

## **Effects of Endoscopic Radical breast cancer Surgery with Nipple and areola Preserved and Immediate Prosthesis Breast Reconstruction on Postoperative Complications of breast cancer Patients**

**Jianjun Wang<sup>1</sup>, Junyu Cao<sup>1</sup>, Chenjun Guo<sup>1</sup>, Fuqiang Huang<sup>2</sup>, Hanruizhi Wang<sup>1</sup>, Zhijuan Liu<sup>1</sup>, Kun Liu<sup>1</sup>, Li Li<sup>1</sup>**

<sup>1</sup>Department of Breast and Thyroid Surgery, The First People's Hospital of Yunnan Province, The Affiliated Hospital of Kunming University of Science and Technology, Kunming, Yunnan, 650000, China

<sup>2</sup>The Second Department of General Surgery of Lijiang People's Hospital, Lijiang, 674199, China

**Introduction:** To investigate the effect of endoscopic radical mastectomy (NSM) with nipple sparing and areola (NAC) combined with immediate breast reconstruction on postoperative complications in patients with breast cancer.

**Methods.** 94 cases of breast cancer from February 2020 to January 2023 were selected and divided into two groups by envelope method, 47 cases in each group. The control group was treated with endoscopic NSM surgery, while the observation group was treated with immediate breast reconstruction surgery. Patients were followed up for 3 months postoperatively to compare their cosmetic effects, shame, and postoperative complications.

**Result.** After 3 months of surgery, the observation group had higher scores for breast size, nipple size, shape, scars, softness, hardness, position, and the lowest point of the breast compared to the control group ( $P < 0.05$ ); After 3 months of surgery, the scores of economic discrimination, social exclusion, social isolation, and internal shame in the observation group were lower than those in the control group ( $P < 0.05$ ); There was no statistical difference in the incidence of perioperative complications between the two groups ( $P > 0.05$ ).

**Conclusion.** Endoscopic assisted NSM combined with immediate breast reconstruction for breast cancer patients does not increase the incidence of postoperative complications, can obtain good cosmetic effect, help reduce patients' sense of shame, and is worth popularizing.

Keywords: Preserving nipple and areola; Radical mastectomy for breast cancer; Immediate breast reconstruction with prostheses; Breast cancer; Postoperative complications

## INTRODUCTION

Breast cancer, which occurs mostly in middle-aged women, is a primary malignant tumor in the breast. The incidence of patients is mostly related to abnormal expression of estrogen receptor, heredity and exposure to radioactive substances [1]. Most patients with breast cancer have no obvious symptoms in the early stage of the disease, but with the extension of the course of the disease, they can manifest as breast masses, nipple discharge, etc., and severe cases will cause local skin color changes in the breast [2]. Surgical treatment, chemoradiotherapy and endocrine therapy are commonly used intervention methods for breast cancer patients. Good results can often be achieved by selecting appropriate methods according to the size of the tumor, the presence of distant metastasis and the psychological needs of patients [3]. However, more patients choose endoscopic nipple-areola sparing radical mastectomy, which has the advantages of less surgical trauma and good cosmetic effect, and most patients can benefit from it. However, with the continuous development of society, breast cancer patients put forward higher requirements for their own physical beauty. In addition to the requirements for breast cancer treatment, they also hope to obtain the recovery of shape, psychology and function [4-5]. Therefore, based on the above background, endoscopic nipple-areola sparing radical mastectomy combined with immediate prosthesis breast reconstruction has been used in clinical practice. This surgery can help patients reconstruct breast shape and improve patient aesthetics under the condition of eliminating tumor lesions, but its safety is controversial [6]. The aim of this study is to investigate the application of laparoscopy-assisted NSM combined with immediate prosthetic breast reconstruction in breast cancer.

## 1. MATERIALS AND METHODS

### 1.1 General Information

A total of 94 breast cancer patients from February 2020 to January 2023 were selected and divided into two groups by envelope method. There were 47 patients in the control group, aged (36-53) years, with an average age of (47.29±4.58) years. The average tumor diameter was (1.52±0.56) cm (range, 0.6-2.9 cm). According to TNM staging, 29 cases were in stage I and 18 cases in stage II. There were 47 cases in the observation group, aged (35-54) years, with an average of (46.42±4.54) years; The tumor diameter was (0.7-3) cm, with an average of (1.52±0.54) cm. According to TNM staging, 33 cases were in stage I and 14 cases were in stage II.

### 1.2 Inclusion and exclusion criteria

Inclusion criteria: (1) meet the diagnostic criteria of breast cancer [7] and have complete pathological results; (2) patients aged 35-55 years with stage I-II tumors; (3) Tumor diameter  $\leq 3$ cm, no contraindication of endoscopic nipple-sparing mastectomy and immediate prosthetic breast reconstruction; Exclusion criteria: (1) severe liver and kidney dysfunction or accompanied by autoimmune diseases; (2) the lesion located in the central area of the breast; (3) malignant tumors in other parts or with autoimmune diseases.

### 1.3 Methods

The control group was treated with endoscopic nipple-areola sparing radical mastectomy. Preoperative examinations were performed to determine the location and size of the lesion and its relationship with the surrounding tissues. After the operation plan was formulated, the patients were placed in the supine position. During the perioperative period, general anesthesia was used to abduct the shoulder joint of the patient, so that the elbow was flexed, and the forearm was suspended on the head frame. The injection of fat dissolved agent was completed at multiple levels and points in the axilla, and 10 minutes later, a 10cm incision was made in the midaxillary line under the axilla (the incision was located above the nipple) to complete axillary fat suction, and a 10mm Trocar was placed to help the patient establish artificial

pneumoperitoneum, and the pressure of pneumoperitoneum was controlled to 8-10mmHg. After inserting the endoscope, the magnification effect of the endoscope was used to further determine the location of the lesion. A surgical incision (5mm in length) was made on the lateral side of the pectoralis major muscle and the anterior edge of the latissimus dorsi muscle according to the operation requirements, and the surgical instruments were placed through the incision site. The fibrous septum was interrupted, and the attached lymph nodes and fat tissue were removed. After the axillary vein was found, the fat and lymph node tissue in the anterior inferior part of the axillary vein were removed to complete the lymph node dissection. According to the specific location of breast cancer, a fusiform incision was made at the edge of the areola, and the breast and breast tissue were removed after the flap was free.

Observation group: combined with immediate breast reconstruction with prosthesis. Breast reconstruction was performed after the endoscopic operation. Before breast reconstruction, the volume and height of the breast, the width of the breast base, and the distance from the nipple to the inframammary fold were calculated using a measuring cup with a scale. The silicone implant was selected according to the above measurement parameters. The procedures and methods of endoscopic nipple-areola sparing radical mastectomy were the same as those of the control group. Between pectoralis major and pectoralis minor, the pectoralis major muscle was opened downward, the serratus anterior muscle membrane was 3cm, and it was free to the posterior space of pectoralis major, and the spare silicone prosthesis (rough surface 245cc) was routinely placed. After the position and size were satisfactory, the lateral edge of pectoralis major and the free edge of serratus anterior muscle were sutured routinely. The patients were followed up for 3 months.

#### 1.4 Indicators of observation

(1) Cosmetic effect. Before and 3 months after the operation, the breast size, nipple size, shape, scar, hardness, position and the lowest part of the breast were evaluated in the two groups. Each score was 5 points, and the higher the score, the better the cosmetic effect [8]. (2) stigma. Before and 3 months after surgery, the

stigma of the two groups was evaluated by the Social impact Scale (SIS), including economic discrimination, social exclusion, social isolation and internal shame. The lower the score, the lighter the stigma [9]. (3) postoperative complications; The incidences of subcutaneous effusion, upper limb edema, incision infection, skin necrosis, and capsular contracture in the two groups during perioperative period were recorded.

### 1.5 Statistical Analysis

SPSS26.0 software was used to process the data. The enumeration data were analyzed by  $\chi^2$  test, expressed by n (%), and the measurement data were analyzed by t test, expressed by  $(\bar{x} \pm s)$ ,  $P < 0.05$  was statistically significant.

## 2 RESULTS

### 2.1 The cosmetic effects were compared between the two groups

There was no statistical difference in preoperative breast beauty between the two groups ( $P > 0.05$ ). The appearance of breast was improved in both groups 3 months after operation. The scores of breast size, nipple size, shape, scar, hardness, position and the lowest breast in the observation group were higher than those in the control group ( $P < 0.05$ ), as shown in Table 1.

Table 1 Comparison of cosmetic effects between the two groups (score,  $\bar{x} \pm s$ )

Cosmetic results	Observation group (n=47)		Control group (n=47)	
	Before surgery	Three months after surgery	Before surgery	Three months after surgery
Breast size	2.58±0.43	4.36±0.64 <sup>#*</sup>	2.60±0.45	3.43±0.53 <sup>*</sup>
Nipple size	2.61±0.45	4.41±0.59 <sup>#*</sup>	2.63±0.43	3.36±0.51 <sup>*</sup>
shape	2.56±0.41	4.39±0.61 <sup>#*</sup>	2.58±0.39	3.39±0.48 <sup>*</sup>
Scar formation	2.59±0.42	4.34±0.66 <sup>#*</sup>	2.61±0.43	3.41±0.51 <sup>*</sup>
Degree of hardness	2.57±0.40	4.56±0.44 <sup>#*</sup>	2.60±0.41	3.49±0.42 <sup>*</sup>
Location	2.64±0.51	4.45±0.55 <sup>#*</sup>	2.63±0.50	3.66±0.53 <sup>*</sup>
Lowest part of breast	2.66±0.48	4.49±0.51 <sup>#*</sup>	2.68±0.49	3.68±0.50 <sup>*</sup>

Compared with the control group, <sup>#</sup> $P < 0.05$ ; Compared with before surgery, <sup>\*</sup> $P < 0.05$

2.2 The stigma was compared between the two groups

There was no significant difference in stigma between the two groups before surgery ( $P>0.05$ ). The stigma of the two groups was reduced 3 months after surgery. The scores of economic discrimination, social exclusion, social isolation and internal shame in the observation group were lower than those in the control group ( $P<0.05$ ), as shown in Table 2.

Table 2 Comparison of stigma between the two groups (score,  $\bar{x} \pm s$ )

Groups	Point of time	Economic discrimination	Social exclusion	Social isolation	Internal shame
Observation group (n=47)	Before surgery	6.97±1.21	23.41±3.43	18.21±1.73	13.69±2.14
	Three months after surgery	4.31±0.84 <sup>#*</sup>	18.12±1.37 <sup>#*</sup>	13.45±0.95 <sup>#*</sup>	10.43±0.99 <sup>#*</sup>
Control group (n=47)	Before surgery	6.99±1.24	23.43±3.45	18.24±1.72	13.71±2.16
	Three months after surgery	5.67±0.85 <sup>*</sup>	20.43±2.14 <sup>*</sup>	15.23±1.27 <sup>*</sup>	12.15±1.32 <sup>*</sup>

Compared with the control group, <sup>#</sup> $P<0.05$ ; Compared with before surgery, <sup>\*</sup> $P<0.05$

2.3 The postoperative complications were compared between the two groups

There was no significant difference in the incidence of postoperative complications between the two groups ( $P>0.05$ ), as shown in Table 3.

Table 3 Safety comparison between the two groups [n (%) ]

Groups	Number of cases	Incision infection	Upper edema	Subcutaneous fluid collection	Necrosis of skin	Capsular contracture	Incidence rate
Observation group	47	0 (0.00)	1 (2.13)	0 (0.00)	1 (2.13)	0 (0.00)	2 (4.26)
Control group	47	1 (2.13)	1 (2.13)	1 (2.13)	1 (2.13)	1 (2.13)	5 (10.64)
$\chi^2$	/						1.389
P	/						0.239

### 3 DISCUSSION

Breast cancer can occur in people of different ages, and the proportion of young and middle-aged patients is the highest [10]. Because most patients with breast cancer do not have obvious symptoms in the early stage of the disease, most patients are diagnosed at a higher stage, resulting in the difficulty of clinical treatment. Surgery is one of the radical treatment measures for breast cancer patients, which can remove the lesion tissue, maintain the integrity of the body, and preserve the breast function to the maximum extent [11]. However, although the lesion tissue can be removed by traditional surgery in patients with breast cancer, the surgical trauma is large and the postoperative aesthetic is slightly poor, which affects the postoperative quality of life of patients [12-13]. In this study, the scores of breast size, nipple size, shape, scar, hardness, position and lowest breast in the observation group were higher than those in the control group 3 months after surgery ( $P<0.05$ ). The scores of economic discrimination, social exclusion, social isolation and internal shame in the observation group were lower than those in the control group 3 months after the operation ( $P<0.05$ ). The results showed that endoscopic assisted NSM combined with immediate prosthetic breast reconstruction can improve the cosmetic effect of breast cancer patients, maintain the postoperative physical beauty to the maximum extent, so as to reduce the stigma of patients and facilitate the recovery of patients. Analysis of reasons: endoscopic nipple-areola sparing radical mastectomy can obtain a good surgical cavity by dissolving fat tissue. With the help of the magnifying effect of endoscopy, axillary lymph node dissection can be achieved, and the loss of blood vessels and nerves can be reduced, and the safety of surgery can be improved [14-15]. At the same time, immediate postoperative breast reconstruction with prosthesis implantation can maintain the postoperative body beauty and obtain good cosmetic results. The operation is relatively simple and the prosthesis has good biocompatibility, which will not affect the postoperative recovery of patients [16].

From the above analysis results, it can be seen that endoscopic nipple-sparing mastectomy combined with immediate prosthetic breast reconstruction can reduce the

stigma of breast cancer patients, and the cosmetic effect of breast is high, but the safety of this surgery is controversial in clinical practice [17-18]. In this study, there was no significant difference in the incidence of perioperative complications between the two groups ( $P>0.05$ ), which showed that the operation did not increase the incidence of complications and the patients had high surgical safety. Analysis of reasons: The prognosis of breast cancer patients is often affected by postoperative complications, and prosthesis implantation can determine the occurrence of complications. The breast cancer patients in this study not only have good cosmetic results, but also do not affect the surgical operation. The selection of prostheses during the operation can maintain the physical beauty of the patients, and does not increase the risk of complications, with high safety [19]. Chen Cheng et al. [20] showed that ischemic necrosis is a complication with a high incidence after breast cancer surgery, which can affect postoperative recovery and reduce patient satisfaction. However, none of the cases in this group had ischemic necrosis of nipple and areola, which may be related to the small number of cases included, and further research and discussion are needed.

In conclusion, endoscopic assisted NSM combined with immediate prosthetic breast reconstruction for breast cancer patients does not increase the incidence of postoperative complications, can obtain good cosmetic results, and help to reduce the stigma of patients, which is worthy of promotion and application.

#### ACKNOWLEDGEMENT

Project number: 202101AY070001-239

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*Iranian Journal of Kidney Diseases / Voulem 18 / Number 02 / 2024 (DOI: 10.53547/ijkd.8295)*



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**Corresponding Author:**

Li Li

Department of Breast and Thyroid Surgery, The First People's Hospital of Yunnan Province, The Affiliated Hospital of Kunming University of Science and Technology, Kunming, Yunnan, 650000, China

E-mail: 13888778930@163.com