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CASE REPORT

Treatment of breast deformity with free deep inferior epigastric perforator flap secondary to pectoralis major flap harvesting



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Summary Head and neck cancer is less common in women than in men. Free tissue transfer is the first choice in reconstructive option for head and neck tumor. Pedicle pectoralis major (PM) flap was a common option in head neck reconstruction in the past, but has become the salvage procedure when free flap fails. However, it is not suitable for female patients because of severe breast deformity and induced psychosocial distress. We present a female patient who had breast deformity due to PM flap reconstruction and was successfully treated with free deep inferior epigastric perforator (DIEP) flap. A 48-year-old woman had squamous cell carcinoma in the left side buccal mucosa, T2N0M0, stage II s/p wide excision with partial resection of maxilla and marginal resection of mandible. Free anterolateral thigh flap had been tried but in vain, then alternatively salvaged with a pedicle PM flap 3 years earlier. She presented with malposition of the left breast, nipple retraction, and high riding. We adequately released the contracture and reconstructed with a free DIEP flap. The free DIEP flap survived completely and restored a balanced breast with good shape and symmetry at 1-year follow-up. Although PM flap is a good modality in head and neck reconstruction, it should be used cautiously especially in female patients. The free DIEP flap is not only suitable for breast reconstruction in

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breast cancer patient, but also a good choice for a different purpose of breast reconstruction such as this patient with breast deformity due to PM flap harvest.

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1. Introduction

In the past, pedicle pectoralis major flap (PM flap) was a common option in head and neck reconstruction because of the ease of flap harvesting and reliable blood supply. Even with the worldwide use of free flaps, the PM flap is still considered the mainstay head and neck reconstructive procedures in many centers. However, the flap is usually associated with a high incidence of complications in addition to its large bulk compared with the free fasciocutaneous flaps.¹ Also the final functional and the esthetic results are not comparable to free flaps head and neck reconstruction. Therefore, with the maturation of the microvascular surgery technique in the past 20–30 years, the PM flap gradually became the salvage procedure when free flap failed.² In modern head and neck surgery, free tissue transfer is the first choice in reconstructive option.

The incidence of head and neck cancer varies greatly throughout the world. In Taiwan, head and neck tumor was the sixth-leading cause of death among cancer patients in the past 5 years.³ The high incidence and relatively young age of head and neck tumor patients make the treatment of head and neck tumor an important issue in Taiwan. In addition, even though the morbidity ratio of male-to-female is approximately 3:1 there are still numerous female patients who would experience surgical intervention for head and neck tumor excision with reconstruction. Generally, women have a higher expectation of postoperative body image. Psychosocial distress to female patients caused by postoperative severe breast deformity or scar formation with a PM flap is a major consideration. Here we present a 48-year-old female patient with squamous cell carcinoma in her left buccal mucosa. She underwent surgical intervention with wide excision of the tumor and PM flap reconstruction because of failed free flap reconstruction. The donor site resulted in severe scar contracture and left breast deformity with asymmetry and high riding. We utilized the free deep inferior epigastric perforator (DIEP) flap to reconstruct the left breast after complete release of scar contracture.

2. Case report

A 48-year-old woman who had squamous cell carcinoma in the left buccal mucosa (T2N0M0), stage II, received a wide excision with partial resection of the maxilla and marginal resection of the mandible, reconstructed with a PM flap because an initial free flap failed intraoperatively about 3 years previously. She came to our outpatient department for consultation because of postoperative severe breast deformity and scar contracture (Fig. 1). The PM muscle flap donor site showed nipple retraction, malposition of the left

breast, and high riding. She stated these body image changes caused severe psychosocial distress to her and her family. After consultation, we decided to use a DIEP flap to improve the cosmetic condition.

Preoperative skin marking of the patient was taken in the standing position (Fig. 2). All flap and recipient site dissection were done under loupe magnification. A 27 cm × 12 cm skin island was incised down to the abdominal wall, from the lateral to the medial portion. The anterior rectus sheath fascia was dissected off the underlying rectus abdominis muscle and its inscriptions, and the orientation and course of the perforators within the rectus muscle were evaluated using Doppler ultrasound. We performed a DIEP flap based on two middle rod perforators connected to deep inferior epigastric vessels with sparing of the entire rectus muscle. For breast symmetry, the previous PM flap scar was excised and released to lower down the high riding left breast. The left internal mammary vessels was dissected through the third intercostals space. The fourth rib cartilage portion was resected about 2 cm to create an optimal space that was wide and readily accessible for comfortable microvascular anastomoses. The DIEP flap was secured to the chest wall with staples, and the vascular pedicle was aligned for anastomoses. The flap was placed in a vertical fashion for coverage of the PM defect and reshape the left breast. During the inseting and the shaping of the flap, we were always aware of the tension, the rotation, and the status of the vascular pedicle.⁴ The contralateral native breast was used as a guide to achieve volume and shape symmetry for the reconstructed breast.

Meticulous closure of the rectus fascia was required to prevent abdominal weakness or hernia. The umbilicus was brought out and sutured through an ovoid incision made in the midline of the abdominal flap between the bilateral anterior iliac crest.

A supportive bra was placed on the patient to help support and maintain the position of the reconstructed breast medially. The patient was placed in a flexed position to minimize tension at the abdominal donor site, and the flap was monitored every hour by our staff in the microsurgical intensive care unit.

2.1. Outcome

At 1 year follow-up, the free DIEP flap survived completely and restored balanced breasts with good shape and symmetry (Fig. 3). Psychosocial distress was also relieved as stated by the patient.

3. Discussion

The PM flap has been long utilized in restoring various defects in the head and neck region. During the past 2

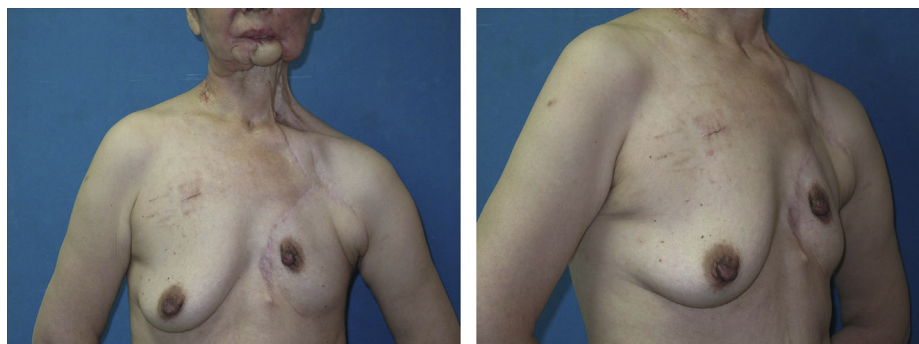


Figure 1 Nipple retraction, malposition of the left breast, and high riding after pedicle pectoralis major flap reconstruction.

decades, the utilization of the PM flap has been restricted to extensive deep defects that have resulted from resection of stage III–IV cancer.¹ The other indication of flap utilization is for the secondary reconstruction after free flaps failure, just like the female patient presented here. However, for female patients, esthetic considerations post-operatively are often important.

There are several options for breast reconstruction, such as prosthesis/implant, transposition of latissimus dorsi myocutaneous flap or pedicled transverse rectus abdominis myocutaneous flap. The low abdominal adipose tissue is a good option for autologous tissue transplantation for breast reconstruction in terms of the volume, size, and softness.⁵ The appearance and quality of the reconstructive breast

was natural because the makeup of the flap was similar to that of true breast tissue.⁶

Our patient received a PM flap for reconstruction and severe breast deformity with significant formation occurred at the same time. Tremendous psychosocial distress was also experienced by our patient and her family. For the improvement of significant transformed body image and psychosocial distress, a free flap provides better reconstruction outcome. The DIEP free flap spares the whole rectus abdominis muscle, includes skin and fat only, and therefore, preserves adequate abdominal wall competence. The DIEP perforator flap requires meticulous technique but offers proven reliability and a low rate of complications. As surgeons become more comfortable with harvesting DIEP flaps, the frequency of usage seems likely to increase.⁷

In conclusion, although the PM flap is still good for head and neck reconstruction in either primary or secondary salvage operations, it should be used with caution in female patients because of breast deformity. Once deformity develops, the free DIEP flap has many features that makes it well suited for breast reconstruction: it has sufficient subcutaneous tissue and skin; the vascular pedicle is large, long, constant, and reliable; and the reliable blood supply of the free flap reduces the risk of fat necrosis and also enables aggressive shaping of the flap for breast reconstruction to optimize the aesthetic outcome.

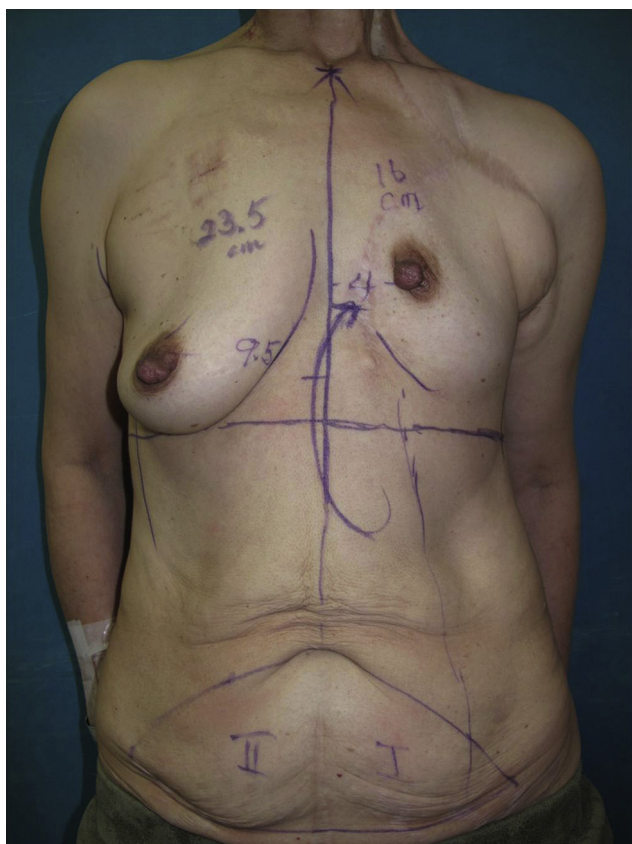


Figure 2 Preoperative design of the deep inferior epigastric perforator flap.



Figure 3 Good wound healing and flap viability were observed at follow-up.

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