treatment of Cancer (EORTC), Breast Cancer Co-operative Group (BCCG). Eur J Cancer 34:307–314
26. Ganz PA, Rowland JH, Meyerowitz BE, Desmond KA (1998) Impact of different adjuvant therapy strategies on quality of life in breast cancer survivors. Recent Results Cancer Res 152:396–411
27. Van Dam FS, Schagen SB, Muller MJ et al (1998) Impairment of cognitive function in women receiving adjuvant treatment for high-risk breast cancer: high-dose versus standard-dose chemotherapy. J Natl Cancer Inst 90:210–218