A case report of total breast reconstruction using an inframammary adipofascial flap with an implant

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INTRODUCTION: Prosthetic-based breast reconstruction can be used in combination with autologous flaps such as a latissimus dorsi (LD) flap or a thoracodorsal artery perforator (TDAP) flap to achieve symmetry. However, the LD and TDAP flaps require a different skin incision from that which is used for the mastectomy. As a new autologous flap for use in combination with prosthetic-based breast reconstruction after nipple-sparing mastectomy (NSM), we used an inframammary adipofascial flap.

PRESENTATION OF CASE: The patient was a 27-year-old female with moderate ptotic breasts, who had ductal carcinoma in situ in the lower outer quadrant of her left breast. After NSM through the inframammary fold (IMF) incision, the subcutaneous fat of the intended inframammary area was undermined, and the tongue shaped adipofascial flap was pulled up in the intended area. After inserting a tissue expander under the major pectoral muscle, this adipofascial flap was reflected back to the inferior portion of the breast area. After modeling the breast mound with this flap, the inframammary skin incision was sutured. Eleven months later, the patient underwent surgery to replace the expander with a permanent implant. Eight months after the replacement with an implant, the cosmetic result is good.

DISCUSSION: This procedure can be performed through the same skin incision on the IMF as NSM. Total breast reconstruction using the inframammary adipofascial flap with an implant can be an alternative approach to achieving symmetry in some patients.

CONCLUSION: This method is useful for breast reconstruction after NSM for young patients with moderate-ptotic breasts.

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1. Introduction

Expander/implant-based breast reconstruction following nipple-sparing mastectomy (NSM) has recently become a standard treatment [1]. Women with small non-ptotic breasts are good candidates for prosthetic-based breast reconstruction. However, in women with large and/or ptotic breasts autologous breast reconstruction is preferred due to the superior results in terms of aesthetics and natural feel [2].

The deep inferior epigastric perforator flap and the latissimus dorsi (LD) flap are the most common methods of autologous breast reconstruction [3]. Indeed, the LD flap is often used in combination with an implant to provide sufficient volume [4]. The thoracodorsal artery perforator (TDAP) flap is also used in combination with either a tissue expander or a permanent implant [5].

Sakai et al. [6] reported the utility of inframammary adipofascial flap for reconstruction after subcutaneous mastectomy. We have used the inframammary adipofascial flap for breast-conserving surgery (BCS) in the inferior portion of the breast [7,8]. This flap can be used to provide sufficient volume for prosthetic-based breast reconstruction after NSM. We therefore used an inframammary adipofascial flap for a young woman with moderate-ptotic breasts.

2. Case report

A 27-year-old female presented with discharge from her left nipple. She had no medical or family history of breast disease. A physical examination revealed no palpable mass in either breast and mammography showed no abnormal findings. Ultrasoundography (US) revealed a distended duct and clumped hypoechoic nodules in the lower outer quadrant of her left breast. US-guided vacuum-assisted biopsy was performed, and a histological analysis showed ductal carcinoma in situ. She underwent a partial mastectomy through an inframammary skin incision. After the cut margin of the specimen was found to be positive, she underwent breast reconstruction combined in which an inframammary adipofascial...
The surgical procedures for the inframammary adipofascial flap with implant.

3. Surgical technique

Before operation, the inframammary fold (IMF) and the area of the adipofascial flap were designed with the patient in a standing position. Since the adipofascial flap would be not released from the muscle 2–3 cm below the IMF (in order to preserve the perforators in the flap), a new IMF (neo-IMF) was drawn at 2–3 cm below the original IMF in a supine position. Of note, the original IMF marked on the skin in a standing position rises 2–3 cm in the head side direction in a supine position. Therefore, the level of IMF when the subject is in a standing position does not differ markedly before and after surgery, when the neo-IMF is secured to the chest wall 2–3 cm below the original IMF in a supine position. De-epithelialization of the skin of the area between the original IMF and theneo-IMF was performed and used the area was used as a part of the flap.

A skin incision was made at the inframammary line. After NSM, the subcutaneous fat of the intended inframammary area was undermined. When a length of 7 cm from the inframammary skin incision was reached, the fat and the anterior sheath of the rectus abdominis muscle was cut semicircularly in a tongue shape at the intended area. The surgeon grasped the tip of the tongue-like flap with forceps and cut along the edge of the flap and anterior sheath, then pulled it up and released the flap from the rectus abdominis muscle. If the fat flap did not include the rectus muscle sheath, then the fat would be very fragile; thus it was important to pull it up together with the rectus muscle sheath. This adipofascial flap was pulled up by separating the rectus muscle and the anterior rectus sheath as far as the neo-IMF; care was taken to preserve a few perforators. De-epithelialization of the skin of the area between the original IMF and neo-IMF was performed. After inserting a tissue expander under the major pectoral muscle, the flap was reflected back to the inferior portion of the breast area. The elevated and hinged flap was remodeled with respect to the inferior portion of the breast shape and secured to the major pectoral muscle with several absorbable sutures. After modeling the breast mound with this adipofascial flap, the skin was sutured at the area of the inframammary line (Fig. 1, Fig. 2).

The residual tumor was also found to be a ductal carcinoma in situ. After the expansion of the expander (11 months after the second operation), she underwent surgery to replace the expander with a permanent implant through the inframammary skin incision. The patient has been well since the surgery, without any recurrence of the cancer, and the cosmetic results were also evaluated to be good (Fig. 3).

4. Discussion

The breast size of most Japanese females is relatively small, thus prosthetic-based breast reconstruction is suitable for some Japanese patients. However, some patients have mild- or moderate-ptotic breasts, even though their breasts are not large.

In the United States, breast reconstruction with implant and acellular dermal matrix (ADM), which enables the reconstruction of mild or moderate ptotic breasts, has become a common [9]. However, because this procedure is not used in Japan, it is difficult to reconstruct a ptotic-breast with an implant. Furthermore, very few Japanese patients undergo contralateral breast surgery for symmetrization because national insurance does not cover this procedure.

The combination of an implant with an LD flap is well accepted for postmastectomy reconstruction [4]. There are recent reports of the use of a TDAP flap with an implant [5]. However, these techniques require a skin incision that is different from that which is used for mastectomy.

As reported here, an inframammary adipofascial flap can be performed in combination with an implant through the same skin incision on IMF as NSM, thus there is little damage to the donor site.

An inframammary adipofascial flap obtains little volume. Moreover, the mobilization of the inframammary adipose tissue of old patients with fatty breasts can easily cause fat necrosis because their inframammary adipose tissues are usually fatty and weak. Thus inframammary adipofacial flap is not indicated for elderly obese patients, even when BCS is indicated. The inframammary adipofacial flap in combination with an implant after NSM is only suited for young patients with dense moderate- ptotic breasts. However, it should be noted that risk of contralateral breast cancer is relatively high in young patients. This procedure is also available for treating contralateral breast cancer, and DIEP, LD and TDAP are
can be performed after an adipofascial flap. Thus, this procedure is a good option for breast reconstruction in young women.

5. Conclusion

This is the first known case report of an inframammary adipofascial flap with an implant.

The indications for an inframammary adipofascial flap in combination with an implant are limited; however, this method is useful for breast reconstruction after NSM for young patients with moderate ptotic breasts.

Conflicts of interest

The authors declare that they have no competing interests.

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Ethical approval

Data were collected in accordance with guidelines for human subjects research, as approved by the Institutional Review Board of Mie University Hospital (2837).

Consent

Written informed consent was obtained from the patient for publication of this case report.

Author contribution

Tomoko Ogawa: study design, data collection, data analysis and writing the paper Tomomi Yamakawa: study design.

Guarantor

Tomoko Ogawa.

References

[1] J.M. Serletti, J. Fosnot, J.A. Nelson, J.J. Disa, L.P. Bucky, Breast reconstruction after breast cancer, Plast. Reconstr. Surg. 127 (2011) 124e–135e.
[2] J.H. Yueh, S.A. Slavin, T. Adesiyun, et al., Patient satisfaction in postmastectomy breast reconstruction: a comparative evaluation of DIEP, TRAM, latissimus flap and implant techniques, Plast. Reconstr. Surg. 125 (2010) 1585–1595.
[3] M.S. Gart, J.T. Smetona, P.J. Hanwright, et al., Autologous options for postmastectomy breast reconstruction: a comparison of outcomes based on the American College of Surgeons National Surgical Quality Improvement Program, J. Am. Coll. Surg. 216 (2013) 229–238.
[4] E.G. Sternberg, G. Perdikis, S.A. McLaughlin, S.P. Terkonda, J.C. Waldorf, Latissimus dorsi flap remains an excellent choice for breast reconstruction, Ann. Plast. Surg. 56 (2006) 31–35.
[5] M. Hamdi, M. Salgarello, L. Barone-Adesi, K. Van Landuyt, Use of the thoracodorsal artery perforator (TDAP) flap with implant in breast reconstruction, Ann. Plast. Surg. 61 (2008) 143–146.
[6] S. Sakai, I. Suzuki, H. Izawa, Adipofascial (anterior rectus sheath) flaps for breast reconstruction, Ann. Plast. Surg. 29 (1992) 173–177.
[7] T. Ogawa, N. Hanamura, M. Yamashita, Y. Ri, N. Kuriyama, S. Isaji, Usefulness of breast-volume replacement using an inframammary adipofascial flap after breast-conservation therapy, Am. J. Surg. 193 (2007) 514–518.
[8] T. Ogawa, N. Hanamura, M. Yamashita, H. Kimura, Y. Kashikura, Long-term results of breast volume replacement using an inframammary adipofascial flap after breast-conserving surgery, Breast Cancer 21 (2014) 635–640.
[9] C.A. Salzberg, Focus on technique: one-stage implant-based breast reconstruction, Plast. Reconstr. Surg. 130 (Suppl. 2) (2012) 955–1035.

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