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Thoracodorsal Artery Perforator Flap Anterograde Dissection: From Source Vessel to Perforator

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The pedicled thoracodorsal artery perforator (TDAP) flap has been previously described for breast and chest wall reconstruction. The TDAP flap, with its long vascular pedicle and constant flap thickness, provides a relatively large amount of tissue and can be harvested without disrupting the underlying latissimus dorsi muscle (LD), minimizing donor site morbidity.[1] Nevertheless, the TDAP flap has not gained its deserved popularity because of its tedious dissection due to its small diameter perforators, their anatomical variations, and their proximity to the thoracodorsal nerve branches.[2]

Herein, we present a simple and reliable anterograde dissection technique for the TDAP flap that facilitates flap harvesting.

Before surgery, TDAP flap standard landmarks are outlined in the upright position. Cutaneous perforators are identified using a handheld Doppler in the lateral decubitus with the ipsilateral arm abducted as during the surgery. A cutaneous incision is made along the anterior axillary line and dissection proceeds until the axillary fascia is reached and divided. The TD pedicle is then identified and carefully isolated from surrounding tissues all along its course. Perforating branches arising from the source vessel are identified before entering the undersurface of the LD muscle or before curving around the anterior muscle margin. At this stage, a suitable perforator can be chosen based on its caliber and proximity to the defect and then freely dissected with minimal muscle dissection (Fig. 1). Flap markings may be adjusted according to the perforator chosen. Eventually, the TDAP flap is raised, relying on a single perforator as a nourishing vessel, and then transferred with the preoperatively planned movement (Fig. 2).

The TDAP flap is a versatile tool for breast and thoracic wall reconstruction. Moreover, LD muscle preservation can decrease donor site complications.[1,2]

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As for other perforator flaps, TDAP flap drawbacks include a steep learning curve often associated with increased operative time.[4]

The TD artery provides only a limited number of large (>0.5 mm) perforators amenable for flap harvesting, and cadaveric dissection studies report just 5.5 ± 1.8 perforators directed to the overlying skin.[2]

Angrigiani[1] and Heitmann[3] proposed the anatomic landmarks approach to help identify the majority of cutaneous perforators. Nevertheless, due to anatomical variations, patient position, and skin laxity, these landmarks can be unreliable in clinical practice and may not correspond to intraoperative findings, thus making TDAP flap elevation technically challenging. Preoperative perforator mapping with a handheld Doppler is simple and practical but may be difficult and require some experience.[2]

Perforator dissection is key for successful flap elevation.[4] Compared with conventional retrograde dissection,[5] anterograde dissection has several advantages, starting with the ease of isolating the source vessel, which allows direct visualization of all its branches directed to the overlying skin. In this way, the perforator on which the fascio-cutaneous flap should be based can be chosen accurately. Moreover, anterograde dissection reduces

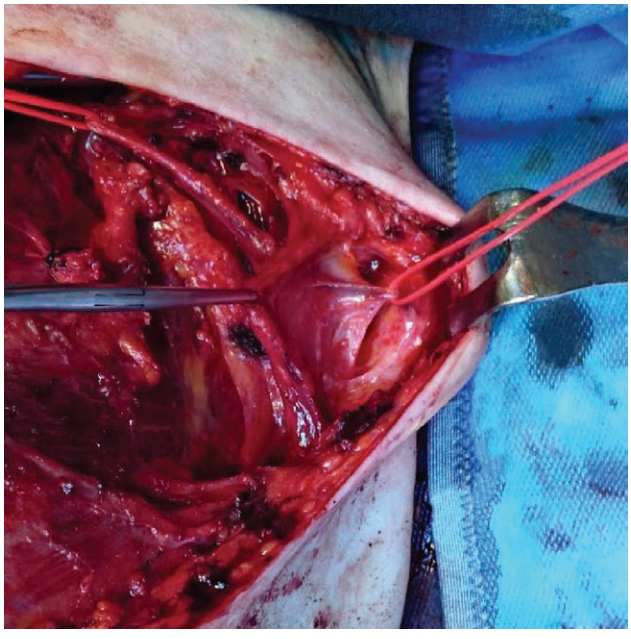

Fig. 1. Close up of the anterogradely dissected vessels. The TD pedicle is visible on the left red vessel loop entering the undersurface of the LD muscle, which is gently retracted. The chosen perforator vessel can be seen lying on the right red vessel loop, freely dissected from the surrounding tissue.

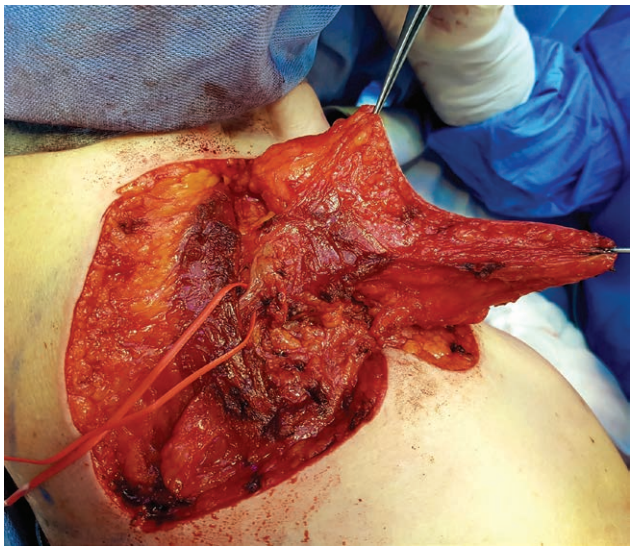

Fig. 2. The TDAP flap, relying on a single perforator, is elevated and moved into the defect with an advancement movement.

perforator manipulation, preventing the risk of pedicle avulsion.[4]

Previously marked cutaneous perforators can easily be confirmed and identified intraoperatively, allowing for selection of a more appropriate perforator in case mapped ones do not suffice in caliber or location, thereby shortening operative time.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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