

Bilateral Breast Reconstruction with Extended Thoracodorsal Artery Perforator Propeller Flaps and Implants

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Summary: We present our experience of bilateral total breast reconstruction using a double-sided extended thoracodorsal artery perforator propeller flap in a case series of 10 patients. Reconstruction was successfully achieved in all cases with few complications. The median time for surgery was 275 minutes (200–330), and the average implant size used was 350 cm³ (195–650). We demonstrate how the extended thoracodorsal artery perforator propeller flap allows for a swift and reliable direct to implant bilateral total breast reconstruction in a simple setting and is a valuable adjunct to our armamentarium of techniques for single-stage bilateral breast reconstruction. (*Plast Reconstr Surg Glob Open* 2015;3:e435; doi: 10.1097/GOX.0000000000000414; Published online 23 June 2015.)

Local perforator flaps are widely used for partial breast reconstruction, but only a small number of papers describe their use in total breast reconstruction.^{1–7} We were unable to locate any reports of their use in bilateral total breast reconstruction where abdominal flaps have become the mainstay of autologous treatment followed by the pedicled latissimus dorsi (LD) flap.^{8–13} In this study, we demonstrate our experience using extended thoracodorsal artery perforator (eTAP) propeller flaps for bilateral total breast reconstruction.

MATERIALS AND METHODS

A retrospective case series of 10 women represent our experience using a modified eTAP flap for bilateral breast reconstruction from May 2012 to December 2014. The flaps were simultaneously augmented with an implant situated at the breast footprint combined with an acellular dermal matrix (ADM). All reconstructive procedures were performed at Lillebaelt Hospital and Odense University Hospital in Denmark and Telemark Hospital in Norway using the identical surgical technique.

The surgical technique of the propeller TAP flap has been described and illustrated for unilateral cases in a recent paper by the authors.⁴ The key steps in brief are identification of the dominating perforators deriving from the thoracodorsal artery by color Doppler ultrasonography and design of an oblique downward skin paddle marked within the boundaries of the LD muscle^{4,14} (Fig. 1). The main difference between the unilateral and the bilateral case is the patient positioning. The flaps were raised in a subfascial plane. We used an “extended” flap design, extending the skin island subcutaneously 2–3 cm on each side at the level of the deep fascia to allow for a bigger flap and better vascularity but still enabling a direct donor site closure. The

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Fig. 1. Preoperative markings showing the oblique downward design for bilateral propeller eTAP flap breast reconstruction.

fasciocutaneous flaps are raised with the patient in the prone position using a monopolar cautery until the perforator is approached, and then the dissection is continued somewhat slower until the perforator is visualized and finalized using Stevens scissors. Simultaneous flap dissection can easily be carried out in this fashion starting with a relatively inexperienced assistant on the opposite side. Sufficient tissue was released around the perforators to ensure a tension-free rotation of the flap. The perforator(s) was neither skeletonized nor dissected through the muscle. We dissected the recipient site cavity through a lateral access using the monopolar cautery. The flaps were then transposed to the breast site, before turning the patient to the supine position. In case the recipient site is severely

damaged by scar tissue, it is our experience that it is advantageous to dissect the mastectomy pocket and release the axillary scar tissue in the supine position before turning the patient to the prone position for flap harvesting. The donor site was closed in 2 layers using either a running absorbable 0 monofilament or interrupted 2.0 braided suture in the deep dermis followed by intracutaneous 3.0 absorbable monofilament suture without placement of drains and the patient turned to the supine position (Fig. 2).

The mastectomy skin was elevated, and a subpectoral pocket created. The implants were inserted after fixation of a lower pole sling of either ADM (Strattice, LifeCell) or Vicryl mesh, and 2 drains were placed in each side. The TAP flap was used to

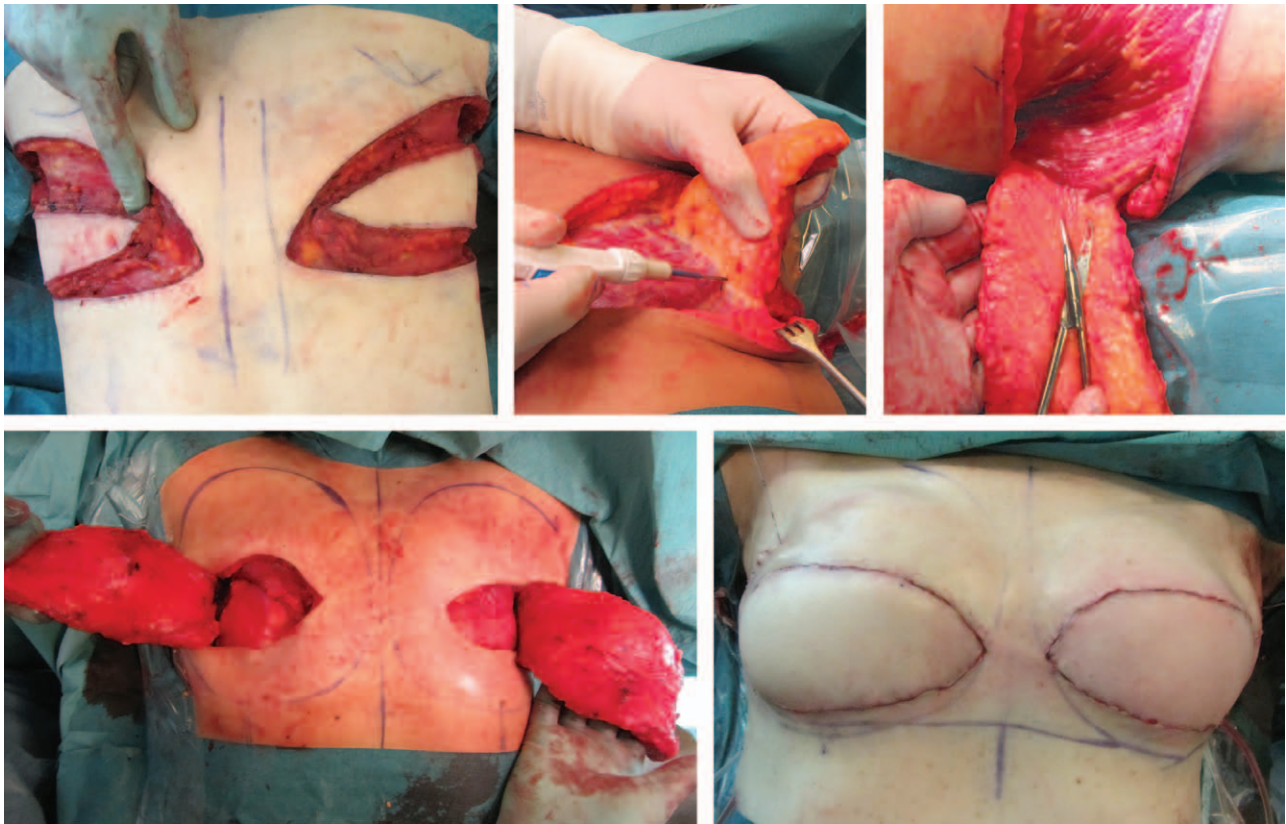


Fig. 2. Surgical technique.

drapes over the implant reconstruction and the skin sutured in 2 layers with absorbable sutures.

All data were collected retrospectively by review of patient records. Insufficient or ambiguous information was supplemented by an outpatient-controlled interview.

RESULTS

In the period between May 22, 2012, and December 5, 2014, 10 bilateral total breast reconstructions were performed using the eTAP flaps. The women had a mean age 47 years (36–70) and body mass index 25 (19–30). Three patients were active smokers (30%), and 5 had hypertension (50%).

The indication for surgery was previous bilateral mastectomy and requested secondary bilateral breast reconstruction or as a correction of an unsatisfactory result following immediate breast reconstruction. Five patients had previous radiation therapy, 4 unilateral and 1 bilateral.

Average implant size was 350 cm³ (195–650), and all were permanent silicone implants except 1 patient who had an expander necessitated by a tight skin envelope following bilateral radiation. The median operative time was 275 minutes (200–330). The median hospital stay was 8 days (3–16) because of

a hospital policy, which required no discharging of patients with drains.

Bilateral total breast reconstruction was achieved in all cases. Two patients required reoperative surgery within 30 days. One had a small partial necrosis, and the other needed relief of venous congestion. Both made a full recovery with a complete reconstruction.

The mean follow-up time was 11 months (1–29), and all patients reported satisfaction with the result of the reconstruction, denied any shoulder disability, and did not report experience of pain or discomfort at either breast or donor site.

DISCUSSION

One-stage bilateral breast reconstruction using the eTAP flap was achieved in all cases (Fig. 3). We believe that the placement of implants in a subpectoral/hammock pocket at the breast footprint site is imperative to keep the implant from sliding laterally, causing compression on the vascular pedicle. The breast size and implants used were large and selected by measuring the width and height of the breast base dimensions. The projection was decided based upon patient wishes and intraoperative assessment of the vascular status of the flaps. Only 1 patient had an

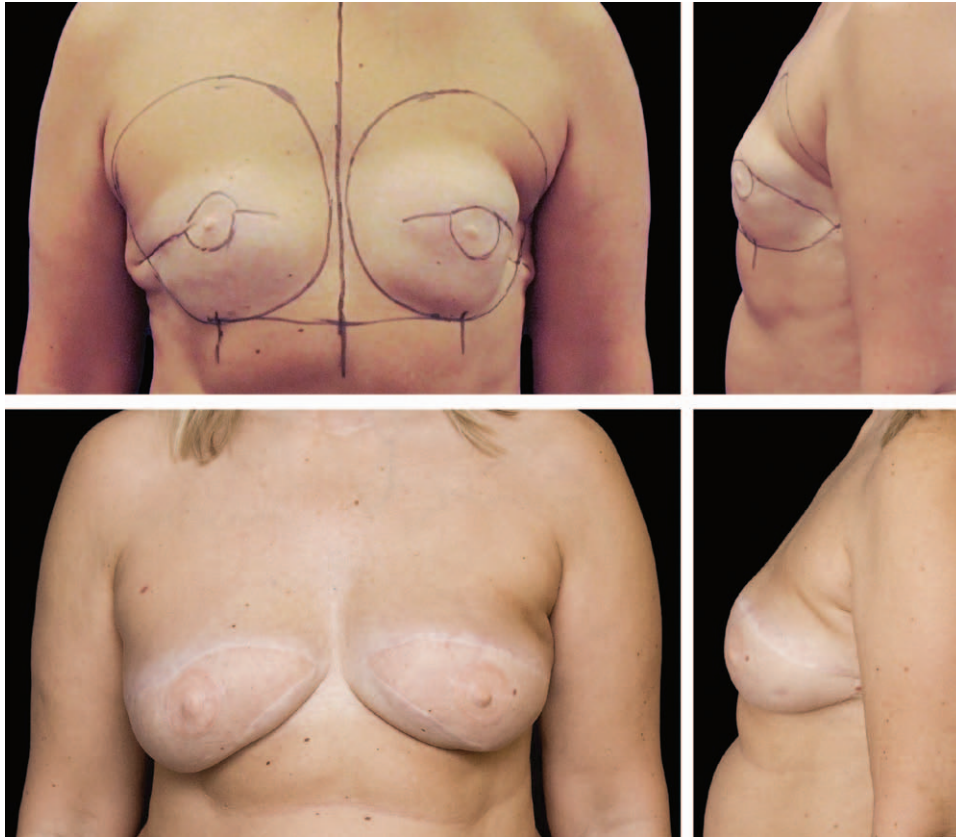


Fig. 3. Patient with an unsatisfactory result following immediate breast reconstruction shown before and after bilateral propeller eTAP flap breast reconstruction.

expander implant because of a nonpliable tissue envelope adjacent to the flap. Two patients experienced a unilateral complication. A hypertensive smoker had a partial necrosis of the flap needing revision, and another patient suffered a venous congestion because of a kinking of the pedicle. Both patients were reoperated on, and the reconstructive goals were achieved. The operative time was relatively fast compared with other single-stage techniques having a median duration of 4½ hours.

The eTAP and implant in a hammock of ADM has proven to be a simple and reliable technique for breast reconstruction. The simple setup offers a swift and satisfying double-sided reconstruction sharing all the benefits of the workhorse LD flap without any of the donor site issues. It compares favorably to other reconstructive methods for double-sided breast reconstruction.⁸⁻¹³ In fact, we would suggest this method as a valid option to expander implant reconstruction because the donor site is not a problem and the breast mound created is unmatched by expansion alone.

All patients reported to be very satisfied with the result of their reconstruction at the time of follow-up and denied any shoulder disabilities, experience of pain or discomfort either at the breast or at the donor site.

CONCLUSIONS

The eTAP flap allows for a swift and reliable one-stage bilateral total breast reconstruction in a simple setting and is a valuable adjunct to our armamentarium of reconstructive options. The procedure is well tolerated, and preliminary results appear to be very satisfying.

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