Surgical Technique

Breast sharing for closure contralateral mastectomy defect

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Abstract: Savage resection for advanced breast cancer can sometimes lead to large chest wall defects that cannot be covered with the rest of skin flap. Local flap is commonly used for covering chest wall defects given its short operative time, length of hospital stay, and satisfying cosmetic sequel. In this study, we present the surgical technique used to cover the lower medial chest wall defect after savage mastectomy. The defect at medial site was covered with the flap rotated from the contralateral breast. This technique is very useful, especially in patients with comorbidity; it achieved acceptable oncological outcome and good cosmetic result.

Keywords: Breast cancer; oncoplastic technique; local flap; breast flap; breast sharing

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Introduction

Oncoplastic technique is a valuable component of breast cancer surgery for patients who need to preserve their breast. Data also shows that it has oncological safety while maintaining the cosmetic result of the breast. In preserving the breast, resection of large tumors can be challenging. For locally recurrent breast cancer, the main goal of surgery is local disease control to palliate clinical symptoms. To make the oncoplastic surgery effective and oncologically safe, all foci of the cancers needs to be completely removed with adequate surgical margins giving enough histological normal tissue and maintaining the cosmetic result of the breast and there are no deformity sequelae.

Palliative systemic therapy is primarily used to treat breast cancer patients with concurrent distant metastases (stage IV). Surgical removal of the breast tumor does not provide survival benefit to the patients. Occasionally, primary tumors are resected in these patients for palliative reasons, such as improving the quality of life (QOL) through relieving symptoms of pain, infection, ulceration or bleeding. Without clear data for management recommendations, patients should be initiated on systemic therapy as first-line treatment. Patients who responded to treatments or had persistent, non-progressive metastatic diseases (especially those with good performance status) may be considered for palliative surgery as a salvage treatment. The QOL benefits have been highlighted in a recent study (1). A salvage resection was defined as the resection of all visible lesion, extended to the surrounding skin with a safety margin of at least 2 cm (2).

The choices of reconstruction methods depend on the location and size of the defect, availability of the local and pedicle flaps, previous surgery or radiotherapy, and the general condition of the patient. Direct simple closure is possible in small lesions. Skin grafts can usually be treated with superficial chest wall defects involving only the soft tissue. Previous or post-operative radiation therapy may compromise the healing of skin grafts.

Many kinds of flaps reconstruction were used to cover such chest wall defect, involving latissimus dorsi flap, transverse rectus abdominal myocutaneous flap, pectoralis major myocutaneous flap, and omental flap. However, these flaps may not be suitable for all patients regarding the existence of comorbidities and tissue availability (3). Thus, the local flap became one of the choices for these patients. In this study, we present one case that we used breast parenchyma to cover medial side chest wall defect in contralateral lesion.

Figure 1 Preoperative left breast lesion showing the skin involvement at left lower inner area which will need large amount of skin resection in mastectomy procedure.

Figure 2 Intraoperative shows post mastectomy defect with a large vertical dimension defect that cannot be close with simple suture of skin. Also shows the flap design in upper part of right breast with a wide base.

Figure 3 The right breast flap was elevated from pectoralis major muscle and rotated into the defect at left lower inner area, then sutured with the edge of the skin. The drains were placed under the flap.

Figure 4 One-week postoperative follow-up at the clinic shows a total viable of the flap without any necrosis part.

Methods

A 65-year-old patient presented with a large mass in her left breast. She was diagnosed with invasive ductal carcinoma. The assessment for metastatic disease showed no lesion of the chest and abdomen, but the bone scan found bone metastasis. She received systemic endocrine therapy for stage IV disease until stable bone metastases. After stable of bone disease was evaluated, salvage mastectomy was planned to reduce her symptoms in the breast. Preoperative breast lesion is shown in the picture (*Figure 1*). The lesion showed skin involvement mostly in the lower left of the inner breast and massive skin resection needs to be done. After total mastectomy was done, skin closure left was performed with direct closure between superior and inferior skin flap starting at the lateral site. However, it still left the defect in the left inner lower quadrant. We designed the breast flap from the upper part of right breast as a rotational flap to cover the medial defect of the left breast (*Figure 2*). After the breast flap was elevated from pectoralis major muscle, the incision was made along the previously drawn line. The base of the flap needs to be at least ½ wide in length so that its vascular supply can be maintained. The flap was then rotated clockwise into the defect and sutured to the remnant of skin. The defect was covered with a right breast flap (*Figure 3*). Two drains were put under the flap on the mastectomy bed. The patient was scheduled for the postoperative follow up at 1 week and the result is shown in *Figure 4*. The flap was totally viable with acceptable

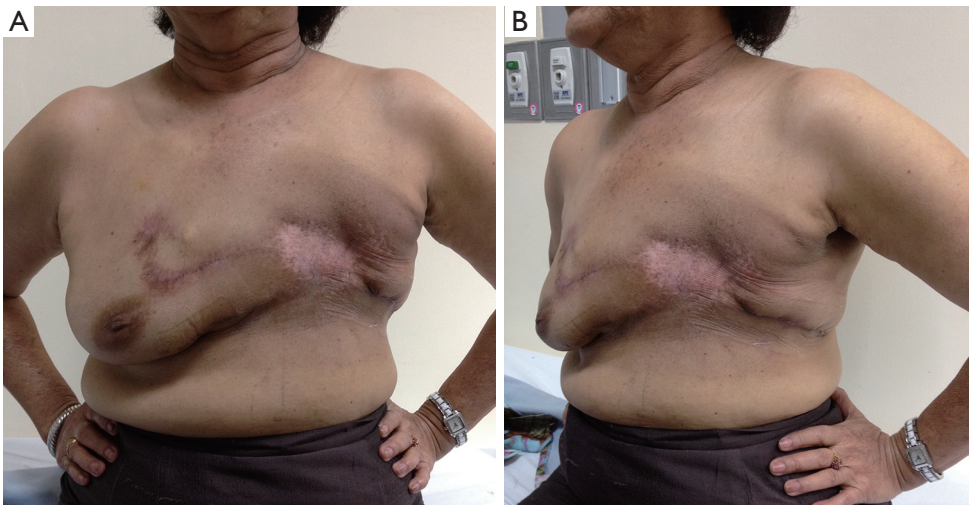

Figure 5 Showing post radiation result of the flap. (A) Anterior view of the results at 11 months after performing right breast flap; (B) lateral view of the results at 11 months after performing right breast flap.

cosmetic result of the donor site.

We discussed the role of chest wall radiation after surgery in our Breast Conference. Finally, the patient received chest wall radiation due to bone metastases improvement. The follow up of the flap post radiation are shown in *Figure 5A* and *5B*.

Discussion

There are many choices for coverage of chest wall defects after mastectomy. Flaps are superior to skin graft in general, especially for those who need radiation afterwards, because of its aesthetic result and integrity. Pedicle TRAM flaps and latissimus dorsi flap are some examples of the myocutaneous flaps with reliable vascular supplies, which are suitable for covering the large chest wall defect. However, those flaps may not be suitable for all patients especially those with comorbidity. Moreover, local flaps enable surgeons to close large defects with a lower morbidity compared to the muscle flaps that are either pedicled or free. Many procedures share the common goal to provide good primary healing and reduce flap failure. Planning for these techniques, however, requires an adequate length-to-width ratio and knowledge of the vascular anatomy of the donor region.

Local flaps that have been reported in previous literatures are bilateral advancement flaps that gave a horizontal scar at the end. Some defects are too large in the vertical dimension, allowing the tension to eventually cause wound dehiscence (4). Other types of flaps such as thoracoabdominal flap are more suitable in case of large defect (less than 600 cm^2) and better than myocutaneous flaps in terms of blood loss, operative time, and length of hospital stay (4,5). However, the major drawback of this procedure is the vertical midline scar (4). Thoracoepigastric flap is another option for large chest wall defect. Using mid axillary incision and base on perforators of superior-epigastric vessels, the flap was reported to be hemodynamically weak and behaves like random flap (4).

The breast parenchyma can be used as a flap to cover the defect located mainly in the midline. This flap is suitable for elderly patients with associated comorbidities because of its short operative time. The breast flap has excellent blood supply and is reliable, but it provides poor cosmetic outcome (6). In the literatures, breast flap had been used as a rotational flap to cover anterolateral chest wall defect as well (7). In addition, breast tissue was used for advancement flap to cover contralateral site defect as it was called 'cyclops flap'. Its use was suitable in most patient but the cosmetic outcome was an issue since the nipple has to be in the middle of chest wall (8).

In our experience, we prefer the breast tissue as rotational flap for selected patients with medial side defect. As the blood supply for breast tissue comes from both side of the chest wall (mostly from internal mammary medially and lateral intercostal artery laterally), we selected the medial side flap above the nipple areolar complex and rotated in the defect. Since this local flap follows the random pattern of the internal mammary arcade and the subdermal plexus,

the width-to-length of the flap doesn't need to go beyond 1:2 (9). The breast flap contains full thickness of the skin. In this case, the breast flap was 100% viable and no necrosis of the flap was found postoperative. Even though slight deformity of the right breast was found, it was not major and the patient accepted the cosmetic result.

Conclusions

Due to a good blood supply of the breast parenchyma, breast flap is one of the interesting choices among the local flaps used for covering chest wall defect in contralateral mastectomy site. Breast flap gives a reliable vascular supply and no tissue necrosis was found. We concluded that this technique should be considered among patients with comorbidity or with limitation to other types of reconstructions.

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Footnote

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/abs.2018.06.01). The authors have no conflicts of interest to declare.

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