The Retrograde Internal Mammary System: Default Recipient Vessels for Stacked Perforator Flap Breast Reconstruction

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Purpose: The deep inferior epigastric perforator (DIEP) flap, due to its ample tissue, reliable vascular anatomy, minimal donor site morbidity, and excellent aesthetic outcomes, is currently the preferred tissue source for autologous tissue breast reconstruction. In most patients the abdominal donor site provides ample volume for an adequate result. However, in select patients with inadequate abdominal tissue, additional volume must be recruited to achieve optimal outcomes. The stacked DIEP, stacked DIEP/GAP, or stacked DIEP/profunda artery perforator (PAP) flap are excellent options for unilateral and bilateral reconstructions respectively.

Stacked flaps, however, are limited by the need for recipient vessels. Well-described options include the antegrade internal mammary system, the thoracodorsal system, internal mammary perforators, or branching vessels off of the primary flap pedicle. There are sporadic reports describing the use of the retrograde internal mammary system as recipient vessels for stacked flaps, but consistent use of these vessels has not been described.

Methods: 34 patients underwent stacked autologous tissue breast reconstruction with a total of 96 free flaps. 19 patients underwent unilateral stacked DIEP reconstruction, 1 had unilateral stacked PAP reconstruction, 1 had bilateral stacked DIEP/SGAP reconstruction, and 13 underwent bilateral stacked DIEP/PAP reconstruction. In all cases the antegrade and retrograde internal mammary vessels were used for anastomoses.

Results: Of the 34 patients, one patient experienced total loss of a stacked DIEP construct (98% flap survival rate), and 2 patients experienced minor fat necrosis. All other patients achieved satisfactory tissue volume and outcomes, with the stacked flaps averaging a combined 633.2 grams.

Conclusion: This is the first study reporting the standard use of the retrograde internal mammary system for recipient vessel anastomosis with stacked flaps. The success we have demonstrated with our clinical results suggests that this is a viable and reproducible technique. The antegrade/retrograde internal mammary system has become the default recipient vessel site in our practice, and we believe it is not only a safe and effective option, but that it also decreases surgical time, facilitates ease of inset, and improves overall efficiency of the case with excellent post-surgical results.

Disclosure/Financial Statement
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