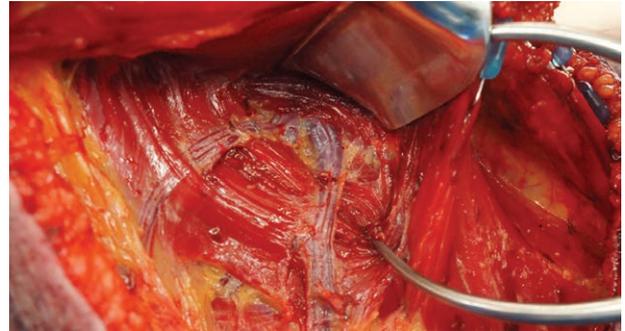






**Fig. 1.** Patient 1: Preoperative photo after bilateral mastectomy and implant reconstruction failure.



**Fig. 3.** Patient 1: Intraoperative view of 2 profunda artery perforators emerging through adductor magnus, in mosaic branching, to supply both the horizontal and vertical limbs of the flap.



**Fig. 2.** Patient 2: Intraoperative skin markings in the lithotomy position.



**Fig. 4.** Patient 1: Postoperative results of bilateral breast reconstruction, using fleur-de-PAP free flaps, following second-stage procedure and tattooing at 1.5 years. Not shown is the postoperative thigh views of the donor site demonstrating well-hidden scars in inferior gluteal crease and medial thighs that resemble acceptable medial thigh lift results.

vascular anastomosis. The flaps were inset using the transverse portion of the flap to provide superior fullness and the vertical portion of the flap providing an inferior sling along the inframammary fold (IMF). Final flap weights were: right 316g, left 298g with each flap measured 22 cm × 7 cm. Perfusion to all components of the skin paddle was confirmed with SPY (Novadaq, Toronto, Ont.) fluorescence imaging.

At follow-up appointments, the only complication was minimal dehiscence at the T-junction of the thigh incisions bilaterally which was treated with silver nitrate applications. She subsequently underwent second-stage esthetic procedures for contouring by excising the skin paddle, fat grafting for volume in the superior pole (140 mL to right breast and 80 mL to the left breast), and nipple tattooing, without complications (Fig. 4).

#### Patient 2

A 42-year-old woman with unilateral breast cancer who was not a candidate for bilateral DIEP flaps secondary to a previ-

ous abdominoplasty. She was offered autologous breast. With the patient in the lithotomy position, bilateral fleur-de-PAP flaps were marked and harvested by means of similar technique as patient 1 (Fig. 2) with flaps weighing 360 and 380g. The flaps were transferred to the chest wall for microvascular anastomosis using the internal mammary system. Inset was completed using an inverted T-position, with the lateral limbs folded posteriorly to create a 3-dimensional teardrop with greater projection at the inferior pole of the breast.

Her postoperative course was complicated by a surgical-site infection at the left breast, which responded to antibiotics, local debridement, and wound care. A second-stage procedure was completed 6 months later to finalize the reconstruction. At that time, the patient underwent bilateral fat grafting with 150 mL of fat to each breast and had bilateral nipple reconstruction.

### DISCUSSION

The PAP flap has the largest caliber skin paddle (averages of 28 cm × 8 cm) and longest pedicle (average of 10 cm), of all posterior thigh perforators. The PAP has an average of 3 perforators, to supply the medial and posterior thigh skin

and subcutaneous tissues, approximately 6cm below the buttock crease. Computed tomography angiogram scans show that perforators have an equal chance of being medial or lateral to the midline of gluteal crease in vertical distribution.<sup>1,8</sup> The fleur-de-lis technique allows centering of perforators and ensures inclusion of any variability in perforator outliers by means of the horizontal and vertical limbs. When selecting a breast reconstruction surgery for a patient with limited donor tissue, stacked flaps can provide adequate volume and projection with the sacrifice of multiple donor sites and increased scars.<sup>9</sup> Modifying the donor site, as with this mosaic fleur-de-lis PAP technique, allows for incorporation of more volume without sacrificing esthetics. One drawback of the extension of this design for skin paddle is the vertical scar. The vertical scar, however, mimics that of a medial thigh lift with minimal appearance from anterior and posterior views.<sup>10</sup> Both patients exhibited excellent breast esthetic outcome with minimal donor site morbidity. Literature review showed 1 case series for fleur-de-lis gracilis flaps. This series had 17 patients with a 19.3% complication rate for wound dehiscence at the Tjunction.<sup>4</sup>

### CONCLUSIONS

When the abdomen is not a viable donor site, the mosaic fleur-de-PAP flap technique for breast reconstruction has shown to increase volume with the addition of a vertical limb, include full angiosome of perforators, and proposed donor site morbidity equivalent to a medial thigh lift.

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### REFERENCES

1. Saad A, Sadeghi A, Allen RJ. The anatomic basis of the profunda femoris artery perforator flap: a new option for autologous breast reconstruction—a cadaveric and computer tomography angiogram study. *J Reconstr Microsurg*. 2012;28:381–386.
2. Ciudad P, Singhal D, Sapountzis S, et al. The extended fleur-de-lis latissimus dorsi flap: a novel flap and approach for coverage of lower back defects. *J Plast Reconstr Aesthet Surg*. 2013;66:1811–1813.
3. Salim F, Adlard R, Pickford MA. The Fleur-de-lis DIEP-introducing a 5<sup>th</sup> zone for DIEP reconstruction. *J Plast Reconstr Aesthet Surg*. 2013;66:1424–1427.
4. McKane BW, Korn PT. The fleur-de-lis upper gracilis flap for breast reconstruction: flap design and outcome. *Ann Plast Surg*. 2012;69:383–386.
5. Aitken ME, Mustoe TA. Why change a good thing? Revisiting the fleur-de-lis reconstruction of the breast. *Plast Reconstr Surg*. 2002;109:525–533; discussion 534–538.
6. Hunter JE, Lardi AM, Dower DR, Farhadi J. Evolution from the TUG to PAP flap for breast reconstruction: comparison and refinements of technique. *J Plast Reconstr Aesthet Surg*. 2015;68:960–965.
7. Koshima I. A new classification of free combined or connected tissue transfers: introduction to the concept of bridge, siamese, chimeric, mosaic, and chain-circle flaps. *Acta Med Okayama*. 2001;55:329–332.
8. DeLong MR, Hughes DB, Bond JE, et al. A detailed evaluation of the anatomical variations of the profunda artery perforator flap using computed tomographic angiograms. *Plast Reconstr Surg*. 2014;134:186e–192e.
9. Katharine Saussy BA, Stalder MW, Delatte SJ, et al. The fleur-de-PAP flap for bilateral breast reconstruction. *J Reconstr Microsurg Open*. 2017;2:e1–e3.
10. Rivera-Serrano CM, Aljaaly HA, Wu J, et al. Vertical PAP flap: simultaneous longitudinal profunda artery perforator flaps for bilateral breast reconstructions. *Plast Reconstr Surg Glob Open*. 2017;5:e1189.