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Effect of Breast Conserving Sentinel Lymph Node Biopsy (SLNB) and Modified Radical Mastectomy on Patients with Early Breast Cancer

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Abstract: ***Objective:*** To study the clinical effect of breast conserving combined with sentinel lymph node biopsy and modified radical mastectomy in patients with early breast cancer. ***Methods:*** Female patients with early breast cancer in clinical stage I and II were selected as the main objects of this study, the study period started from July 2017 to July 2020. In the breast conserving and sentinel lymph node biopsy patients, 50 cases were randomly selected as the experimental group; 50 cases in the modified radical mastectomy patients were randomly selected as the control group. The clinical intervention effect of the two groups was analyzed. ***Results:*** the perioperative indexes of the experimental group were shorter than those of the control group, the patients recovered faster, the incidence of complications in the experimental group was lower, and the quality of life scores of the experimental group were significantly higher than those of the control group, and the difference was statistically significant, the intervention effect of the experimental group was also better. ***Conclusion:*** The application of breast conserving and sentinel lymph node biopsy in the treatment of early breast cancer can promote the recovery of patients, shorten the operation time and reduce the rate of complications, which has significant clinical significance.

Key words: Breast conserving; Sentinel lymph node biopsy; Modified radical mastectomy for breast cancer; Early breast cancer patients

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Breast cancer is a malignant tumor with high incidence rate, which seriously threatens women's health. The etiology of breast cancer has not been confirmed clinically, which is mainly related to genetic inheritce, excessive drinking and taking exogenous estrogen. The tumor size of early breast cancer patients with clinical stage I and II belongs to T1 and T2 stages. Surgical operation is an important treatment for breast cancer, the traditional method is modified radical mastectomy, that is, all the patients'breasts are removed, and the axillary lymph nodes are cleaned. However, this kind of operation is more traumatic, which damages the integrity of the breast, and easily leads to edema of the upper limbs of patients, limb movement disorders, and reduced the quality of life of patients. Breast conserving surgery can make patients maintain good breast shape after surgery. Sentinel lymph node (SLN) is the first lymph node in the process of lymph node metastasis in breast cancer. After sentinel lymph node biopsy, if there is no sentinel lymph node metastasis, axillary lymph node dissection can be avoided. Breast conserving and sentinel lymph node biopsy can reduce the surgical trauma and promote the recovery of patients[1]. On this basis, this study will be breast conserving sentinel lymph node biopsy (SLNB) treatment methods to study its clinical significance.

1 General information of patients and research methods

1.1 General data analysis

The research work was carried out in our hospital from July 2017 to July 2020. The research objects were early stage female breast cancer patients with stage I and II who received surgical treatment in our hospital during this period. In order to explore the clinical effect of different surgical methods, 50 cases of breast conserving and sentinel lymph node biopsy were randomly selected as the experimental group, and 50 cases were randomly selected as the control group in the patients with modified radical mastectomy. The maximum and minimum age of patients in the experimental group was 55 years old and 32 years old, and the median age was (45.45 ± 3.23) years old. The corresponding maximum and minimum age of patients in the control group was 57 years old and 30 years old, and the median age was (56.05 ± 3.00) years old.

1.2 Research method

The patients in the control group were treated with modified radical mastectomy. In the specific implementation process, the patients were given general anesthesia first, and then a transverse fusiform incision was given at the distance of 0.5-1cm from the tumor edge. After skin incision, the free flap reached the subclavian bone, and the first tendon of rectus abdominis was drawn, reaching the lateral edge of sternum and the front edge of latissimus dorsi muscle. Free the whole breast from the surface of pectoralis major to ensure its integrity. Then lift the pectoralis major to remove the lymph and adipose tissue between pectoralis major and pectoralis minor, and give the patients axillary lymph node dissection (ALND). In this process, attention should be paid to avoid damage to the important nerve and vascular tissue of the patient, wash the wound cavity, and give the patient electrocoagulation hemostasis. Then the drainage tube was placed in the axillary and parasternal region of the affected side of the patient, and the incision was sutured. The wound was bandaged after confirming that there was no incision tension and blood supply disturbance.

Patients in the experimental group underwent breast conserving and sentinel lymph node biopsy (SLNB). Breast conserving surgery removed the tumor and its surrounding 1-2 cm glands, marked the cutting edge, and gave rapid frozen section for pathological examination. When the pathological results of the cutting edge were negative, it indicated that breast conserving was successful. Titanium clip was placed for radiotherapy positioning, and the wound was plastic treated, drainage tube was placed, and the incision was closed. If the pathological results of the cutting edge were positive for two consecutive times, the patient should be given total mastectomy. In sentinel lymph node biopsy, 1% methylene blue was injected into the areola of the patient with a dose of 1 ml. The skin of the injection site was massaged for 5 minutes. The sentinel lymph node was found along the blue stained lymphatic vessels, and then the sentinel lymph node was removed and sent to the frozen section for examination. Axillary lymph node dissection can be avoided when sentinel lymph node pathology is negative, axillary lymph node dissection (ALND) is given when sentinel lymph node pathology is positive.

1.3 Observation index

Perioperative indicators: the perioperative indicators of the two groups were compared, including intraoperative blood loss, operation time, total drainage volume and extubation time.

Complications: To observe the actual situation of patients, record and compare the rate of complications between the two groups. The main complications included upper limb edema, movement limitation, subcutaneous effusion and flap necrosis.

Quality of life: the application of the breast cancer quality of life assessment scale, which mainly includes five aspects of physiological conditions, a total of 36 items, using the 5-grade scoring method, the score is 0-4 points, the higher the score, the higher the quality of life of patients[2].

1.4 Statistical methods

SPSS 20.0 software is mainly used for data statistics. Among them, for statistical calculation of measurement data, the result express mainly by ($\bar{x} \pm s$), and the test is mainly based on t value. For the statistics of counting data, the comparison result is counted by (n, %), and the test is represented by χ^2 value. If the result shows that the $P<0.05$, it means that it is statistically significant value[3].

2 Results

2.1 Perioperative situation

During the operation, blood loss, total drainage volume and extubation time of the experimental group were shorter than the control group, and the data difference was significant. The recovery effect of the experimental group was better.

2.2 Rate of complications

The rate of complications was 4.00% (2 patients) in the experimental group and 22.00% (11 patients) in the

Table 1. Comparison of perioperative conditions between the two groups (x±s)

Group	Operation time (min)	Intraoperative blood loss (ML)	Drainage volume (ML)	Extubation time (d)
Experimental group (n = 50)	66.67±10.22	60.98±11.54	105.33±19.07	1.32±0.67
Control group (n = 50)	99.87±12.09	158.08±42.33	235.54±37.09	3.08±1.06
t	9.002	10.203	9.994	7.034
P	<0.05	<0.05	<0.05	<0.05

Table 2. Comparison of the rate of complications between the two groups [n (%)]

Group	Edema of upper limb	Limited activities	Subcutaneous effusion	Flap necrosis	Rate
Experimental group (n = 50)	1（2.00）	0（0.00）	1（2.00）	0（0.00）	2（4.00）
Control group (n = 50)	3（6.00）	2（4.00）	4（8.00）	2（4.00）	11（22.00）
X2					8.097
P					<0.05

Table 3. Comparison of quality of life between the two groups ($\bar{x}$ ± s)

Group	Physiological status	Social and family situation	Emotional state	Functional status
Experimental group (n = 50)	25.99±3.24	22.09±3.67	20.15±2.00	23.43±4.23
Control group (n = 50)	21.09±2.76	18.34±4.08	17.33±3.90	20.89±5.22
t	8.043	8.998	7.056	5.445
P	<0.05	<0.05	<0.05	<0.05

control group.

2.3 Quality of life

The quality of life scores of patients in the experimental group were significantly higher than those in the control group, and the differences were significant.

3 Discussion

Breast cancer is a common malignant tumor in women. In recent years, the incidence rate of breast cancer is increasing year by year, and there is a trend occurring in younger patients. Occurrence of breast cancer is related to many factors such as genetic inheritance, excessive drinking and taking exogenous estrogen. The treatment of breast cancer includes surgery, chemotherapy, radiotherapy, endocrine therapy, targeted therapy and so on. In patients with early breast cancer, there is no obvious distant metastasis, so local treatment of breast is especially important. In the previous surgical treatment, modified radical mastectomy was usually applied. This operation includes total mastectomy and axillary lymph node dissection, which has a significant effect on cancer tissue clearance from patients. However, the operation is traumatic and the recovery speed of patients is slow. The impact of breast removal on the psychological and quality of life of patients is relatively large[4-5]. The primary focus of breast conserving surgery includes the tumor and the breast tissue around the tumor. According to the location of the tumor and the thickness of the breast, it is decided whether to remove part of the subcutaneous tissue and the pectoralis major muscle fascia in the depth of the tumor. The needle path, residual cavity and skin scar of biopsy incision should be included in the scope of resection as far as possible. Sentinel lymph node biopsy (SLNB) for breast cancer is a biopsy technique to evaluate the axillary staging. It can accurately evaluate the pathological status of axillary lymph nodes. For patients with negative axillary lymph nodes, SLNB can safely and effectively replace axillary lymph node dissection.

The results of this study showed that in the

experimental group with breast conserving and sentinel lymph node biopsy (SLNB), the operation time was shorter, the bleeding volume was less, and the extubation time was shorter, which indicated that this method had less trauma, could promote the recovery of patients, the rate of complications in the experimental group was lower, and the quality of life score of the experimental group was significantly higher than that of the control group. This showed that the treatment effective rate of experimental group is higher. Patients with modified radical mastectomy will expose more nerves and blood vessels, and prone to skin flap necrosis, subcutaneous effusion and other complications. In addition, during the application of modified radical mastectomy, axillary lymph node dissection (ALND) is very important step. It can judge the metastasis and prognosis of breast cancer, it will not increase the survival rate of patients, but it is easy to increase the risk of limb disorders[6]. The breast conserving surgery can determine the resection range of patients by multi-directional frozen section examination, it is therefore better in maintain the shape of breast after operation. Sentinel lymph node (SLN) is the first step in axillary metastasis of breast cancer, and it is almost impossible to have jumping metastasis. Therefore, when patients are given SLNB biopsy, the lymph node metastasis can be determined. If the axillary lymph node is negative, axillary lymph node dissection (ALND) can be avoided, in order to minimize the surgical trauma and reduce the rate of postoperative complications. Therefore, the clinical application effect of breast conserving sentinel lymph node biopsy (SLNB) is significant, which can help patients recover quickly, reduce the rate of complications, and effectively improve the quality of life of patients[7-10].

In conclusion, through the comparative study of breast conserving sentinel lymph node biopsy (SLNB) and modified radical mastectomy in the treatment of early stage breast cancer patients with stage I and II, it is found that breast conserving sentinel lymph node biopsy (SLNB) has better treatment effect, can help rapid recovery of patients, reduce the rate of adverse reactions, improve the clinical treatment effect, it is remarkable and should be further promoted.

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