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Breast

A Skewered Flap Technique for Fat Grafting in Abdominal Flap Breast Reconstruction

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One of the most common techniques for breast reconstruction is a flap from the abdominal area, including a transverse rectus abdominis myocutaneous (TRAM) flap[1] and deep inferior epigastric perforator (DIEP) flap.[2] When performing breast reconstruction using these flaps, fat grafting is sometimes used for partial volume supplementation.[3] Harvesting adipose tissue from the discarded flaps has been reported as an efficient method for harvesting fat tissue.[4] This report focuses on our original technique for harvesting fat from the removed flap.

When liposuction was performed from the removed flap, it was unstable because it had already been detached from the body. Furthermore, the cannula tip may penetrate the subcutaneous fat side, making fat harvesting difficult. Therefore, we devised a technique to make it easier, as follows. After elevation of these flaps, we evaluated flap perfusion using real-time intraoperative visualization with near-infrared light fluorescence with indocyanine green. The poor blood perfusion areas of the flap were identified[5] and discarded. The removed flap was rolled into a cylindrical shape, and a liposuction cannula was then inserted into the rolled flap. The rolled flap was grabbed in the surgeon's left hand, and the liposuction process was performed. [**See Video (online)**, which displays fat harvesting.] This technique was performed for seven patients who underwent unilateral breast reconstruction with unilateral abdominal flaps (five pedicled TRAM flaps and two DIEP flaps), and 20–42 mL of fat was injected to the upper pole, where volume was insufficient as needed.

This technique, which we named the skewered flap technique, makes it easy for liposuction from discarded flaps because the surgeons can grab the flaps in their hands to fix them easily. Furthermore, when the flap was rolled and the cannula was inserted through it, the skin flap could cover the cannula around its entire circumference, preventing the cannula tip from penetrating the subcutaneous fat (Fig. 1). Furthermore, during the DIEP flap procedure, two surgeons worked together, with one performing the vascular anastomosis and the other harvesting fat from the discarded flap at a different site simultaneously without disrupting the microsurgical field. In addition, during the pedicle TRAM flap procedure, while one surgeon transferred the flap from the abdomen to the chest through a subcutaneous tunnel, the other surgeon harvested fat from the discarded flap outside of the surgical field at the same time. Further, it does not require donor sites, resulting in minimal invasion for the patients and no additional medical devices and costs.

The limitation of the study is that the technique was applied for seven cases. Although it is possible to harvest fat tissue more than the amount injected this time, if a unilateral DIEP flap with fat graft is expected to result in a significantly insufficient breast volume, a bilateral DIEP flap should be used.

In conclusion, we believe that fat harvesting from discarded flaps is a useful adjunct to breast reconstruction with abdominal flaps, and that our harvesting technique facilitates fat harvesting from them.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

REFERENCES

1. Serletti JM. Breast reconstruction with the TRAM flap: pedicled and free. *J Surg Oncol.* 2006;94:532–537.
2. Granzow JW, Levine JL, Chiu ES, et al. Breast reconstruction with the deep inferior epigastric perforator flap: history and an update on current technique. *J Plast Reconstr Aesthet Surg.* 2006;59:571–579.
3. Laporta R, Longo B, Sorotos M, et al. Breast reconstruction with delayed fat-graft-augmented DIEP flap in patients with insufficient donor-site volume. *Aesthetic Plast Surg.* 2015;39:339–349.
4. Sowa Y, Kodama T, Morita D, et al. Fat grafting with harvesting from zone IV in the DIEP flap. *Eplasty.* 2019;19:ic14.
5. Holm C, Mayr M, Höfter E, et al. Perfusion zones of the DIEP flap revisited: a clinical study. *Plast Reconstr Surg.* 2006;117:37–43.

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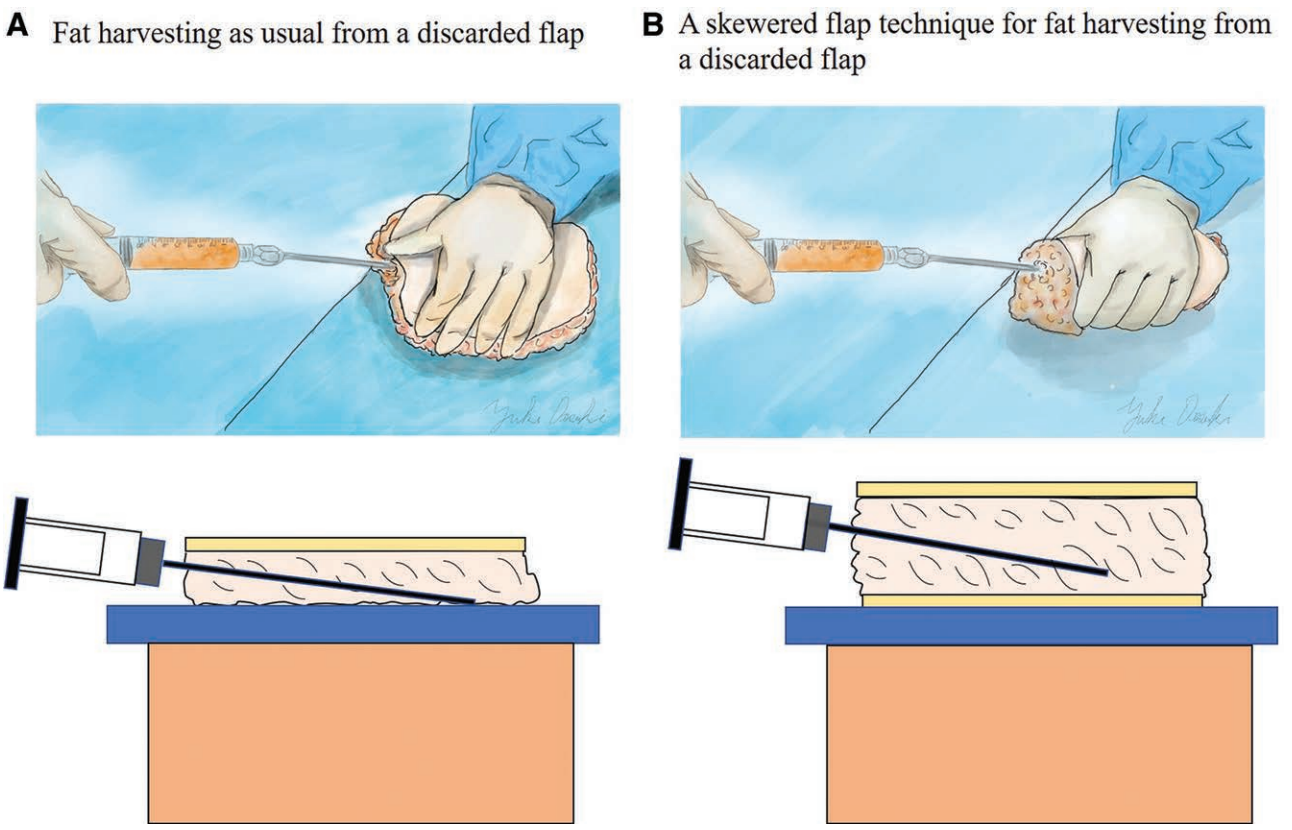

Fig. 1. Illustration showing fat harvesting as usual from a discarded flap. A, The cannula easily perforates the fat side of the flap, making it difficult to suction. B, Illustration showing our method of fat harvesting, in which the skin flap could cover the cannula around its entire circumference, preventing the cannula tip from penetrating the subcutaneous fat, making suctioning easy, even if the fat layer of the flap is thin.