

The Reconstruction after a Giant Phyllodes Tumor Resection Using a DIEP Flap

Yuki Tsuruta, MD
Ryo Karakawa, MD
Koya Majima, MD
Satoru Yamamoto, MD
Tomoyoshi Shibata, MD
Hidehiko Yoshimatsu, MD
Hiroki Miyashita, MD
Kenta Tanakura, MD
Tomoyuki Yano, MD, PhD

Summary: A phyllodes tumor of the breast is a rare neoplasm, accounting for 0.3%–1% of all breast cancers. The size is 4–5 cm on average but sometimes the tumor grows more and involves the entire breast. As for treatment, complete surgical resection is the standard for localized breast phyllodes tumors. The reconstruction of a large defect is challenging. Herein, we present a case where a deep inferior epigastric artery perforator (DIEP) flap was used in breast reconstruction for a 48-year-old woman who was suffering from a giant phyllodes tumor. Immediate reconstruction was performed after tumor excision; the specimen weighed 4,230 g and the skin defect was 22 × 24 cm. The deep inferior epigastric artery and vein were anastomosed to the right internal mammary artery and vein, and the superficial inferior epigastric vein was anastomosed to the right lateral thoracic vein. The postoperative course was uneventful and the DIEP flap survived completely. In the setting of the reconstruction for a large defect, we must make maximum use of the limited human tissue available and ensure minimum damage, while also considering the functional and aesthetic outcome of the donor site. Various ideas and technologies have been reported that can assist in achieving this goal, but few reports have commented especially on the reconstruction of giant phyllodes tumor using autologous tissues. There were some other options for the way of the reconstruction such as a latissimus dorsi flap and a rectus abdominis flap. Compared with these approaches, using a DIEP flap has some disadvantages such as the need for the microsurgical skill and the risk of postoperative hernia. However, a DIEP flap provides the enough tissue to cover the large defect without any damage of the muscle. To our knowledge, this case was the largest phyllodes tumor reconstruction ever, in terms of the amount of the skin needed and resected tissue involved. Although more studies and longer follow-up will be required in the future, this case may show the usefulness of DIEP flaps for reconstruction of a giant phyllodes tumor. (*Plast Reconstr Surg Glob Open* 2020;8:e2760; doi: [10.1097/GOX.0000000000002760](https://doi.org/10.1097/GOX.0000000000002760); Published online 27 April 2020.)

INTRODUCTION

A phyllodes tumor of the breast is a rare neoplasm, accounting for 0.3%–1% of all breast cancers.¹ Its typical presentation is an enlarging painless breast mass stretching the overlying skin. The size is 4–5 cm on average and 20% of the tumors grow larger than 10 cm.² Sometimes they grow more and involve the entire breast. As for treatment, complete surgical resection is the standard for

localized breast phyllodes tumors. There are no convincing data to recommend any adjuvant treatment after surgery. Wide excision with adequate margin is necessary to reduce the risk of local recurrence.³ But if the tumor is giant and involves the entire breast, excision is difficult and mastectomy must be considered. The reconstruction of a large defect is challenging and it needs careful planning. Here we present our experience of using a deep inferior epigastric artery perforator (DIEP) flap for a huge defect after the excision of a phyllodes tumor.

CASE REPORT

A 48-year-old woman presented to our hospital with suspicion of phyllodes tumor in her right breast (Fig. 1). Her chief complaint was the increase of the size of her right breast. Computed tomography at the introduction origin clinic showed a mass of 175.1 × 191.3 × 199.5 mm with a heterogeneous contrast effect, suggestive of a phyllodes tumor.

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From the Department of Plastic and Reconstructive Surgery, Cancer Institute Hospital of Japanese Foundation for Cancer Research, Tokyo, Japan.

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The right breast was obviously large because of the giant tumor, with slight redness and fever. The flexibility of the tumor was not clear but it seemed not to be tightly fixed to the tissue, and there was no visible invasion upon the skin. Tumor resection followed by immediate breast reconstruction using a DIEP flap was planned. Wide resection with a 2 cm margin was performed. The weight of the specimen was 4,230 g and the skin defect was 22 × 24 cm (Fig. 2). After the tumor resection, a 15.5 × 48 cm free DIEP flap was elevated with a right side one perforator (Fig. 3). Indocyanine green angiography showed that the right perforator was enough to allow perfusion from zone 1 to 3.⁴ A flap inset was performed with a 90-degree clockwise rotation. The deep inferior epigastric artery and vein were anastomosed to the right internal mammary artery and vein at the fourth intercostal space. At this time, since zone 2 of the flap was suspected to be congestive, we added one venous anastomosis of the superficial inferior epigastric vein to the lateral thoracic vein. We resected the lower one-third portion and the upper small portion of the flap and then closed the breast and abdominal wound. The postoperative course was uneventful and the DIEP flap survived completely. The patient was discharged on the 11th day after surgery (Fig. 4). The pre- and postoperative radiation therapy was not performed. The patient is under periodical follow up and there have been no signs of recurrence or distant metastasis for the past 1 year and pleased with the outcome.

DISCUSSION

Phyllodes tumors of the breast are rare fibroepithelial neoplasms, classified into benign, borderline, and malignant histological types. About 50% of the tumors are benign, while 30% are malignant.^{5,6} Local recurrence can occur in all subtypes, and systemic recurrence may occur

in borderline or malignant subtypes. Local recurrences are observed in 9%–36% of patients with malignant type tumors.^{2,7–9} As for treatment, complete surgical resection is the standard for localized breast phyllodes tumors. There are no convincing data to recommend any adjuvant treatment after surgery. To reduce the risk of recurrence, excision with adequate margin of more than 1 cm is necessary.⁹ If the tumor is large, mastectomy is inevitable. In that case, the defect may be giant and the reconstruction is challenging for surgeons.

In the case of reconstruction of a large defect, the choice of donor site is important. Recently, the outcome of donor sites has been emphasized, not only in terms of functional issues but also in terms of the aesthetic appearance of the donor sites. We must make the maximum use of the limited human tissue available, ensuring minimum damage and defects for the donor sites. Also, we should shorten the recovery period and minimize the number of operations. Many surgical techniques, such as muscle-sparing perforator flaps, use of a combination of multiple narrow flaps,^{10–12} and super-microsurgery have already been developed to achieve this goal.

At present, few reports have commented specially on the reconstruction of giant phyllodes tumors using autologous tissues. In 2016, Fang et al.¹³ reported a series of constructions with a bi-pedicled DIEP flap. The difference between their cases and ours is the defect size and the weight of the resected tissue. The skin defect in our case, particularly at the upper part of the thorax, was remarkably large, 22 × 24 cm, compared with their cases, 22 × 15 cm, 18 × 13 cm, and 18 × 13 cm each. Thus, the amount of skin needed was much more than in their cases. Moreover, the amount of the resected tissue was much larger, 4,230 g, compared with their cases, 1,370 g, 1,021 g, and 1,052 g. In 2017, Aashish et al.¹⁴ reported a

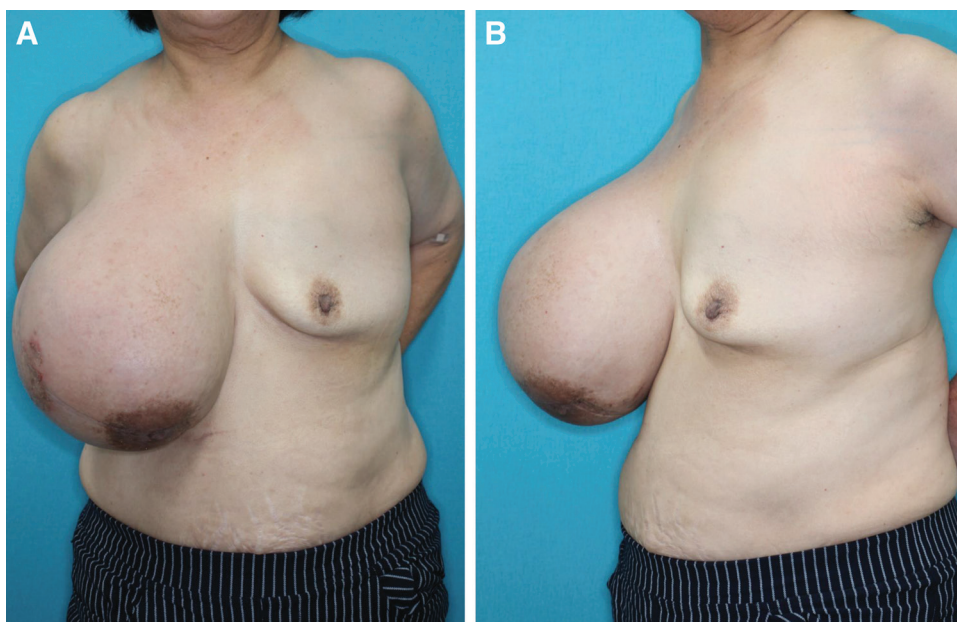


Fig. 1. Preoperative view. The patient was suffered from a giant phyllodes tumor in her right breast. A, The view from front. B, The view from her left side.

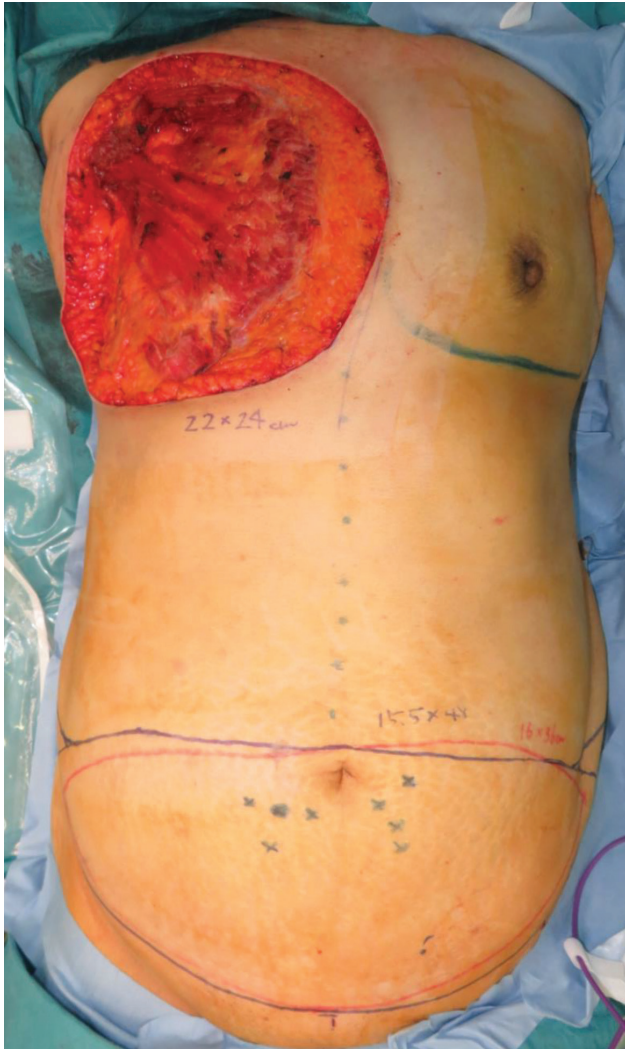


Fig. 2. The skin defect was 22 × 24 cm after tumor excision.

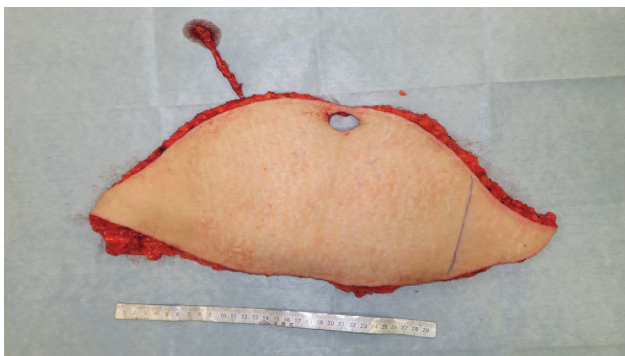


Fig. 3. A 15.5 × 48 cm free DIEP flap was elevated with right side one perforator.

construction with latissimus dorsi flap; the skin defect was 13.5 × 18.5 cm.

Our patient had plenty of fat tissue and sagging abdominal skin, so we chose DIEP flap as it could give the largest amount of soft tissue and the biggest skin paddle. A preoperative abdominal computed tomography showed



Fig. 4. Postoperative view at 3 months after the surgery.

sufficient perforators on both sides. We considered the possibility of changing to the vertical rectus abdominis myocutaneous flap if the skin defect was too large to cover with a DIEP flap. There were some other options for the way of the reconstruction such as a latissimus dorsi flap and a rectus abdominis flap. Compared with these approaches, using a DIEP flap has some disadvantages such as the need for the microsurgical skill and the risk of postoperative hernia. However, a DIEP flap provides the enough tissue to cover the large defect without any damage of the muscle.

In the setting of the reconstruction for a huge defect using a DIEP flap, indocyanine green angiography should be used to check the perfusion. A superficial inferior epigastric vein should be kept long enough for the anastomosis in case a flap is congested and superdrainage is needed. This case the DIEP flap survived completely, but we could use stacked profunda artery perforator flaps as a back-up option in the chance of flap failure.¹⁵

At present, few case reports have mentioned autologous reconstruction for giant phyllodes tumors and no comparative studies have been performed related to this issue. Thus, more studies and longer follow-up will be required in the future, but this case may show the

usefulness of DIEP flaps for reconstruction for a giant phyllodes tumor.

Ryo Karakawa, MD
3-8-31, Ariake, Koto-ku
Tokyo 135-8550, Japan
E-mail: ryo.kyara@gmail.com

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