

# Five Year Experience of Oncoplastic Volume Replacement Using Local Perforator Flaps

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## Background

Patients undergoing breast-conserving surgery may require volume displacement or volume replacement to fill the excisional defect and ensure a good aesthetic outcome (Figure 1). Volume displacement by local mobilisation or mammoplasty may not be possible in small non-ptotic breasts. In the setting of a large tumour relative to breast size, simple wide local excision can result in a poor long-term aesthetic result. This can be addressed by importing tissue in the form of a local perforator flap.

In this study, we assess the outcomes of local perforator flaps following breast-conserving surgery.

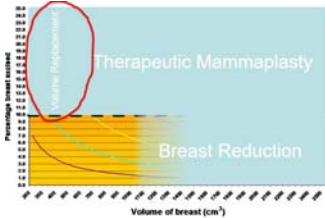


Figure 1: Indication for volume replacement oncoplastic surgery

## Methods

A consecutive case series study was performed. Since January 2014, 115 patients have undergone local perforator flap reconstructions in our unit, most commonly based on the lateral intercostal perforators (LICAP) or lateral thoracic artery perforator (LTAP). The surgical technique is demonstrated in Figure 2. Patients are marked preoperatively with Doppler guidance (Figure 3). Perforator flaps can be performed as either a 1-stage or 2-stage procedure, with the flap performed 2-3 weeks after wide local excision once margin status has been confirmed histologically. Data was collected prospectively for all patients in relation to indication for surgery, resection volumes, local flap type, post-operative complications and longer term oncological outcomes.

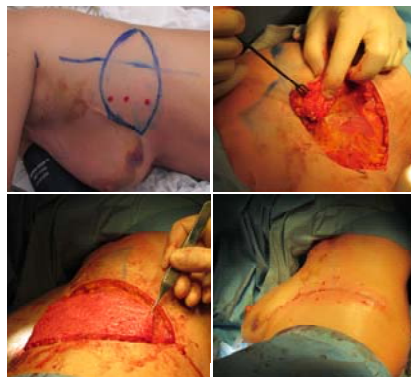


Figure 3 (a): Marking of the flap and perforators, (b) Raising the flap, (c) De-epithelialisation of the flap, (d) Wound closure

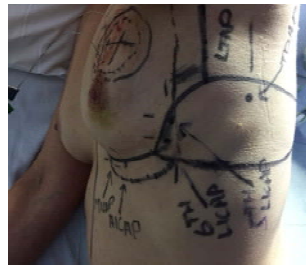


Figure 3: Preoperative marking of perforator vessels

## Results

- 115 patients, mean age 52 (range 27-84) years
- Mean wide local excision specimen weight 81.8g (range 25-313g)
- Mean tumour size 33.1 mm (range 4 – 80mm)
- Mean BMI 26.3 (range 19.4-41)
- Smokers =10 (8.7%)

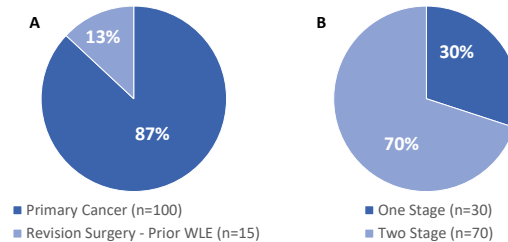


Figure 4 (A): Indications for procedures – the majority were performed to fill a defect created at the time of primary cancer excision whilst the remainder were performed to fill a defect created by previous breast surgery months or years previously; (B) Timing of flap surgery – the majority were performed as a two-stage procedure with the flap performed once histology confirmed clear margins had been obtained at the time of WLE

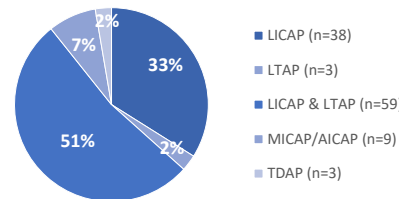


Figure 5: Number of flaps performed by perforator type (LICAP = lateral intercostal artery perforator, n=38; LTAP = lateral thoracic artery perforator, n=3; MICAP = medial intercostal artery perforator and AICAP = anterior intercostal artery perforator, n=9; TDAP = thoracodorsal artery perforator, n=3, non-specified flap n=3)

- Complication rate: 15%
  - Delayed wound healing: n=3
  - Surgical site infection = 9
  - Haematoma = 3
  - Fat necrosis = 5
- Conversion to mastectomy for involved margins: 3% (n=3)
- Median follow-up: 37 months
  - Post flap imaging issues: 4 biopsies for fat necrosis/scarring
  - Local recurrence rate: 0%



Figure 6: Pre- and post-operative pictures of a patient who underwent LICAP flap reconstruction following wide local excision for invasive carcinoma

## Discussion

Our data has shown the use of local perforator flaps to be a reliable technique to avoid and correct breast defects, with minimal donor morbidity and good oncological outcomes. Similar successful use of local perforator flaps in breast conserving surgery (BCS) have been reported elsewhere, with safe oncological outcomes,<sup>1,2</sup> minimal effect on radiological follow-up<sup>3</sup> and low morbidity rates.<sup>4</sup> With recent data suggesting improved survival for early breast cancers treated by BCS and radiotherapy compared to mastectomy,<sup>5,6</sup> the focus of oncological treatment for breast cancer should be on BCS where feasible. Local perforator flap reconstruction allows for higher BCS rates to be achieved without a reduction in cosmetic outcomes.

## Conclusion

Local perforator flaps extend the criteria for BCS, allowing it to be performed safely, with good cosmetic outcomes, in patients with a high tumour to breast size ratio.

## References

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