



ELSEVIER



CASE REPORT

Use of a pre-expanded “propeller” deep inferior epigastric perforator (DIEP) flap for a large abdominal wall defect

Angela Cheng^{a,b}, Michel Saint-Cyr^{a,c,*}

^a Department of Plastic Surgery, UT Southwestern Medical Center, 1801 Inwood Rd., Dallas, TX 75390, USA

^b Division of Plastic Surgery, Emory University Hospital, 1364 Clifton Road NE, Atlanta, GA 30322, USA

^c Mayo Clinic, Division of Plastic Surgery, 200 First Street SW, Rochester, MN 55905, USA

Received 22 August 2012; accepted 12 September 2012

KEYWORDS

DIEP flap;
Propeller flap;
Abdominal defect;
Deep inferior;
Epigastric artery
perforator flap;
Burn

Summary Large abdominal wall soft tissue defects are traditionally reconstructed using loco-regional flaps and/or tissue expanders. Pedicled perforator flaps offer similar tissue coverage with minimal donor site morbidity and do not require microsurgical skills. The deep inferior epigastric perforator (DIEP) flap has become increasingly popular for breast reconstruction and offers abundant soft tissue while permitting primary donor site closure. To minimize operative sessions, recovery time, donor site morbidity, and avoid microsurgery, we combined tissue expansion with a “propeller” flap design and report this first case of a pre-expanded pedicled perforator flap based on the DIEP to address a large abdominal wall defect due to a burn injury.

© 2012 British Association of Plastic, Reconstructive and Aesthetic Surgeons. Published by Elsevier Ltd. All rights reserved.

Introduction

Tissue expanders have commonly been used for burn surgery reconstruction but as perforator flaps grow in

popularity, reports of a combined approach have surfaced.¹ Pre-expanded flaps have been well-described for coverage of large defects due to burns, congenital nevi or vascular tumors in children, and scalp defects. Pre-expansion can help thin the flap, enlarge the available skin paddle, facilitate donor site closure, and increase vascularity due to delay phenomenon. Perforator-based propeller flaps are also lauded for minimizing donor site morbidity, providing similar quality loco-regional tissue, and avoiding the need for microsurgical techniques. A combined technique affords

* Corresponding author. Mayo Clinic, Division of Plastic Surgery, 200 First Street SW, Rochester, MN 55905, USA. Tel.: +1 507 284 4685; fax: +1 507 284 5994.

E-mail address: SaintCyr.Michel@mayo.edu (M. Saint-Cyr).

maximal benefit and minimizes the disadvantages. Previously reported pre-expanded perforator-based flaps include the deep inferior epigastric artery perforator flap (DIEP),² thoracodorsal artery perforator flap (TdAP),³ internal mammary artery perforator flap,⁴ and the anterior intercostal artery perforator flap (AICAP).^{5,6} We describe the first case of a pre-expanded, propeller DIEP flap for reconstruction of a large abdominal wall defect due to a burn injury.

Case report

This is a 33-year-old healthy Hispanic patient who was originally involved in an auto-pedestrian accident in 2007 where he was struck and pushed into hot tar. He sustained a traumatic brain injury, a severe right tib-fib fracture requiring above-the-knee amputation, and burns to his face, abdomen, left elbow and hands treated with tangential excision with skin grafting. He presented to our clinic requesting improvement in his abdominal contour.

A large (30 × 24 cm) soft tissue defect was noted with meshed split-thickness skin graft firmly adherent to the rectus muscle without diastasis or hernia. The surrounding tissue laxity was insufficient for complete primary closure with excision of the defect. He was ambulatory with a prosthesis and had returned to construction work. Using a pencil Doppler in the clinic, we were able to identify several perforators in the right abdomen and the left superficial inferior epigastric artery (SIEA) (Figure 1). A computed tomography angiography (CTA) confirmed the position of several lateral row perforators on the right. We designed two pedicled perforator flaps, R DIEP and L SIEA, and placed large (12 × 17 cm and 11 × 17 cm) rectangular tissue expanders with a remote port through an incision along the existing scars as an outpatient procedure. Careful attention was paid during the dissection of the pocket to avoid injury to the critical perforator in the right lower quadrant. Postoperatively, the patient developed

abdominal wall cellulitis along the right lower quadrant (RLQ) which resolved with a brief hospitalization for IV antibiotics. Expansion then proceeded every few weeks as tolerated for 4 months. A total of 1100 mL and 530 mL of saline were injected into the right and left expanders, respectively (Figure 2). One month later, at time of surgery, we confirmed the perforator by pencil Doppler, removed the expanders, excised the defect (including the umbilicus), and dissected the (30 × 17 cm) flap based on a single lateral row perforator. The left abdominal tissue was advanced medially with progressive tension sutures. Then the DIEP flap was rotated 115° clockwise for inset (Figure 3). The donor site was closed primarily with minimal undermining and drains. The patient is satisfied with the resulting contour improvement and secondary liposuction is planned to address the fullness noted caudally and possibly reconstruct the umbilicus (Figure 4).

Discussion

Traditional surgical options for reconstruction of large abdominal defects such as this burn injury include serial excision, multiple expanders with local tissue advancement, expanded or extended loco-regional flaps (i.e. TFL or ALT), and free flaps. Several tissue expanders and operative sessions would likely have been required to reconstruct the defect resulting in financial burdens to this patient due to loss of time at work. Local tissue rearrangement following expansion would also potentially require multiple sessions due to the size of the defect and result in a donor site deformity. Sacrificing the latissimus function in an amputee risks further loss of function. Any thigh flaps which may disturb the remaining unaffected lower extremity were also considered unacceptable for this patient.

The abdominal angiosome based on the epigastric system is vast, slightly variable in perforator location, but reliable and permits the harvest of tissue in different orientations. The abdominal skin is pliable and intrinsically

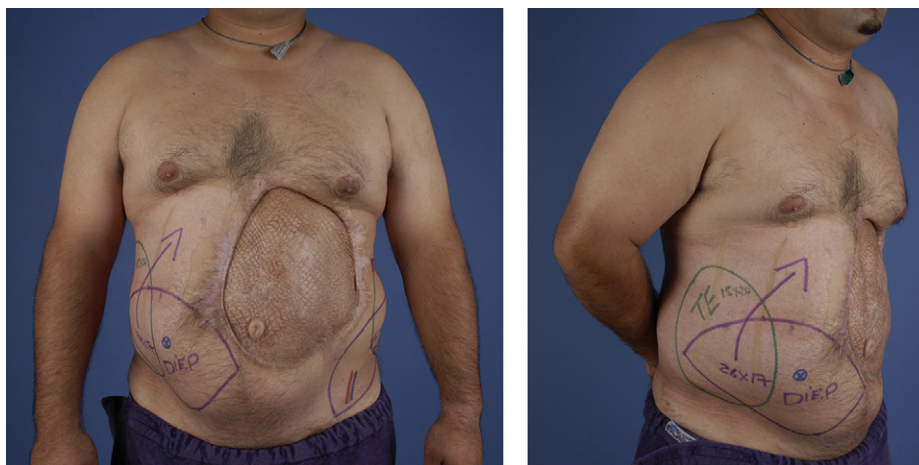


Figure 1 Preoperative AP and lateral oblique views of the large defect, nipple asymmetry, and healed grafts. The planned flap from the right abdomen based on a lateral row DIEP (blue mark) identified using pencil Doppler and CTA imaging is shown with TE (green) indicating the expander position and the skin island is marked in purple. A possible pre-expanded SIEA flap from the left abdomen was also designed and marked.

Download English Version:

<https://daneshyari.com/en/article/4117729>

Download Persian Version:

<https://daneshyari.com/article/4117729>

[Daneshyari.com](https://daneshyari.com)