
ORIGINAL ARTICLE

THE IMPACT OF MASTECTOMY, BREAST-CONSERVING TREATMENT AND IMMEDIATE BREAST RECONSTRUCTION ON THE QUALITY OF LIFE OF CHINESE WOMEN

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Background: The psychosocial impact of breast surgery has been extensively studied in the Western population. There is a relative paucity of comparable data in Oriental women who are increasingly affected by cancer of the breast. The present study investigates the effects that different types of breast surgery have on the quality of life of Chinese women.

Methods: Forty-nine Chinese women with early breast cancer were interviewed at 6 months–2 years following their primary surgery (breast-conserving treatment (BCT; 17 patients), mastectomy (15 patients) and mastectomy with immediate breast reconstruction (17 patients)). Aspects of quality of life measured included general psychological well-being, body image, sexual functioning and social functioning.

Results: Patients who received BCT had significantly better body image scores compared to mastectomy patients. They were less worried about their appearance, had more freedom in the choice of clothing, felt less upset by the change in their body and felt more accepted by their partners. The three groups did not differ significantly in the other aspects of quality of life measured.

Conclusions: Compared to mastectomy or mastectomy and immediate breast reconstruction, the most significant benefit of BCT is the preservation of a better body image.

Key words: body image, breast carcinoma, breast reconstruction, breast-conserving surgery, mastectomy, quality of life.

INTRODUCTION

In the treatment of early breast cancer the extent of surgery has always been an issue of controversy. Until recently the standard surgical treatment for breast cancer was radical or modified radical mastectomy. There is now enough evidence, however, to show that in early breast cancer relapse-free intervals and survival rates are comparable in patients treated either by mastectomy or by breast-conserving treatment (BCT).^{1–3} It has been reported that mastectomy is associated with a significant degree of psychological morbidity.^{4,5} Some of this morbidity may be related to the loss of the breast and can be avoided by BCT. There is still some controversy about the exact nature and extent of the psychological benefits of BCT as an alternative to mastectomy. Better general adjustment, less depression and fewer emotional reactions have been reported in several studies.^{6–8} Better body image and sexual functioning are also potential benefits of BCT.⁹

Breast reconstruction has become an important adjunct in the treatment of breast cancer. The ability to reconstruct the amputated breast has been available for more than three decades and has gained widespread acceptance. Johnson *et al.* showed that it is safe to reconstruct the breast immediately after mastectomy without adversely affecting disease-free and overall survival in women suffering from early breast cancer.¹⁰ Positive psychological impact of breast reconstruction in postmastectomy women has been shown in several studies.^{11–14} It is now generally accepted that mastec-

tomy with immediate breast reconstruction is a good alternative for patients in whom BCT is either not suitable or not desirable.¹⁵

Most of the information regarding the impacts of different types of breast surgery and breast reconstruction on the quality of life of breast cancer patients originates from research in Western countries. Due to the lack of comparable studies in Oriental women it is difficult to know whether similar conclusions can be drawn across cultural boundaries. The aim of the present study was to measure the impact of mastectomy, BCT and breast reconstruction on various aspects of the quality of life of Chinese women suffering from early breast cancer.

METHODS

Subjects

At Kwong Wah Hospital all patients newly diagnosed to have breast cancer are interviewed and counselled by a team consisting of the breast surgeon, the medical social worker and the oncology nurse specialist. Depending on the local staging and location of the tumour and the size of the breast, patients are given the choice between mastectomy and BCT if the latter is deemed feasible. Immediate breast reconstruction is also offered to all patients with early breast cancer who prefer or require mastectomy.

In the present retrospective study all female patients suffering from early breast cancer (T_{is}, T₁ or T₂) who were not older than 65 years, within 6 months–2 years from their primary surgery and who agreed to participate in the study were included. Patients were either called back for an interview or were interviewed over the telephone if a personal interview could not be arranged. Patients were not interviewed in the first 6 months postoperatively because some might need adjuvant chemotherapy or radiotherapy

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during this period, which would have additional adverse effects on their quality of life. Patients who underwent surgery more than 2 years ago were excluded because the psychological impact of mastectomy decreases with time.^{4,16} Interviews were carried out either by a surgeon not directly involved with treatment of that particular patient, the medical social worker or the oncology nurse specialist. Interviews were structured and based on a questionnaire designed to measure general psychological well-being, body image, sexual functioning and social functioning. Satisfaction with their own choice of treatment and the overall treatment received was also recorded.

Patient assessment

General psychological well-being was measured by the Chinese health questionnaire (CHQ-12). The original Chinese health questionnaire contains 60 items, consisting of the 30-item general health questionnaire and 30 additional items taking account of the socio-cultural characteristics of the Chinese.¹⁷ It is well known that the Chinese tend to express their emotional and psychological complaints in somatic form.¹⁸ The 12-item abridged version of the Chinese health questionnaire (CHQ-12) was created by discriminant function analysis and was validated by Chong and Wilkinson in a Chinese community in Taiwan.¹⁹ It was deemed useful as a screening instrument for minor psychiatric disorders in Chinese patients. In the present study, in addition to completing the CHQ-12, patients were asked to rate (on a five-point Likert scale) their overall health in the past week. This rating was used as a test of the validity of the CHQ-12 in the study population. Any significant adverse life events in the past 3 months (apart from the diagnosis and treatment of breast cancer) that might cause additional psychological strain were also noted.

Because we could not find a satisfactory instrument to measure the impact of breast surgery on body image in Chinese women, we adopted initially the body image index used by Lasry *et al.*⁷ This was found to be unsatisfactory in a pilot study. Three of the seven questions in the body image index are about the patients' opinion of the change in their sexual attractiveness after surgery and our patients found them difficult to answer. The older patients (usually those over 50 years of age) were offended when asked these questions and said that sexual attractiveness was not of any concern to them because they were already 'old'. The younger patients were too shy to comment on how sexually attractive they thought they were and declined to answer. In order to create an instrument to measure body image, we carried out in-depth interviews with several patients about their concerns related to the change in their body following breast surgery. Some of the patients who were interviewed were worried that they might look different after surgery, and that other people would know from their appearance that they had had breast cancer. The choice of clothing was a concern to some patients and they would avoid wearing short sleeves and thin clothing. Some patients were upset when they looked at their bodies and some were worried that their husbands or partners might not accept the change. These concerns and worries formed the basis of our body image questions (Table 1).

To assess sexual functioning, questions were directed towards changes in the frequency of sexual intercourse, the patients' and their partners' interest in sex and their overall sexual relationship. To assess social functioning patients were asked whether there were changes in the frequency and enjoyment of meeting with friends and whether they felt accepted by friends. Any change in

Table 1. Body image questions: score from 1 (best outcome) to 4 (worst outcome)

Do you think you look different to others after the operation?
Do you think other people can tell from your appearance that you have breast cancer?
Are you worried that other people may notice that you have breast cancer?
Do you dress differently now compared to before the operation?
When you look at your body now, do you feel upset by the change?
Do you feel at ease showing your body to your husband/partner after the operation?
Do you think your husband/partner accepts the change in your body?

the degree of involvement in leisure and sports activities was noted. Any loss of self-confidence in social encounters was also enquired about. At the end of the questionnaire patients were asked to rate their overall satisfaction with the treatment they received (out of a scale of 1–4) and whether they thought they had made the right choice in their treatment.

RESULTS

A total of 76 suitable patients were identified who had surgery within the period from January 1996 to June 1997, which corresponded to 6–24 months prior to the commencement of the present study. Interview was successfully carried out in 49 patients (64%) while the remainder either refused to participate or could not be contacted. Among them 17 patients received BCT, 15 patients received mastectomy alone and 17 patients received mastectomy followed by immediate breast reconstruction with the transverse rectus abdominis myocutaneous flap. The characteristics of the three groups are summarized in Table 2. There was no significant difference among the three groups with regards to age, marital status, occupation, history of recent significant life events and previous encounter with breast cancer patients. The three groups did differ in their education level, with more patients in the reconstruction and BCT groups having received higher education compared to the mastectomy group ($\chi^2 = 9.605$, d.f. = 2, $P = 0.008$). This difference could be partly related to the fact that the mastectomy patients had the highest mean age, which in general corresponded to a lower education level in Hong Kong. Whether this discrepancy will have any effect on the outcome of the present study is subject to interpretation.

There was no significant difference between the three groups with regards to tumour staging, lymph node status and menopausal status (Table 2). One patient in the reconstruction group was diagnosed to have both local recurrence and distant metastasis while the remainder were free of recurrence. The mean time from surgery for the whole group was 13.9 ± 5.0 months and the median time was 12 months. The mean time from surgery for the BCT group was significantly shorter than that for the other two groups (independent samples t -value = -2.60 and -2.67 ; d.f. = 30 and 24.57; two-tailed $P = 0.014$ and 0.013, respectively) but the difference between the mastectomy and mastectomy + reconstruction groups was not significant.

The CHQ-12 score was obtained by totalling the scores of the 12 questions. This score was found to correlate significantly with the patients' own assessment of their overall health in the past week (Spearman's $r = -0.49$, $P < 0.001$) (Table 3). Patients who rated their general health more poorly on the five-point scale reported

Table 2. Characteristics of the three treatment groups

	BCT <i>n</i> = 17	Mastectomy <i>n</i> = 15	Mastectomy + reconstruction <i>n</i> = 17
Age (mean)	47.4 years	50.4 years	44.2 years
Marital status			
Married	15	10	15
Single/divorced/widowed	2	5	2
Occupation			
Housewife	11	7	6
Employed	6	8	11
Education*			
Primary	6	12	5
Secondary or above	11	3	12
Life events in past 3 months			
No	13	11	12
Yes	4	4	5
Previous encounter with breast cancer patients			
No	12	15	14
Yes	5	0	3
Tumour staging			
T _{is}	1	1	3
T ₁	10	4	6
T ₂	6	10	8
Nodal status			
N ₀	12	7	9
N ₁	5	8	8
Tumour recurrence			
No	17	15	16
Yes	0	0	1
Time since operation (mean) [†]	11.3 months	14.5 months	15.9 months
Menopausal status			
Premenopausal	12	8	13
Postmenopausal	5	7	4

BCT, breast-conserving treatment.

There are no significant differences between the three groups except in education and time since operation.

*Significant difference between mastectomy group and the other two groups.

[†]Significant difference between BCT group and the other two groups.

Table 3. CHQ-12 scores in relation to self-rating of health and adverse life events

	<i>n</i>	CHQ-12 score (mean)
General health in past week*		
Poor	0	–
Worse than average	9	25.6
About average	30	21.6
Better than average	4	19.0
Excellent	5	18.0
Adverse life events in past 3 months [†]		
No	35	20.6
Yes	13	24.9

CHQ, Chinese health questionnaire.

*Spearman correlation coefficient = -0.49; *P* < 0.001.

[†]Mann–Whitney *U*-test, 109.5; two-tailed *P* = 0.006, corrected for ties.

higher CHQ-12 scores, indicating greater psychological morbidity. Altogether 13 patients (27%) reported adverse life events in the preceding 3 months, including four in the BCT group, four in the mastectomy group and five in the reconstruction group (Table 4). The CHQ-12 scores were significantly higher in patients reporting life events (Mann–Whitney *U*-test, 109.5; Wilcoxon rank sum

test, 439.5; two-tailed *P* = 0.006, corrected for ties; Table 3). There was no difference in CHQ-12 scores among the patients undergoing BCT, mastectomy or breast reconstruction (Table 5).

A body image (BI-7) score was obtained by totalling the scores of the seven body image questions. These seven questions had a Cronbach's alpha of 0.82. Alphas in excess of 0.75 indicate good internal consistency. The mean BI-7 score was lowest in the BCT group (indicating better body image; Table 6). This was followed by the breast reconstruction group and then the mastectomy group. The difference between the BI-7 scores for the BCT and mastectomy groups was statistically significant (Mann–Whitney *U*-test, 38.5; Wilcoxon rank sum test, 181.5; two-tailed *P* = 0.0247, corrected for ties). The difference between the breast reconstruction and mastectomy groups did not reach statistical significance. Because two of the seven body image questions are related to the patients' partners or husbands and do not apply to patients who are single, another score (BI-5) was obtained by totalling only the scores of the other five questions. These five questions had a Cronbach's alpha of 0.79. The mean BI-5 scores of the three groups followed the same pattern as the BI-7 score (Table 6). The difference in the BI-5 scores of the BCT and mastectomy groups was also statistically significant (Mann–Whitney *U*-test, 70.5; Wilcoxon rank sum test, 272.5; two-tailed *P* = 0.0376, corrected for ties), while the difference

Table 4. List of adverse life events encountered in the past 3 months

Event	<i>n</i>
Problem with work	2
Sickness of parents	2
Moving house	2
Financial problem	1
Husband had extra-marital affair	1
Death of husband	1
Death of father	1
Emigration of close relative	1
Injury of leg in accident	1
Abnormality in gynaecological screening	1

Table 5. CHQ-12 scores in relation to type of surgery

Type of surgery received*	<i>n</i>	CHQ-12 score (mean)
BCT	14	22.4
Mastectomy	17	21.4
Mastectomy + reconstruction	17	21.5

CHQ, Chinese health questionnaire; BCT, breast-conserving treatment.
*No significant difference.

Table 6. Body image scores in relation to type of surgery

	BCT	Mastectomy	Mastectomy + reconstruction
BI-5 score (mean)*	5.8	7.8	6.6
BI-7 score (mean)†	7.9	11.5	9.7

BCT, breast-conserving treatment; BI, body image.

Significant difference between BCT and mastectomy groups:

*Mann-Whitney *U*-test, 70.5; two-tailed *P* = 0.0376, corrected for ties;

†Mann-Whitney *U*-test, 38.5; two-tailed *P* = 0.0247, corrected for ties.

between the breast reconstruction and mastectomy groups remained non-significant.

A sexual life score was obtained by totalling the scores of the sexual life questions. These four questions had a Cronbach's alpha of 0.84. The sexual life score showed no significant difference in the three groups. The seven social life questions were not sufficiently related (Cronbach's alpha = 0.34) to allow the calculation of a single score, therefore the questions were evaluated separately. There were no significant differences among the three groups on the questions addressing social life.

Concerning the choice of surgical treatment, 42/49 patients (86%) thought that they had made the correct decision, three patients (6%) said that they were not sure while four patients (8%) were not happy with their choice. The proportion of patients who were satisfied with their decisions was very similar in the three groups: 88% (15/17) in the BCT group, 87% (13/15) in the mastectomy group and 82% (14/17) in the breast reconstruction group. All the patients were either quite satisfied (43%) or very satisfied (57%) with the overall treatment received.

DISCUSSION

Although the incidence of breast cancer is still much higher in Western countries compared to the rest of the world, breast cancer is definitely an increasing concern in the Hong Kong population. In Hong Kong, in the decade from 1981 to 1990, a steady increase in the incidence of breast cancer by 25% was observed (Hong Kong Cancer Registry, 1992). Not all of this increase, however, may reflect increasing disease incidence because reporting and registration have also improved in this period. Breast cancer is now the second commonest cause of female cancer deaths in Hong Kong following lung cancer. In the course of treating our breast cancer patients, most of the information we rely on comes from studies carried out in Western countries. Although there is no evidence to suggest that the biological behaviour of breast cancer differs in different populations, the psychological impact of breast cancer and breast surgery may be different in different cultures. Therefore there is a need for studies to address the psychosocial issues related to breast cancer in the Oriental population. Our present study is one of the first attempts to fill this gap.

In the present study we compared the various aspects of the quality of life of patients suffering from early breast cancer after they received BCT, mastectomy alone and mastectomy with immediate breast reconstruction. We found no difference among the three groups in general psychological well-being (Table 4). Although it is impossible to draw a negative conclusion from a study of this size, our findings are generally in agreement with other studies reported in the medical literature. According to the analysis by Kiebert *et al.* of the 16 studies comparing psychological morbidity after BCT or mastectomy, nine reported no difference while the results of the remaining studies were contradictory.⁹

The most significant difference found in the present study was a better body image score in the BCT group compared to the mastectomy group. This suggests that BCT patients were in general less worried about their appearance, had more freedom in the choice of clothing, felt less upset by the change in their body and felt more accepted by their partners. This is in agreement with studies reported in the medical literature. Out of 12 studies that addressed the change in body image after breast surgery, 10 found significant differences favouring BCT over mastectomy.⁹ It is worthwhile to note that in the present study the body image score of patients who received immediate breast reconstruction following mastectomy was better than that for patients who received mastectomy alone, although the difference did not reach statistical significance. This suggests that the negative impact of mastectomy on body image could be partially ameliorated or prevented by immediate breast reconstruction. The proof of this hypothesis needs to come from larger-scale studies. The difference in body image scores remained significant even after adjusting for the influence of the patients' husbands or partners. This implies that the beneficial effects of BCT (and possibly immediate breast reconstruction) apply equally to married and single women.

Most of the available instruments for psychosocial measurements are developed and validated in Western populations. Extra precautions must be taken when applying these instruments to populations with different cultural backgrounds. In the process of measuring the change in body image, we appreciated the importance of cultural differences. The original instrument we employed contained questions on sexual attractiveness, which

were considered unacceptable by our patients. The need for a new set of body image questions was indicated following patient worries and concerns uncovered in pilot interviews. This underscores just one of the limitations of applying instruments for psychosocial measurements across cultural boundaries. But until more instruments are developed and validated specifically for use on Chinese populations, we remain reliant on translations of imported instruments.

The Chinese health questionnaire is one of the few instruments for psychosocial measurement validated in Chinese populations. The CHQ-12 was validated in a study involving more than 300 Chinese patients admitted to a medical centre in Taiwan for general health screening.¹⁹ The sensitivity and specificity of CHQ-12 in detecting minor psychiatric disturbance were estimated to be 78% and 77%, respectively. Our results also support the validity of the CHQ-12 score as a measure of psychological disturbance in the Chinese. The CHQ-12 score correlated significantly with the patients' own assessment of their health in the past week. In the absence of physical debility and illness (apart from breast cancer), the patients' own assessment of their health reflects the presence or absence of psychological distress because it is well known that the Chinese tend to express their emotional and psychological complaints in somatic form. The finding of a significantly higher CHQ-12 score in patients with recent adverse life events also lends support to the validity of this instrument.

Finally, it was found that a high proportion of patients (86%) reported satisfaction with their choice of treatment and all patients were satisfied with the overall treatment they received, regardless of the type of surgery performed. There are a number of possible explanations. Social bias tends to favour reporting of satisfaction after health care. Also, because the interviews were performed 6 months after the surgery, most patients had probably made the majority of their adjustment to their disease and the treatment they received. Being well and alive can powerfully influence satisfaction. Another possible contributing factor to patient satisfaction was that all our patients were given the chance to choose their own treatment whenever feasible and were encouraged to participate in decision making as much as possible. Studies have shown that choice plays an important part in determining the psychological outcome of patients receiving breast surgery, regardless of the nature of the procedure performed.^{20,21} In general, patients who are offered choice experience fewer psychological difficulties than patients who are not. This is an example of how doctor-patient communication can influence the psychological outcome of treatment.

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