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Breast sharing: New perspectives on an old method[☆]



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Summary *Background:* Many techniques have been described for breast reconstruction after mastectomy throughout the decades. In many cases, with excess tissue being discarded, a significant reduction of the contralateral breast was needed for symmetry. Described by Marshall as a one-staged, autologous, non-microsurgical breast reconstruction technique, this method was used in perforator flaps as a breast-sharing technique.

Methods: Between June 2011 and January 2014, the breast-sharing technique was performed in seven patients with simple mastectomy, delayed breast reconstruction, and willingness for autologous non-microsurgical breast reconstruction. All the participants in this study received preoperative oncological screening with ultrasound, magnetic resonance imaging, or mammography, which revealed the absence of pathologic imaging in the donor breast.

Results: The experiences of seven patients who underwent breast reconstruction surgery through breast-sharing technique are presented. Due to venous congestion, one of the patients (14%) suffered major complications with total loss of the flap. A total of four patients (57%) incurred minor complications with little to no repercussions on the final outcome. The functional and aesthetic outcomes were very satisfactory, and only one patient required a second touch-up surgery for lipofilling due to unsatisfactory breast volume. Regular follow-ups were done by the oncologist with no recurrences found up to the present.

Conclusions: Using contralateral breast as the donor site, this article presents the first case series for one-stage mammarian reconstruction. With some complications but good aesthetic outcomes, this method has been shown as another available method for breast reconstruction in patients with hypertrophic and ptotic breast.

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Introduction

Over several decades, numerous breast reconstruction techniques after mastectomy have been described. Ever since Czerny attempted the first autologous breast reconstruction by transplanting a fist-sized lipoma from the patient's flank,¹ many authors have contributed to the evolution of breast reconstruction in search of a method with less morbidity while still maintaining excellent aesthetic results. Some of the techniques use the tissue from the abdomen (pedicled transverse rectus abdominis musculocutaneous (TRAM) flap,² free TRAM flap,³ the deep inferior epigastric perforator (DIEP) flap),⁴ and others from the gluteus (superior gluteal artery perforator free flap⁵ or inferior gluteal free flap⁶). The use of pedicled flaps has also been advocated¹² (Thoracodorsal artery perforator flap (TDAP), muscle-sparing latissimus dorsi, intercostal artery perforator (ICAP)) but most cases require the implant of prosthetic material to reach an adequate volume or new scar areas.

As breast reconstruction often meant the need for significant reduction of the contralateral breast to achieve symmetry, Marshall reported the use of the contralateral breast as the donor site in a two-staged breast-sharing technique.^{7–9} Although theoretically appealing, thus enabling the use of tissue that would be discarded normally, very few authors published about the contralateral split-breast flap.

Material and methods

Between June 2011 and January 2014, a single-stage breast-sharing technique was performed in seven patients with simple mastectomy, delayed breast reconstruction, and the willingness for autologous non-microsurgical breast reconstruction. All the participants of this study received preoperative oncological screening with ultrasound, magnetic resonance imaging, or mammography, which revealed the absence of pathologic imaging in the donor breast.

Anatomy

The perforators ensure blood supply to the breast from the internal mammary artery, the thoracoacromial artery, the lateral thoracic artery, and the terminal branches of the third to eighth intercostal perforators. The internal mammary artery gives off perforators (internal mammary artery perforator; IMAP) in each of the upper six intercostal spaces¹³ before dividing distally into the superior epigastric and musculophrenic artery. Each IMAP is accompanied by a perforator vein and an individual nerve branch of the anterior intercostal nerve which allows harvesting a sensate flap. Usually the dominant perforator is the second IMAP supplying an area extended from the cranial border of the clavicle to the xiphoid and from midsternal to the anterior axial fold.¹⁴ Cadaveric dissections showed that the fourth IMAP typically supplies the skin area from the infra-areolar region to the submammary fold,¹⁰ although dynamic territories might even be larger due to the presence of linking vessels between adjacent IMAP(s) and between the IMAP(s) and the lateral thoracic artery.¹¹ These communicating

vessels are located at the subdermal level or midway between the dermis and the pectoral fascia, whereas the venous system was found to be mostly at the subdermal level.¹¹

Surgical technique

Marking

With the patient in standing position, markings were made in a similar fashion as in a reduction mammoplasty but with some modifications. The midline, anterior axillary line, inframammary fold (IMF), and the axis of the breast (A) were drawn. A parallel paramedian line called the vertical axis (VA) was marked on each side 9–14 cm from the midline. The distance was calculated from the umbilicus to the intersection between the IMF and the VA on the donor breast, and its transposition on the contralateral side was the position of the new IMF.

The position of the new nipple was designed at the level of the inframammary fold. Over this point, the Wise pattern¹⁷ was placed and the periareolar marking as well as the vertical limbs were drawn. The latter should not exceed 5 cm and their angle of divergence from the periareolar marking should be wider with more extensive ptosis. From these extremities, lines were directed laterally and medially to intersect the inframammary fold without surpassing the anterior axillary fold and a line 1 cm lateral to the midline, respectively.

Preoperative bidirectional Doppler of all IMAPs below the third intercostal space was completed. The perforator was chosen with the strongest Doppler signal, usually the fourth IMAP. Once the suitable IMAP was marked, the line connecting the medial vertical limb with the IMF was modified to include the perforator (Figure 1). A superomedial pedicle based on the first three IMAPs was

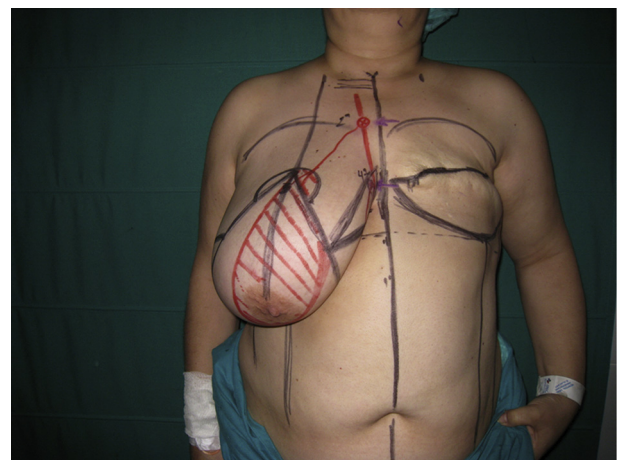


Figure 1 Marks are made with the patient in a standing position and a superomedial-based Wise-pattern-like reduction mammoplasty is performed. Also marked is the Doppler position of the fourth internal mammary artery perforator (IMAP) which will nourish our flap and the second IMAP which will nourish the remaining breast.

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