Original Article

Comparison of Quality of Life, Patient Satisfaction and Overall Postoperative Pain between Breast Reconstruction with Transverse Rectus Abdominis Myocutaneous Flap and Breast-Conserving Therapy in Breast Cancer Patients: A Single Surgeon Experience

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Background: Breast cancer is the most common cancer in Thai women; however, recent advances in its treatment not only achieve complete cure but also improve the quality of life of the patient. Two such methods, breast reconstruction with transverse rectus abdominis myocutaneous flap (TRAM) and breast-conserving therapy (BCT) are employed in order to maintain the patient's body image. Unfortunately, both of these types of operation may entail complications and extended treatment processes that adversely affect the patient's quality of life. As 80% of women with breast cancer survive for more than 5 years, quality of life, patient satisfaction and overall postoperative pain are important factors to consider when choosing the most appropriate operation for each patient.

Objective: The aim of this study was to assess differences in quality of life, patient satisfaction and overall postoperative pain between women who underwent mastectomy with immediate breast reconstruction with transverse rectus abdominis myocutaneous flap (TRAM) and those who had breast-conserving therapy (BCT) in Rajavithi Hospital. Both types of operation were performed by a single surgeon.

Materials and Methods: A cross-sectional study was conducted during follow-up visits. From June 2013 to June 2015, 19 patients who underwent transverse rectus abdominis myocutaneous flap (TRAM) after mastectomy and 19 who underwent breast-conserving therapy (BCT) were enrolled. All patients who underwent treatment attended at least 2 years' follow-up, and their ages ranged from 20 to 70 years old. Quality of life was evaluated based on the World Health Organization Quality of Life assessment instrument (WHOQOL-BREF-THAI) in the Thai language. There are 5 separate domains for evaluation of quality of life, namely the physical, mental, psychological, environmental and overall domains. During follow-up telephone interviews, patients were asked to grade their satisfaction on a 5-point Likert scale (5 points for extremely satisfied and 1 point for extremely dissatisfied). We also assessed the patients' overall postoperative pain using the visual analog scale (0 for no pain and 10 points for maximal pain).

Results: A total of 38 patients completed the questionnaire. The mean age of TRAM flap group was 46.37±9.96 years compared with 53.47±9.49 years in the BCT group. Women who underwent breast reconstruction with TRAM flap showed better overall and physical domain quality of life than those who had BCT; however, there was no significant difference in the mental, psychological and environmental domains. There was no statistically significant difference between the two groups in terms of patient satisfaction and overall pain score.

Conclusion: When selecting the most appropriate operation for breast cancer patients, the surgeons should take into account not only body image but also patient quality of life.

Keywords: Immediate breast reconstruction, Transverse rectus abdominis myocutaneous flap (TRAM), Breast conserving-therapy (BCT), Quality of life, Patient satisfaction, Postoperative pain

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Breast cancer is the most common cancer in Thai women, and up to 80% of patients survive for more than 5 years beyond diagnosis[1]. Current treatments for breast cancer patients aim not only to achieve complete cure but also to improve patients' quality of life. Mastectomy is still a standard procedure for removing the cancer, but nowadays many options are available which preserve patients' satisfaction with their body image, such as breast reconstruction after mastectomy with TRAM flap and breast conserving-therapy (BCT). Unfortunately, both of these procedures can result in such complications as flap necrosis, abdominal laxity, incisional hernia and postoperative pain after TRAM flap reconstruction[2-4] and discomfort and inconvenience resulting from BCT postoperative radiotherapy. All of these factors may affect the patients' quality of life in the physical, mental, psychosocial and environmental domains. In Asian countries, for instance Korea and Japan, the incidence rate of breast cancer among younger patients is high[5]; therefore, there is a greater level of concern about quality of life, and this should be taken into account when selecting surgical techniques.

The aim of this study was to assess differences in terms of quality of life, patient satisfaction and overall postoperative pain those following TRAM flap reconstruction after mastectomy compared with those following BCT in breast cancer patients who underwent operations performed by the same surgeon.

Materials and Methods

A cross-sectional study design was adopted using questionnaires completed via telephone interviews. This research was approved by the institutional review board of Rajavithi Hospital, Bangkok, Thailand (143/2558). Women who had undergone surgical treatment for breast cancer at least 2 years prior to the study were eligible to be enrolled if they (1) were between 20 and 70 years; (2) had a diagnosis of breast cancer (ductal carcinoma in situ, Stage I-III invasive carcinoma); or (3) had no evidence of locoregional or systemic recurrence. From June 2013 to June 2015, 19 patients who had undergone transverse rectus abdominis myocutaneous flap (TRAM) after mastectomy and 19 patients who had had breast-conserving therapy (BCT) were enrolled in the study. Quality of life was evaluated based on the World Health Organization Quality of Life assessment instrument (WHOQOL-BREF-THAI) published in the Thai language. There are 5 separate areas for evaluation of quality of life: the physical, mental, psychological, environmental and overall domains. During follow-up telephone interviews, patients were asked to grade their satisfaction on a 5-point scale (5 points for extremely satisfied and 1 point for extremely dissatisfied). Postoperative pain was assessed using the visual analog scale (0 for no pain and 10 points for maximal pain).

Statistical analysis was performed using IBM SPSS version 22.0. Descriptive data were presented as percentage (%), mean, and standard deviation. A two-tailed t-test was used to assess differences in patients' quality of life, their levels of satisfaction, and their overall postoperative pain. The scores of the two groups (TRAM flap and BCT) were compared, with a *p*-value of less than 0.05 denoting statistical significance.

Operative techniques and postoperative care

TRAM flap was performed in much the same way in all patients. Using skin-sparing mastectomy and ipsilateral pedicle, TRAM flaps were harvested using the sheath-sparing technique. In order to prevent rectus sheath weakness, prolene mesh was placed on top of the sheath. All patients' levels of activity were limited to bed rest in the Fowler position for the first 2 days postoperatively, after which they were allowed to move and behave normally with the proviso that they should avoid strenuous exercise for a few months.

BCT was performed in a similar fashion in all

Table 1. Patients' demographic characteristics

Variable	TRAM (n = 19)	BCT (n = 19)	*p*-value
Age (years)			
Less than 60	18 (94.74)	16 (84.21)	0.031*
More than 60	1 (5.26)	3 (5.79)	
Mean age (years)	46.37±9.96	53.47±9.49	
Education level			
Below undergraduate degree	8 (42.10)	16 (84.21)	0.990
Undergraduate degree and above	11 (57.90)	3 (15.79)	
Marital status			
Single	6 (31.58)	9 (47.37)	0.990
Marriage	13 (68.42)	10 (52.63)	
Occupation			
Employed	16 (84.21)	12 (63.16)	0.990
Unemployed	3 (15.79)	7 (36.84)	

Values are represented as n (%), mean ± SD
* = Significant at $p<0.05$

patients. Breast tumor was removed with at least 1 cm margin in all directions and full thickness to reach the pectoralis fascia, after which 4 to 5 metallic clips were placed at the tumor bed to locate the radiation area. One day after surgery, the patients were allowed to resume their everyday activities but were advised to refrain from heavy work or exercise for a few weeks. Both techniques utilized sentinel lymph node biopsy in all cases in which metastatic lymph nodes could not be detected before surgery.

Results

Over a 2-year period (June 2013 to June 2015), 19 women underwent TRAM flap reconstruction after mastectomy. One patient had ductal carcinoma in situ (DCIS), 6 had stage I, 9 had stage II, and 3 had stage III, and the mean patient age was 46.37±9.96. The extirpative procedure consisted of 15 cases of total mastectomy with sentinel lymph node biopsies and 4 cases of modified radical mastectomy. Of the 15 sentinel lymph node biopsies, 3 were positive for malignancy and had axillary dissection later. After surgery, 6 patients underwent adjuvant therapy consisting of chemotherapy and radiation therapy, 11 had chemotherapy alone, and 1 patient received neoadjuvant chemotherapy preoperatively followed-up with adjuvant radiation. The remaining patient received neither adjuvant chemotherapy nor radiation after the operation because she had DCIS. All patients with estrogen-positive receptor carcinoma received follow-up hormonal treatment for 5 years.

From June 2013 to June 2015, 19 women underwent BCT procedures. One patient had ductal carcinoma in situ (DCIS), 11 had stage I, 6 had stage II, and 1 had stage III. The mean patient age was 53.47±9.49. Breast conserving surgery with sentinel lymph node biopsy was performed in 15 cases and four patients had axillary dissection. All 15 sentinel lymph node biopsies proved negative for lymph node metastasis. After surgery, 13 patients underwent adjuvant therapy consisting of chemotherapy and radiation therapy, and 6 patients had radiation alone. All patients with positive estrogen receptor carcinoma had follow-up hormonal treatment for 5 years.

We decided to grade quality of life at 3 levels in accordance with the World Health Organization Quality of Life assessment instrument (WHOQOL-BREF-THAI version). Demographic data were recorded and quality of life (QOL) scores were calculated. The scores of the two groups were then analysed and compared statistically. All 19 patients who underwent TRAM flap reconstruction had good QOL in the physical domain; 2 and 17 had fair and good QOL respectively in the psychological domain; and 1 and 18 had fair and good QOL respectively in the environmental domain. All of the TRAM flap patients reported good overall QOL (Table 2).

In the breast conservation therapy (BCT) group, 2 and 17 subjects had fair and good QOL respectively in the physical domain, while 8 and 11 had fair and good QOL respectively in the social domain. All patients had good QOL in the psychological and environmental domains, and all reported good overall QOL (Table 2).

All of the subjects participated in the patient satisfaction and overall postoperative pain survey, completing a 5-point satisfaction scale survey, and a 10-point visual analog scale was used to assess overall postoperative pain. The average satisfaction grade for TRAM flap was 4.42 points compared with 4.11 points (p-value = 0.108) for BCT. None of the patients answering the survey was dissatisfied

Table 2. WHOQOL quality of life in 5 domains after TRAM flap reconstruction and BCT

Domains	Poor (n)		Medium (n)		Good (n)	
	TRAM	BCT	TRAM	BCT	TRAM	BCT
Physical	0	0	0	2	19	17
Mental	0	0	1	0	18	19
Psychosocial	0	0	2	8	17	11
Environmental	0	0	1	0	18	19
Overall	0	0	0	0	19	19

Table 3. Comparison of quality of life after TRAM and BCT

Domain score	TRAM	BCT	p-value
Physical	29.79±1.27	28.26±1.33	0.001*
Mental	25.00±1.56	24.74±0.81	0.518
Psychosocial	12.26±0.73	11.79±1.08	0.123
Environmental	32.68±1.92	32.47±0.77	0.660
Overall	107.95±3.29	105.47±2.55	0.014*

Values are represented as mean ± SD
* = Significant at $p<0.05$

Table 4. Patients' satisfaction with TRAM and BCT

Satisfaction grade	TRAM flap	BCT	p-value
5 (extremely satisfied)	10 (52.6)	3 (15.8)	
4 (very satisfied)	7 (36.8)	15 (78.9)	
3 (satisfied)	2 (10.5)	1 (5.3)	
2 (not satisfied)	0 (0.0)	0 (0.0)	
1 (extremely dissatisfied)	0 (0.0)	0 (0.0)	
Average grade, point	4.42±0.69	4.11±0.46	0.108

Values are represented as n (%), mean ± SD

Table 5. Comparison of postoperative pain after TRAM and BCT

	TRAM	BCT	p-value
Postoperative pain	2.16±1.06	1.84±0.76	0.302

Values are represented as mean ± SD

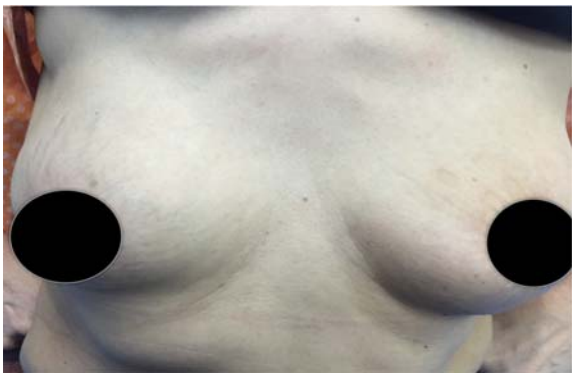

Figure. 1 Immediate breast reconstruction with TRAM flap (right breast).

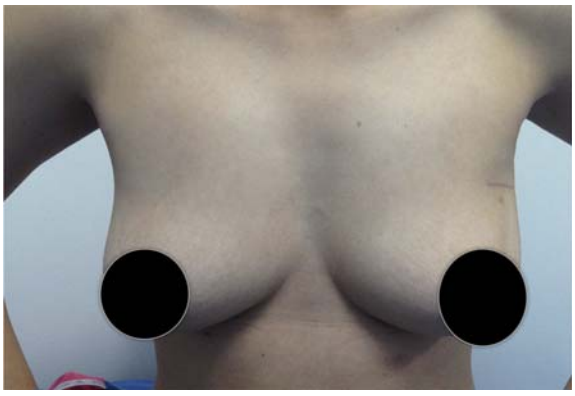

Figure. 2 Breast conservation therapy (BCT) at left breast.

with their experience or results. The average postoperative pain for TRAM flap was 2.16 points compared with 1.84 points for BCT, but these results were not statistically significant (p-value = 0.302).

Discussion

Breast cancer is the most common cancer in Thai women[1], and the number of sufferers is increasing every year. Its prevalence in Thailand is about 33 per 100,000[1] women. Surgery is the major treatment for breast cancer, but nowadays we have to aim to achieve not only complete cure but also maintenance of patients' quality of life. Breast reconstruction with transverse rectus abdominis myocutaneous flap (TRAM) and breast-conserving therapy (BCT) are two such procedures aimed at preserving the patients' body image and self-confidence. Both procedures may entail some complications and extended treatment processes which can adversely affect the patient's quality of life, such as the prolonged healing process in TRAM flap and adjuvant radiation therapy in BCT. As more than 80% of women with breast cancer survive for more than 5 years, quality of life is a very important consideration and may be a deciding factor in choosing the appropriate operation for each patient.

Many studies have compared the outcomes of total mastectomy with those of BCT[6, 7] and several have suggested that body image and a feeling of attractiveness are better following the latter modality[8]; however, there has been little research into comparison of the results of total mastectomy with immediate reconstruction and those of BCT, even though both techniques help to preserve good body image[9].

In this study, various questionnaires were used primarily to detect differences in self-reported postoperative outcomes between patients who had breast reconstruction with TRAM flap after mastectomy and those who underwent BCT. Our results showed that the type of surgery chosen for patients with breast cancer had a significant effect on their quality of life. In this study, both types of operation were performed by a single surgeon using the same technique in each procedure. Women with TRAM flap reconstruction seemed to have better results in terms of the physical domain and overall quality of life than those who had BCT, although the former operation involved longer operative time and length of hospital stay; on the other hand, most TRAM flap patients did not need adjuvant radiation, which can cause complications such as skin burn, breast edema and fat necrosis[10]. The average age of the TRAM flap patients in our study was lower than that of BCT patients, and this may have had an impact on the quality of life reported by each group.

We informed the patients about the higher risk of recurrence after BCT in lower age groups, and for this reason some younger patients opted for choose total mastectomy with immediate TRAM flap reconstruction instead of BCT. Levels of patient satisfaction and overall postoperative pain were not significantly different between the two groups.

A limitation of this study was its small number of participants, and further research with higher volumes of patients may provide more accurate results. However, this study may serve as a guide for surgeons and patients when choosing the appropriate image-preserving operation.

Conclusion

Both TRAM flap reconstruction after mastectomy and breast-conserving therapy (BCT) help to conserve patients' appearance; however, the resulting quality of life of patients undergoing these modalities varies in terms of operative time, time to recovery, complications and adjuvant treatments. Surgeons should therefore consider not only postoperative body image after operation but also patients' quality of life, and this should be a major factor to consider when choosing the appropriate operation for individual breast cancer patients.

What is already known on this topic?

Women who undergo TRAM flap reconstruction seem to have better results in terms of the physical domain and overall quality of life than those who have BCT. However,

patient satisfaction and overall postoperative pain levels are not significantly different between the two procedures.

What this study adds?

1) The results of this research study differ from those of previous studies[6,7] which showed that that TRAM flap and BCT did not achieve different levels of overall quality of life. In this study, in contrast, TRAM flap seemed to be better than BCT in this area.

2) Both types of operation in this research were performed by the same surgeon, showing that both breast reconstruction and mastectomy can be performed by a breast surgeon with satisfactory results.

3) As overall postoperative pain is not statistically different between the two operations, patients can focus on other factors such as recurrence rate and postoperative complications when choosing the operation that suits them best.

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Potential conflicts of interest

The authors declare no conflicts of interest.

References

1. Pongnikorn D, Suwanrungruang K, Buasom R. Cancer incidence in Thailand. In: Imsamran W, Chaiwerawattana A, Wiangnon, Pongnikorn D, Suwanrungruang K, Sangrajrang S, et al., editors. Cancer in Thailand. Vol.VIII, 2010-2012. Bangkok: Cancer Registry Unit, National Cancer Institute Thailand; 2015.
2. Sun Y, Kim SW, Heo CY, Kim D, Hwang Y, Yom CK, et al. Comparison of quality of life based on surgical technique in patients with breast cancer. Jpn J Clin Oncol 2014;44:22-7.
3. Petit JY, Rietjens M, Lohsiriwat V, Rey P, Garusi C, De Lorenzi F, et al. Update on breast reconstruction techniques and indications. World J Surg 2012;36:1486-97.
4. Jung YS, Na KY, Kim KS, Ahn SH, Lee SJ, Park HK, et al. Nation-wide Korean breast cancer data from 2008 using the breast cancer registration program. J Breast Cancer 2011;14:229-36.
5. Arndt V, Stegmaier C, Ziegler H, Brenner H. Quality of life over 5 years in women with breast cancer after breast-conserving therapy versus mastectomy: a population-based study. J Cancer Res Clin Oncol 2008;134:1311-8.
6. Fann JR, Thomas-Rich AM, Katon WJ, Cowley D, Pepping M, McGregor BA, et al. Major depression after breast cancer: a review of epidemiology and treatment. Gen Hosp Psychiatry 2008;30:112-26.
7. Ascherman JA, Seruya M, Bartsich SA. Abdominal wall morbidity following unilateral and bilateral breast reconstruction with pedicled TRAM flaps: an outcomes analysis of 117 consecutive patients. Plast Reconstr Surg 2008;121:1-8.
8. Garvey PB, Buchel EW, Pockaj BA, Casey WJ 3rd, Gray RJ, Hernandez JL, et al. DIEP and pedicled TRAM flaps: a comparison of outcomes. Plast Reconstr Surg 2006;117:1711-9.
9. Meric F, Buchholz TA, Mirza NQ, Vlastos G, Ames FC, Ross MI, et al. Long-term complications associated with breast-conservation surgery and radiotherapy. Ann Surg Oncol 2002;9:543-9.
10. Kiebert GM, de Haes JC, van de Velde CJ. The impact of breast-conserving treatment and mastectomy on the quality of life of early-stage breast cancer patients: a review. J Clin Oncol 1991;9:1059-70.