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Anteromedial thigh perforator-assisted closure of the anterolateral thigh free flap donor site[☆]

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KEYWORDS

AMT flap;
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Perforator flap;
Propeller flap

Summary Primary closure of the anterolateral thigh free flap donor site is advisable as skin grafting can be associated with higher morbidity. However, this is not possible when anterolateral thigh free flap width is over 8–9 cm with a corresponding flap width-to-thigh circumference ratio over 16%. The authors report their experience and technique with the anteromedial thigh perforator dissection during anterolateral thigh free flap donor-site closure that, on demand, can be used to design a local perforator flap to achieve primary closure of the donor site. Between July and December 2012, 20 consecutive patients underwent elective anterolateral thigh free flap reconstruction for head and neck oncologic surgery. Attempts to close directly the anterolateral thigh free flap donor site failed in two patients with large flaps and V–Y anteromedial thigh perforator flaps were advanced to close the defect. Flaps healed uneventfully. Except two patients, at least one >1-mm perforator was found in all the remaining thighs. Further investigation is needed to establish the maximum anterolateral thigh free flap donor-site width that can be served by this reconstruction. This represents an ideal model for residents to start training on perforator dissection.

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The anterolateral thigh (ALT) flap has gained wide popularity for soft-tissue reconstruction and nowadays it is considered the ideal soft-tissue flap. This acknowledgment is also due to the relatively low rate of donor-site morbidities.^{1–3} Primary closure of the ALT donor site is

advisable to reduce morbidity and it mainly depends on flap width. Skin grafting the donor site, in fact, is generally associated with higher scarring, contour defect and higher rate of limitation in hip and knee range of motion because of strict adhesions between the skin graft and the fascia.^{1–3}

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This study aims to report our preliminary experience of ALT donor-site closure by preserving large anteromedial thigh (AMT) perforators that, on demand, can be used to harvest local perforator flaps to close the defect.

Patients and methods

Between July and December 2012, 20 consecutive patients underwent elective ALT free flap reconstruction for head and neck oncologic surgery. The mean age of the patients was 59 years (range 50–68 years). All patients were of normal weight (body mass index (BMI) range 18.5–24.9 kg m⁻²). Flaps' width was on average 6.6 cm (ranging from 5 to 9 cm) with flap width-to-thigh circumference ratio (W:T) being 13.2% on average (ranging from 10% to 17.7%).

Surgical technique

Closure of the ALT donor site is started by suprafascial undermining of the AMT using a freestyle perforator

dissection technique till the medial aspect of the sartorius (upper half)/vastus medialis muscles. Perforators larger than 1 mm and pulsatile are preserved. The rest of the donor-site closure is performed using standard technique.

When direct closure is feasible, the lateral and medial adipo-cutaneous flaps are advanced by using five to seven progressive tension sutures with Vicryl 2/0 (Ethicon Inc., San Angelo, TX, USA) without impairing perforators, to diminish the tension on the suture line. In two cases, direct closure was not possible and two defects of 3 and 4 cm in width remained. V–Y advancement perforator flaps of 10 × 15 cm and 10 × 16 cm, respectively, were used to cover the defects (Figure 1)a–d.

Results

No perforator larger than 1 mm was found on two thighs (10%). On 11 thighs we did find one perforator (55%), on 6 two (30%) and on 1 three perforators (5%).

Perforators' emergence through the fascia has been classified as in Table 1. 'First row' perforators were found

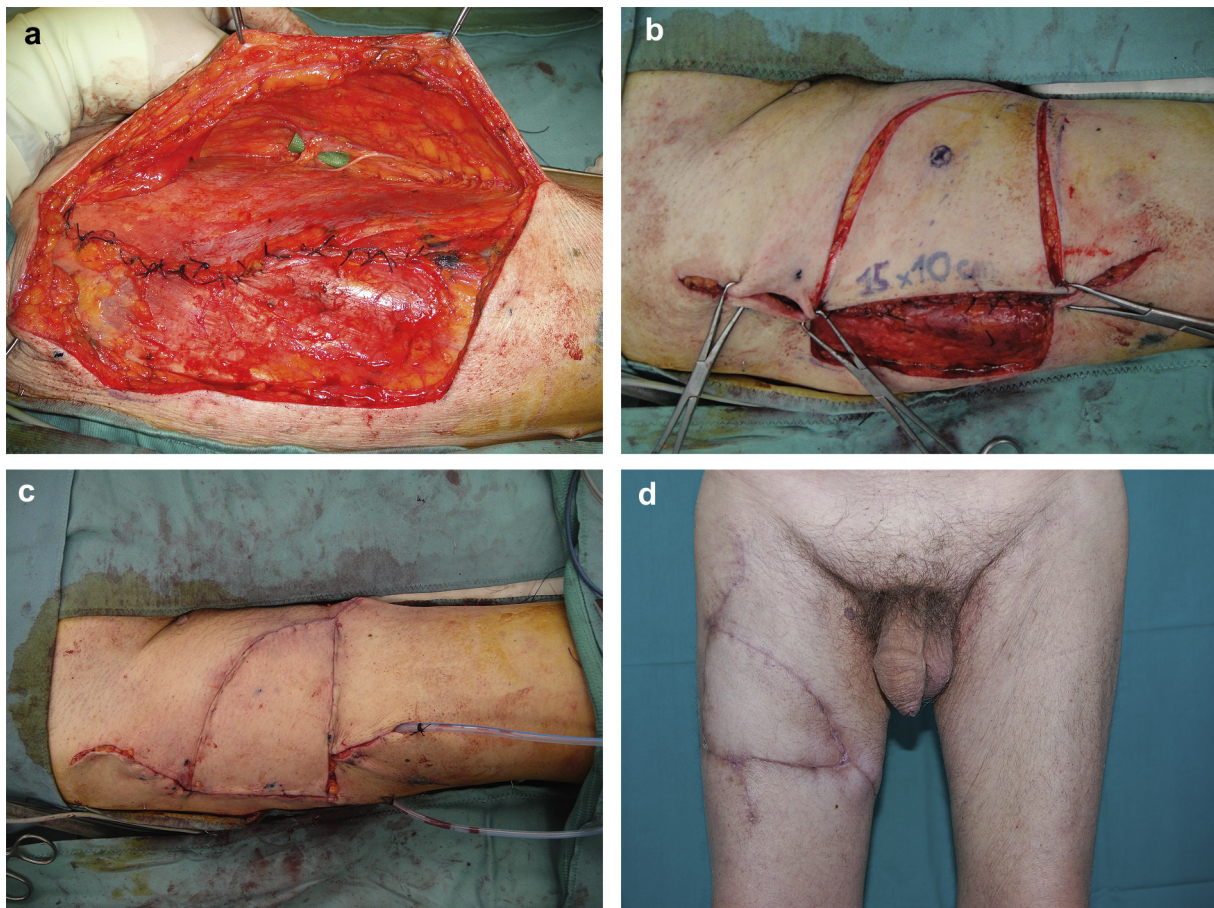


Figure 1 a, Right 12 × 9 cm adipocutaneous ALT free flap has been harvested. Anteromedial thigh suprafascial undermining with a big anteromedial thigh perforator dissected. This perforator (bigger than 1 mm) exits through a fascia slit along with a cutaneous sensory nerve in the mid-thigh, over the sartorius muscle. b, Attempt of direct closure of ALT donor-site failed and a defect 3 cm wide and with a length of 10 cm remains. A V–Y advancement perforator flap has been designed centred on the perforator. The advancement flap is 15 cm in length and 10 cm wide. c, The V–Y perforator flap has been advanced to cover the defect and primary closure of the donor site has been achieved. d, Three-month follow-up frontal view. The flap healed uneventfully. Notice that thigh contour is preserved and a very good colour and texture match has been achieved.

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