INTRODUCTION

The incidence of breast cancer in Japan has been gradually increasing (1, 2). Although the age at which women are most susceptible to breast cancer is lower than that for other cancers (3), the 5-year post-treatment survival rate in breast cancer is favorable in comparison to that in many other cancers. Thus, the prognosis of patients with breast cancer is relatively good. Therefore, patients’ postoperative quality of life is important, and a good aesthetic outcome after reconstruction surgery following cancer resection is a major quality-of-life factor. Symmetrical appearance after breast reconstruction contributes mainly to aesthetic outcome. Some form of “touch-up” surgery is required before and/or after reconstructive surgery in order to improve breast symmetry and patient satisfaction. Touch-up surgery is normally performed on the reconstructed breast and includes repositioning the mound, augmentation with fat grafting, and reduction with liposuction. However, it is sometimes performed on the contralateral breasts and includes modifying the shape, position, and size of the contralateral breasts.

Breast reconstruction is of two general types, namely autologous tissue transplantation and placement of a mammary prosthesis, which is generally a silicone implant. Autologous tissue transplantation is limited by the volume of available tissue, which is related to the patient’s body mass index (BMI). A mammary prosthesis can be adjusted to the size of the breast, but for a markedly ptotic breast, the original appearance of the breast cannot be mimicked using a mammary prosthesis. When the patient’s breasts are extremely large or ptotic, breast reconstruction can result in significantly asymmetrical appearance. When obvious asymmetry results from unilateral breast reconstruction, we apply reduction mammaplasty or mastopexy to the contralateral side as a delayed touch-up surgery. We reviewed touch-up surgeries performed at our hospital to evaluate the efficacies of reduction mammaplasty and mastopexy performed for breast symmetrization on the contralateral side.

PATIENTS AND METHODS

We performed unilateral breast reconstruction in 14 patients treated with breast cancer resection at Tokushima University Hospital, between January 2008 and December 2014. Three of the 14 patients underwent touch-up surgery for the contralateral breast. In two of these 3 patients, reduction mammaplasty was performed using the method reported by Georgiade et al. (4). In the third patient, mastopexy was performed using the method reported by Weiner et al. (5).

We were granted access to the medical records of the 3 patients by the Department of Plastic and Reconstructive Surgery of Tokushima University Hospital. The study was approved by the ethics committee of Tokushima University Hospital (No. 2607). We collected and evaluated the following patient information: age, height and weight, methods of breast cancer resection and breast reconstruction, the wait time (months) between breast cancer resection and touch-up surgery, preservation of the sensitivity of the nipple-areolar complex after the touch-up surgery, and aesthetic outcome (based on visual analog scale score). Results: Wait times in the 3 cases were 4, 9, and 18 months. Nipple-areolar sensitivity was well preserved in all 3 cases. Aesthetic outcomes were judged “excellent” or “very good.” Conclusion: Revision surgery on the contralateral breast 4 to 18 months after breast reconstruction substantially improves the aesthetic outcome. J. Med. Invest. 63 : 281-285, August, 2016

Keywords : reduction mammaplasty, mastopexy, touch-up surgery, breast cancer, breast reconstruction

Reduction mammaplasty and mastopexy for the contralateral breast after reconstruction surgery following cancer resection : A report of 3 cases

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Summary : Background : Breast reconstruction generally involves autologous tissue transplantation and placement of a mammary prosthesis. When the patient’s breasts are extremely large and ptotic, breast reconstruction often results in significantly asymmetrical appearance. However, a good aesthetic outcome after reconstruction surgery following cancer resection is an important quality-of-life factor. We evaluated the efficacy of touch-up surgery, either reduction mammaplasty or mastopexy, performed on the contralateral breast for symmetrization. Methods : Reduction mammaplasty was performed on the contralateral breast in 2 patients and mastopexy was performed on the contralateral breast in 1 patient after reconstruction surgery following cancer resection, between 2008 and 2014. We reviewed each patient’s medical record for general clinical information and for the methods of breast cancer resection and breast reconstruction used, wait time between breast cancer resection and touch-up surgery, preservation of the sensitivity of the nipple-areolar complex after the touch-up surgery, and aesthetic outcome (based on visual analog scale score). Results : Wait times in the 3 cases were 4, 9, and 18 months. Nipple-areolar sensitivity was well preserved in all 3 cases. Aesthetic outcomes were judged “excellent” or “very good.” Conclusion : Revision surgery on the contralateral breast 4 to 18 months after breast reconstruction substantially improves the aesthetic outcome. J. Med. Invest. 63 : 281-285, August, 2016

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Reduction Mammaplasty Procedure

Reduction mammaplasty is a procedure for reducing the size of large and ptotic breasts. It includes resection of excess breast parenchyma and transposition of the nipple-areola complex higher on the breast hemisphere. For reduction mammaplasty, a new, lifted-up nipple-areola complex position is determined preoperatively and marked on the contralateral breast, with the patient in a standing position. During surgery, superfluous skin is marked and resected along with fatty tissue and part of the mammary gland around the pedicle nipple-areolar flap. The blood supply for the nipple-areolar flap is from the inferior soft tissue pedicle containing perforator vessels on the pectoralis major muscle. The epidermis of the nipple-areolar flap is denuded, except for the nipple-areola complex itself. The nipple-areola complex is pulled up and sutured to the previously marked site. Ultimately, the skin envelope of the breast is sutured below the elevated nipple-areola.

Mastopexy Procedure

Mastopexy is a procedure for lifting ptotic breasts by correcting the breast contour and elevating the nipple-areola complex. It does not include volume reduction. For mastopexy, a new nipple-areolar site is marked preoperatively on the patient’s contralateral breast, as described earlier. During surgery, superfluous skin is resected, but the mammary gland around the nipple-areolar pedicle is not resected. The nipple-areolar flap is nourished from the superior soft tissue pedicle containing perforator vessels on the pectoralis major muscle. The nipple-areola complex is pulled up and sutured to the previously marked site. Ultimately, the skin envelope of the breast is sutured below the elevated nipple-areola.

RESULTS

The clinical characteristics, cancer resection surgeries, and touch-up surgeries with the results in all 3 patients are shown in Table 2. The patients were 51, 54, and 61 years of age. According to body mass index (BMI), Patient 1 was of normal weight, Patient 2 was overweight, and Patient 3 was obese. Patient 1 had undergone Halsted radical mastectomy, by which the pectoralis major and pectoralis minor were removed. Patient 2 had undergone modified radical mastectomy, in which both pectoralis muscles were preserved. Patient 1 had undergone delayed reconstruction with a pedicled transverse rectus abdominis musculocutaneous (TRAM) flap; the left deep inferior epigastric vessels were anastomosed with the left thoracodorsal vessels so that the entire flap would survive and the reconstructed breast could be made as large as possible. Patient 2 had also undergone delayed reconstruction with a free deep inferior epigastric perforator flap; the flap vessels were anastomosed with the left thoracodorsal vessels so that the reconstructed breast could be made as large as possible. However, the reconstructed breast did not match the contralateral breast in volume in either Patient 1 or Patient 2, so reduction mammaplasty was performed (Figures 2 and 3) at 4 and 9 months, respectively.

Table 1. Visual analogue scale*

<table>
<thead>
<tr>
<th>Score</th>
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<tr>
<td>Breast size: 2 (symmetric) to 0 (asymmetric)</td>
</tr>
<tr>
<td>Breast shape: 2 (symmetric) to 0 (asymmetric)</td>
</tr>
<tr>
<td>Breast scar: 2 (barely visible) to 0 (clearly visible)</td>
</tr>
<tr>
<td>NAC size, shape: 1 (symmetric) or 0 (asymmetric)</td>
</tr>
<tr>
<td>NAC color: 1 (symmetric) or 0 (asymmetric)</td>
</tr>
<tr>
<td>NAC position: 1 (symmetric) or 0 (asymmetric)</td>
</tr>
<tr>
<td>Most inferior point of breast: 1 (symmetric) or 0 (asymmetric)</td>
</tr>
<tr>
<td>Total: 10-9: excellent, 8-7: very good, 6-5: good, 4-3: fair, 2-0: poor</td>
</tr>
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</table>

NAC: nipple-areola complex.

*as described by Tomita K et al. (6).

Figure 1. Schematic diagram of the mastopexy performed for patient 3. (a) Preoperative design: A new nipple-areola position and the excessive skin to be resected are marked. (b) Intraoperative findings: Superfluous skin is resected, excluding breast parenchyma. The nipple-areolar complex is nourished from the superior pedicle on which the epidermis is denuded (indicated with an arrowhead). (c) Immediate postoperative findings: The nipple-areola complex is sutured to the same position as the reconstructed breast. The skin envelope of the breast is sutured in a reversed-T shape.
Patient 1 had undergone nipple-sparing mastectomy and immediate reconstruction with a silicone implant. Ptosis of the contralateral breast was significant, so mastopexy was performed 18 months after the mastectomy (Figure 4). The sensitivity of the nipple-areola complex was good in all 3 patients. The aesthetic outcomes were judged “excellent” or “very good”, according to the visual analog scale.
 DISCUSSION

In Western countries, reports on reduction mammaplasty and mastopexy for the contralateral breast after unilateral breast reconstruction are fairly numerous (7-14). Touch-up surgery for contralateral breasts has been rarely reported in Japan. As the breasts of Japanese women are, on average, smaller than those of Western women, the reconstructed breast is usually provided adequate volume with a latissimus dorsi or rectus abdominis musculocutaneous flap. The 3 patients described herein all had large ptotic breasts with significant asymmetry after breast reconstruction.

Reducing the mammary gland and fatty tissue while preserving both the original blood supply and sensitivity of the nipple-areola complex is key to successful reduction mammaplasty and mastopexy. Various techniques have been reported in attempts to improve these important steps. The resulting procedures are categorized according to the origin of the pedicle. Weiner et al. (5) described a procedure by which the nipple-areolar flap receives its blood supply from the superior pedicle. Ribeiro (15), Robbins (16), Courtiss et al. (17), and Georgiade et al. (4) described the use of the inferior pedicle. McKisock (18) and Strömbeck (19) advocated the use of a bipedicled flap for provision of more reliable blood supply. The 2 reduction mammaplasties we performed were according to Georgiade’s procedure, that is, by the inferior pedicled flap method. We chose this procedure because it allows for preservation of both nipple-areolar circulation and sensation (20) despite removal of a large amount of breast tissue. Our third patient, whose breasts were considerably ptotic, underwent mastopexy performed according to Weiner’s procedure, that is, the superior pedicled flap method. We chose this procedure because it allows firm fixation of the nipple-areola complex at the elevated position, maintenance of breast projection, and preservation of fullness at the upper site of the breast (21). Weiner’s procedure tends to result in loss of nipple-areolar sensitivity; therefore, we elevated the superior pedicled flap without dissecting it from the pectoralis major muscle. This way, we were able to preserve the cutaneous branches of 3 to 5 intercostal nerves and the sensitivity of the nipple-areola complex in our patient.

Touch-up surgery for the contralateral breast is sometimes performed at the time of or even before the breast reconstruction surgery (11-14). In our institute, we perform touch-up surgeries 4 to 18 months after the breast reconstruction. In our 3 patients, objective evaluation after the touch-up surgery showed excellent outcomes. We believe that symmetrical appearance can be attained easily with delayed touch-up surgery because the waiting period allows for maturation of the scar of the reconstructed breast.

CONFLICT OF INTEREST

This study was supported by departmental resources only. The authors have no conflicts of interest to report.
REFERENCES


