

Comparative study on the effect of breast conserving surgery and modified radical operation in patients with early stage breast cancer.

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Abstract

Objective: To investigate the effect of breast conserving surgery and modified radical operation modified radical operation for early stage breast cancer patients.

Methods: A retrospective analysis of 100 cases of early breast cancer patients in our hospital from January 2010 to November 2011 were divided into conserving group (n=50, using breast conserving surgery) and radical group (n=50, using modified radical operation) according to the different surgical methods. Operation time, intraoperative bleeding, hospitalization time and the incidence of adverse reactions were compared between groups. According to follow-up data of two groups, postoperative local recurrence rate, distant metastasis rate and 3 y and 5 y survival rate were compared. Short form of health survey was used to describe the quality of life after operation.

Results: Operation time, blood loss, length of stay and incidence of adverse reactions were significantly lower in conserving than in radical group ($P < 0.05$). Postoperative follow-up showed that there was no significant difference between the two groups in postoperative local recurrence rate, distant metastasis rate and postoperative 3 y and 5 y survival rate ($P > 0.05$). The scores of life quality in conserving group were significantly higher than those in radical group ($P < 0.05$).

Conclusion: For patients with early breast cancer, breast conserving surgery has similar effect to modified radical operation with reduced operation time, reduced bleeding, shortened hospitalization time and improved survival time of patients.

Keywords: Breast conserving surgery, Modified radical operation, Early breast cancer; Application effect.

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Introduction

Breast cancer is one of the most common malignancies in women, accounting for 7% to 10% of all malignancies in China [1]. In recent years, the incidence of breast cancer has been increasing at a rate of 2%~3% year by year. Even in some large cities, breast cancer accounts for the first female malignancy [2]. At present, the cause of breast cancer is still unclear, and it is mainly believed that secretion disorders of estrone and estradiol has a close correlation with breast cancer [3]. Early manifestations of breast cancer present as painless and single small lumps. Orange-peel sign and depression occur when the lymphatic vessels and ligaments are involved in the disease [4]. Early diagnosis and radical treatment of patients with Breast cancer is important to prognosis, and surgical methods are commonly used for early breast cancer [5]. Breast cancer radical surgery is commonly used for surgery methods,

which may have destruction on pretty figure of breast and a serious impact on the quality of life of patients, while breast conserving surgery has advantages such as retention of breast, which meets the life demand of patients [4]. Therefore, the purpose of this study is to compare the effect of the two methods.

Materials and Methods

Clinical data

Retrospective analysis of 100 patients with early breast cancer in our hospital from January 2010 to November 2011 were divided into conserving group (n=50) and radical (n=50) according to the different surgical operations. Patients were female, aged 30 to 58 y, with normal breast development. General information of two groups is shown in Table 1.

Table 1. General information of two groups.

Item	Breast conserving group	Radical group	t/ χ^2	P value
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Age (year)		42.5 ± 4.8	43.2 ± 4.2	1.10	0.06
Tumor diameter (cm)		1.25 ± 0.4	1.30 ± 0.37	0.93	0.06
TNM stage of tumor (n)	Stage I	26	25	1.31	0.06
	Stage II	24	25		
Pathological type of tumor (n)	Invasive ductal carcinoma	19	21	0.95	0.09
	Invasive lobular carcinoma	16	14		
	Others	15	15		
Pathogenic site (n)	Left breast	23	25	1.03	0.07
	Right breast	27	25		

Inclusion criteria

All patients were required to meet the following criteria before inclusion [6]: 1) patients had normal breast, mastoid and areola shape without haemorrhage, nipple retraction and eczema-like changes; 2) all patients only had unilateral breast tumor; 3) all patients were diagnosed as stages I and II breast cancer by ultrasound, X-ray mammography and biopsy; 4) all patients were not treated with chemotherapy or radiotherapy before operation.

Methods

Modified radical surgery: Preoperative conventional imaging was adopted to determine the location of cancer and tumor size. Then according to the breast shape and different sizes, transverse or longitudinal spindle incision was selected. The incision should have a distance of more than 3 cm to the edge of the tumor. After removal of tumor, all the lymph nodes in pectorals, breast and axilla (Berg I and II) were dissected according to the grading criteria of Berg axillary lymph node. After the operation, drainage tubes were placed routinely and unplugged after completion.

Breast conserving surgery

Same as the radical group, imaging location was used to determine the foci location and size in conserving group. According to breast shape and different sizes, transverse or longitudinal spindle incision was selected. The incision should have a distance of more than 2 cm to the edge of the tumor. With conventional complete resection of about 2 cm normal tissue of the tumor margin, tissue above the tumor generally was kept. Suture markers and intraoperative frozen section were performed on 5 directions (inside, outside, top, bottom and the base) of tumor edge to ensure negative margins. If biopsy showed positive margins, expansion of resection should be done in the according side. If the margin was still positive after expansion, modified radical surgery was required. Incision suture was operated after all margins became negative. Stump gland of both sides should not be sutured to avoid the abnormal appearance of postoperative breast shape. Another armpit incision was used to clean ipsilateral axillary lymph nodes (groups 1 and 2). Routine drainage was performed after

the operation. All patients were treated with individualized comprehensive treatment according to the specific circumstances.

Evaluation index

The operative time, blood loss, hospital stay and the incidence of postoperative complications were compared between the two groups. The local recurrence rate, distant metastasis rate, and the 3 y and 5 y survival rate of patients after operation were compared according to the follow-up data.

Patients received outpatient service or hospital review every 3 months after the first year of postoperation, and review every 4 to 6 months after the second to fourth year. Main review items included breast, liver type-B ultrasonic check, chest radiography, and the whole body bone scan if necessary, followed up to October 2016. SF-36 were used to evaluate the life quality of the patients, including 8 items such as physiological function, physiological function, physical pain, general health, vital energy, social function, emotional function and mental health (each score of 0 to 100 points). The higher score indicated the better quality of life.

Statistical methods

All the data of this study were analysed by SPSS19.0 software. The t test was used to measure the data and the χ^2 test for count (test standard $\alpha=0.05$). It was considered statistically significant when $P<0.05$.

Results

Comparison of the two groups in general surgery

Surgery time, intraoperative blood loss and hospital stay of patients in conserving group and radical group are shown in Table 2 below.

From the above table, the results of surgery time, hospital stay and intraoperative bleeding of conserving surgery group were significantly better than those of the radical group ($P<0.05$).

The two groups of patients with postoperative complications

In the conserving group, there were 5 cases of postoperative complications (the incidence rate 10%), 1 case of skin necrosis, 2 cases of subcutaneous fluid and 2 cases of local skin flap. In the radical group, there were 10 cases of postoperative complications (the incidence rate 20%), 3 cases of skin necrosis, 4 cases of subcutaneous fluid and 1 case of local flap ischemia, 2 cases of swelling in ipsilateral upper limb. The

incidence of postoperative complications was significantly lower in that of conserving group (P<0.05).

Comparison of prognosis of the two groups

The local recurrence rate, distant metastasis rate and the 3 y and 5 y survival rates of the conserving group and the radical group were shown in Table 3 (considering loss to follow-up as death).

Table 2. General surgery statistics of the two groups.

Group	Cases (n)	Surgery time (min)	Intraoperative blood loss (ml)	Hospital stay (d)
Breast-conserving	50	114.57 ± 18.72	98.04 ± 9.85	9.47 ± 1.94
Radical	50	173.54 ± 24.47	140.93 ± 12.69	15.26 ± 3.21
T value		5.826	4.973	5.342
P value		0.013	0.035	0.021

Table 3. Comparison of prognosis between the two groups.

Group	Cases (n)	Local recurrence rate (n (%))	Distant metastasis rate (n (%))	3-year survival rate (n (%))	5-year survival rate (n (%))
Conserving	50	2 (4.0)	3 (6.0)	48 (96.0)	46 (92.0)
Radical	50	3 (6.0)	2 (4.0)	49 (98.0)	46 (92.0)
χ ² value		1.104	0.953	1.305	1.005
P value		0.062	0.085	0.072	0.072

From the table above, local recurrence rate, distant metastasis rate and 3 y/5 y survival rate after surgery of the two groups had no significant difference (P>0.05).

Comparison of life quality of patients in two groups

SF-36 was used for the evaluation of life quality of patients during the follow-up period (Table 4).

Table 4. Comparison of life quality of patients in two groups.

Items	Conserving group	Radical group	t value	P value
Physiological function	79.65 ± 8.73	72.34 ± 8.38	4.973	0.035
Physiological function	88.64 ± 11.39	74.67 ± 8.96	5.826	0.013
Bodily pain	80.06 ± 8.56	71.59 ± 8.12	5.342	0.021
Overall health	82.07 ± 9.15	73.55 ± 8.54	4.332	0.033
Vitality of life	85.32 ± 10.53	70.24 ± 7.91	4.143	0.037
Social function	84.33 ± 9.61	77.64 ± 8.91	3.963	0.042
Emotional function	87.36 ± 10.99	76.48 ± 8.86	4.742	0.032
Mental health	85.76 ± 10.72	74.28 ± 8.57	4.972	0.035

Average score	84.38 ± 9.78	75.11 ± 9.02	5.194	0.026
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From the table, life quality of conserving group was significantly better than that of the radical group (P<0.05).

Discussion

Breast cancer is a common malignant tumor in women. The incidence gradually increased after the age of 20, and remained high in 45 to 50 y old females. Compared with western countries, the incidence age of breast cancer in China is younger [7]. Clinical studies have shown that the incidence of breast cancer was related with early age of menarche, late age of menopause, infertility and age of the first partus matures. In addition, the incidence of breast cancer was also a family phenomenon. A family history of breast cancer increased the risk of general population 2 to 3 times. At present, the treatment of breast cancer mainly depended on the surgical treatment of multi-based comprehensive treatment [8]. For early breast cancer, surgical treatment was the preferred method. In 1894, Halsted proposed radical mastectomy with the idea that transfer of breast cancer was the primary lesion metastasis to the regional lymph nodes, and then into blood circulation. However, with the expansion of the scope of surgery, it was found that postoperative survival rate was not significant improved. This fact prompted many scholars to

narrow the scope of surgery, which proposed the modified radical operation [9]. In the treatment of breast cancer using modified radical operation, two surgical methods developed. First treatment retained the pectoralis major muscle and excising small pectoral muscle. The second treatment retained pectoralis major and minor muscle. The lymph node dissection scope of the former treatment was similar to radical resection, while the second treatment mainly dissected axillary lymph node groups 1 and 2, not affecting the axillary lymph nodes [10]. According to a large number of clinical case studies, it was found that survival rate of phases I and II breast cancer using radical surgery and modified radical surgery was not significantly different. Moreover, the second modified radical operation also retained the size of the chest muscle with better postoperative appearance than traditional radical surgery, which was a common treatment for early breast cancer treatment in clinic now [11]. In this study, the radical group of patients also used the second treatment. Results showed that local recurrence rate, distant metastasis rate, 3 y and 5 y survival rate for post-operative patients was 6%, 4%, 98% and 92, respectively. This was consistent with clinical reports [12]. Although modified radical operation had less impact on women's breast appearance compared with traditional radical mastectomy, its removal range was still large which didn't meet the modern women's aesthetic requirements. At present, most studies have shown that breast cancer patients had early hematogenous metastasis, and lymphatic metastasis pathway was not in an orderly manner. Hence, local treatment of breast cancer had no significant effect on prognosis [13]. In recent years, with the development of biological research of breast cancer and various medical technologies, as well as the requirement to improve the quality of life, the treatment of breast cancer has also undergone some changes. The scope of breast cancer resection was narrowing gradually, which developed a conserving breast cancer resection [14]. The primary purpose of this procedure was to complete the removal of the mass, and the surgical resection range was smaller. The axillary lymph node and other incision were cleaned, so as to meet the patient's requirement on the breast appearance. Results showed that local recurrence rate, distant metastasis rate, 3 y and 5 y survival rate for post-operative patients were not significant different when comparing patients with modified radical operation and conserving breast cancer resection ($P>0.05$). However, with regard to amount of blood loss, operation time, hospital stay, postoperative complications and quality of life comparison, improved radical surgery patients was not better than conserving breast cancer resection patients.

Above all, breast retention surgery and modified radical operation surgery results were similar for early breast cancer patients. However, modified radical operation surgery performed better in reducing the operation time, reducing the amount of intraoperative blood loss, shortening the hospital stay and improving patient survival time.

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