

Composite Superior Gluteal Artery Perforator Flaps for Unilateral Breast Reconstruction: A Case Report

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J Reconstr Microsurg

Autogenous breast reconstruction methods offer excellent esthetic outcomes with minimal donor-site morbidity. The technique of “stacking” abdominal flaps, or using both abdominal flaps to reconstruct a single breast, has been described as a way of creating a breast of adequate volume and projection in a patient with a thin abdomen.^{1,2} When the abdomen is not an option, either for the sake of volume inadequacy or previous surgical damage to the desired donor site, the superior gluteal artery perforator (SGAP) flap may be considered. Although a single SGAP flap is typically adequate to provide volume in the thin patient, those with larger volumetric requirements may have inadequate donor tissue for satisfactory reconstruction with a single flap.³ In such cases, a composite of two independent SGAP flaps may provide adequate soft tissue to occupy the dimensions of the breast pocket and provide desired projection.

We present a patient who desired unilateral muscle sparing autogenous reconstruction and had previously received full abdominoplasty. This healthy 64-year-old woman was diagnosed with breast cancer 3 years before presentation and was treated at that time with right mastectomy and immediate implant reconstruction. She subsequently developed grade 4 capsular contracture creating marked breast asymmetry with significant discomfort. Her right inframammary fold was elevated and the breast footprint narrowed by contracture (► Fig. 1). When evaluating the patient for potential perforator flap donor sites, it was noted that she carried a small amount of adiposity in her gluteal region (► Fig. 2). It was determined that a single SGAP flap would not provide the volume needed to achieve her desired postoperative breast size and shape. Therefore, we elected to use two independent SGAP flaps to reconstruct her right breast.

In the operating room, the breast pocket was developed, widely releasing the scarified tissue and the implant/capsule

were removed. The internal mammary artery and vein (IMA/V) were accessed as recipient vessels. As planned before her procedure to ensure adequate vessel length for tension free inset of both SGAP flaps, the left deep inferior epigastric vessels were harvested for use as interposition grafts. These vessels were accessed through a portion of her previous abdominoplasty incision. The left-sided vessels were chosen to preserve maximum retrograde perfusion in the right internal mammary artery. The patient was transferred to prone position for harvest of the SGAP flaps. A preoperative computed tomography angiogram had been reviewed to identify the vascular pattern of the superior gluteal arterial system and the dominant perforators had been identified and marked on the patient with a handheld Doppler. The flaps were designed to place the vascular supply centrally within the base of the flap to ensure adequate perfusion and minimize fat necrosis. As previously described, it is our preference to design the flap much higher on the buttock than the conventional SGAP pattern to allow for the ultimate scar line to rest at the junction of the esthetic units of the lower back and upper buttock.² Because bilateral flaps were used, individual flap harvest was not overly aggressive minimizing donor-site morbidity and preserving the buttock contour. After evaluating our mastectomy defect it was determined that to best fill the breast pocket, one flap would be used to reconstruct the inferior aspect of the breast and the other would be used to reconstruct the superior aspect. In this way, the flaps were not stacked, per se, but independently arranged in the breast pocket to create a composite that made efficient use of each flap's volume. By briefly placing the flaps in the breast pocket before anastomosing them allowed us to determine the most appropriate vessel arrangement for revascularization. The flaps were deepithelized, and the graft vessels anastomosed to the retrograde IMA/V. The superior

received
January 28, 2015
accepted after revision
April 25, 2015

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Tel: +1(212) 584-4662.

DOI <http://dx.doi.org/10.1055/s-0035-1555141>.
ISSN 0743-684X.



Fig. 1 Capsular contracture has led to breast asymmetry with a narrowed base and an elevated inframammary fold. The left DIEP vessels are marked for anticipated harvest. DIEP, deep inferior epigastric perforator.



Fig. 2 The hip flaps are designed higher on the buttock than traditionally described. The solid lines represent the skin excision while the dotted lines demonstrate extend of the fat harvest achieved by beveling. Individual flap harvest was not overly aggressive minimizing donor-site morbidity and preserving the buttock contour.

flap was anastomosed to the graft vessels based on the preplanned vascular configuration. The inferior flap was anastomosed to the antegrade IMA/V. The completed vascular

construct was tension free and devoid of compression points (►Fig. 3). There was robust capillary bleeding noted on both the flaps. The flaps were sutured to one another and the

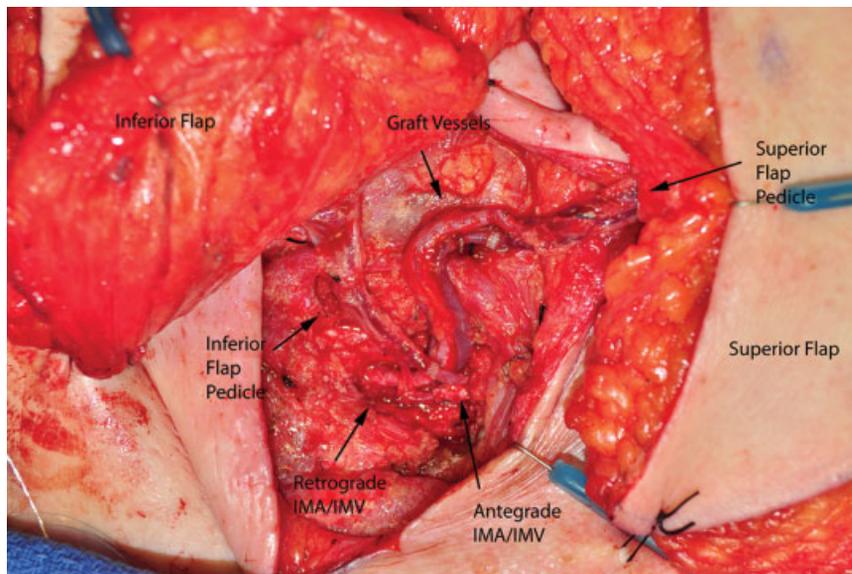


Fig. 3 The completed vascular construct is tension free and demonstrates an excellent flow.



Fig. 4 The early postoperative result demonstrates improved symmetry and breast contour.

construct was carefully secured to the chest wall with multiple interrupted sutures at the flap's periphery. The patient enjoyed an uneventful convalescence and was discharged home on the 3rd postoperative day with viable, soft flaps, and good size match to her contralateral breast (→**Fig. 4**).

The technique of combining flaps to overcome volume limitations and allow successful reconstruction of a single breast in thin patients is a powerful tool for the reconstructive microsurgeon. The body lift perforator flap incorporates a stacked deep inferior epigastric perforator (DIEP) and SGAP flap to reconstruct a single breast and the stacked DIEP unites two independent DIEP flaps to achieve the desired volume and projection in unilateral breast reconstruction.^{1,4} Other authors report stacked profunda artery perforator flaps for unilateral reconstruction, however, concerns for numbness in the distribution of the posterior femoral cutaneous nerve and the long-term additive risk of defatting of a weight-bearing surface may make this a less desirable option.⁵ We present another advanced reconstructive option in the composite SGAP flap.

In this case, the antegrade IMA/V and the retrograde IMA/V with an interposition graft were used to supply each SGAP flap independently as this appeared to be the most appropriate vascular arrangement considering multiple factors including: pedicle length and branching pattern as well as our anticipated flap arrangement within the breast pocket. The retrograde internal mammary system has been shown to be adequate to reliably supply and drain a free tissue transfer.⁶ Branch chain configurations could certainly be considered if

the vascular branching pattern was appropriate for such a linkage.

As demonstrated in this report, the composite SGAP flap gives the woman with a need for more tissue than can be harvested with a single SGAP flap another option for successful, cosmetically sensitive muscle-sparing autogenous breast reconstruction.

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