Aesth Plast Surg (2019) 43:1497–1499
https://doi.org/10.1007/s00266-019-01473-8

EDITOR'S INVITED COMMENTARY

Invited Discussion on: Identifying Preoperative Factors Associated with the Volume Discrepancy in Patients Undergoing Breast Reconstruction with the Extended Latissimus Dorsi Musculocutaneous Flap Coverage

Rieka Taghizadeh[1]

Received: 3 August 2019 / Accepted: 4 August 2019 / Published online: 20 August 2019

Level of Evidence V This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

Background

Breast reconstruction has undergone significant strides in recent years. Immediate autologous techniques in combination with skin- or nipple-sparing mastectomy have resulted in natural and long-standing outcomes (Fig. 1a, b). Surgeon-driven efforts have been concentrated on optimising the efficiency and technical success of breast reconstruction. However, there is increasing awareness of the importance of aesthetic parameters which would enable the patients to move forward in their breast cancer journey with increased self-confidence. Shape, volume and symmetry are the components associated with satisfaction in both aesthetic and reconstructive breast procedures. In addition, ptosis and projection contribute to a pleasing outcome.

Volumetric analysis is an important component of planning in autologous breast reconstruction. Determining the ideal volume of harvested tissue can be complex and requires experience. Since the water displacement method introduced in the 1970s, there has been a range of volumetric assessment tools the more recent of which is 3D imaging [1, 2]. Most of these have limited practicality due to high cost and lack of evidence.

✉ Rieka Taghizadeh
Rieka.taghizadeh@icloud.com

[1] Department of Plastic Surgery, St Helen and Knowsley Teaching Hospitals, Liverpool, UK

Summary of the Aims of this Paper

The current study was conducted to identify preoperative factors associated with the post-operative volume discrepancy in the ipsilateral breast in patients undergoing immediate breast reconstruction with the extended latissimus dorsi (LD) flap. A retrospective review of the authors' departmental case load highlighted skin defect size and mastectomy breast volume to be relevant factors which could be utilised to predict the lack of volume and plan any secondary volume augmentation surgery. The article raises a number of interesting discussion points.

Discussion

Indications for Extended LD Flap

The extended LD is a robust flap that allows more volume harvest, however, with relatively limited versatility in terms of volume match and tissue pliability. With advances in microsurgical reconstruction, the deep inferior epigastric artery perforator (DIEP) flap is considered the gold standard with excellent volume replacement, shape configuration and donor site advantages.

The contraindications for DIEP reconstruction in my practice include active smoking, uncontrolled cardiovascular disease and unavailable perforators as identified by a preoperative CT angiography. Previous abdominal surgery and liposuction would not preclude the offer of such surgery. Nevertheless, it is important for each unit to decide on the most suitable modality of reconstruction based on experience, outcomes and the aim to minimise complications and optimise outcomes.

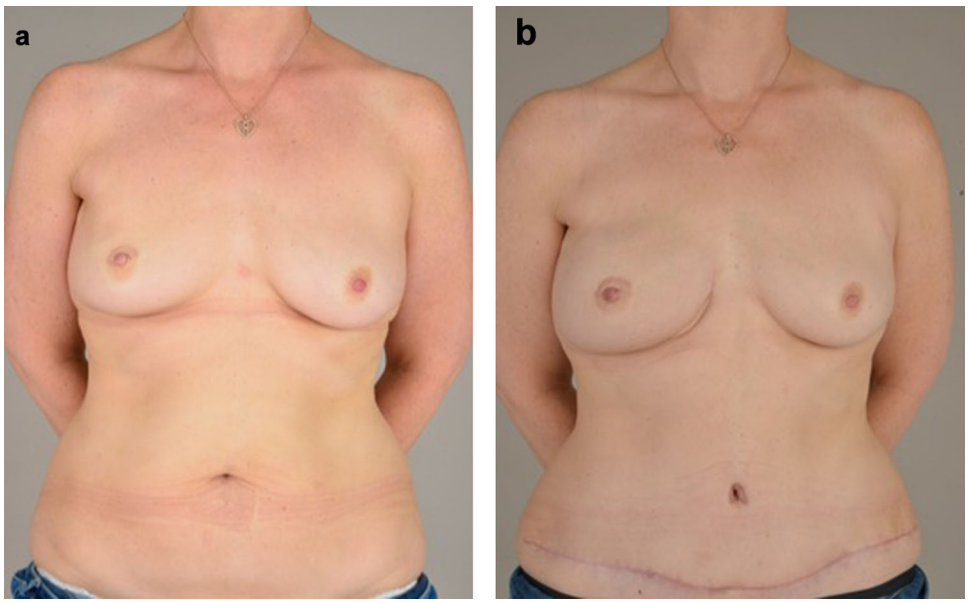

Fig. 1 **a** Right-sided breast cancer in patient with minimal ptosis. **b** Nine months following right nipple-sparing mastectomy and immediate breast reconstruction with DIEP flap. Awaiting removal of inferior monitoring skin paddle

Donor Site

The authors have chosen an oblique paddle for the LD flap, the reasons for which may be ease of harvest or obtaining more fat. This pattern, however, would not allow for alignment of the scar within the brassiere strap. In all forms of autologous breast reconstruction, aesthetic positioning of scars and closure of the donor site should be respected. Patients increasingly desire well-hidden and inconspicuous scars. Postoperative photographs of donor sites should therefore be made available to patients during the consent process.

Patient Preference Regarding Secondary Surgery

Prediction of volume discrepancy and need for secondary surgery following immediate extended LD flap reconstruction has been the main purpose of this manuscript. Many surgeons aspire to replace "like with like" during autologous breast reconstruction. However, mere replacement of volume alone does not necessarily equate to an aesthetically pleasing result. In keeping with aesthetic breast surgery principles, it is the combined effect of shape, volume, ptosis, texture and symmetry which influences the final outcome. Despite possible cultural differences, many women are less preoccupied with the need for further surgery and instead desire a reconstruction which is durable, functional, as well as aesthetic.

Although it is important to avoid multiple operations following the initial reconstruction, combining any necessary procedures at a later date is well tolerated by patients. This would include contralateral symmetrisation surgery, nipple reconstruction or lipomodelling. The latter has had a significantly positive impact on both aesthetic and reconstructive breast surgery through autologous volume augmentation, fine tuning of contour or improvement of soft tissue quality. In the context of the extended LD breast reconstruction, it is preferable to correct the volume discrepancy through lipomodelling instead of a prosthesis, to ensure similar autologous tissue behaviour in the long term on both sides. The assessment of volume discrepancy aids in planning for secondary surgery. However, prediction of it in advance should not be of primary concern to the surgeon.

Patient Expectations

Breast cancer and its treatment modalities have grave physical as well as psychosexual impact on patients. The positive effects of a successful breast reconstruction are therefore well established [3]. A personal observation is the increased awareness of breast aesthetics in breast cancer patients following their diagnosis. Existing ptosis and asymmetry as well as volume excess or deficiency appear more troublesome and apparent. This in turn leads to higher expectations from both the surgeons and patients. Dissatisfaction arises when outcomes do not correlate with expectations.

Combining Ptosis Correction

Nipple-sparing mastectomy and immediate reconstruction perhaps pose the least challenge with regards to any skin or volume deficiency and apply to patients with small breasts and minimal ptosis. In the more common setting of skin-sparing mastectomy and immediate reconstruction, it is often necessary to correct the existing ptosis as well as attention to the contralateral breast. This could be performed as secondary procedure or concurrently, the latter being my preferred option (Fig. 2a, b).

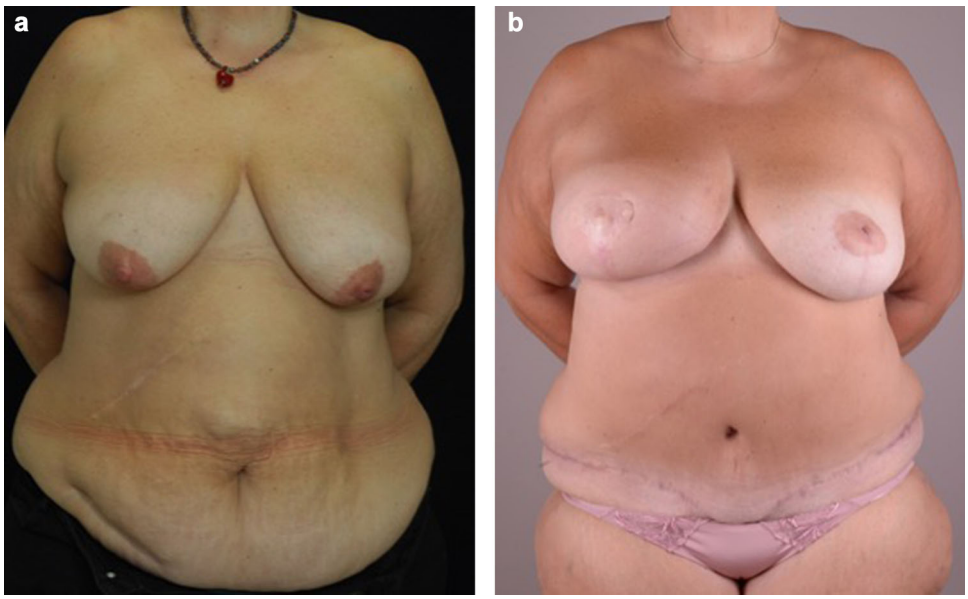

Fig. 2 **a** Right-sided lobular breast cancer in patient with BMI 40, grade III ptosis and previous abdominal surgery. **b** Two years post right skin-sparing mastectomy, immediate DIEP reconstruction and left symmetrising breast reduction. Patient completed post-mastectomy radiotherapy and nipple reconstruction

Symmetry and Comparison with the Contralateral Breast

The paper appears to concentrate on comparing the same ipsilateral breast before and after extended LD reconstruction. This may have some relevance in determining whether additional volume is required in the form of either an implant or lipomodelling. However, what is more important is the discrepancy between the preoperative ipsilateral and the post-operative contralateral breast. This comparison would predict symmetry and determine the need for any contralateral surgery.

Duration of Follow-up

The authors had a three-month follow-up for their patient cohort which they recognise as a limitation. The reconstructed breast continues to evolve with time and is influenced by possible changes in patient BMI. In my practice, a minimum follow-up period of 6 months is given to evaluate and plan further surgery.

Technology has continued to influence our practice of surgery though a fundamental element of successful reconstruction remains the artistic evaluation and execution of shape, ptosis and symmetry which cannot be obtained by reliance on technology alone.

Summary

Although predicting the need for secondary volume enhancement can be useful, volume alone is not the only determinant factor in the decision-making process regarding reconstructive choices. If the contralateral breast is ptotic, then merely anticipating a volume discrepancy using the calculation and overcoming this by inserting a secondary implant will give gross asymmetry in terms of shape, ptosis and texture. The extended LD is a useful option for reconstruction. However, when volume and skin discrepancy is predicted, it may be preferable to return to the drawing board and identify other autologous options or potentially reconsider some of the exclusion criteria for the DIEP flap.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Standards Not applicable to this discussion.

Informed Consent Informed consent has been obtained for use of photographs although no patient idenfiable features are shown.

References

1. Milligan D, Drife J, Short R (1975) Changes in breast volume during normal menstrual cycle and after oral contraceptives. Br Med J 4(5995):494–496
2. Kim H, Mun GH, Wiraatmadja ES et al (2015) Preoperative magnetic resonance imaging-based breast volumetry for immediate breast reconstruction. Aesthet Plast Surg 39(3):369–376
3. Beugels J, Kool M, Hoekstra LT et al (2018) Quality of life of patients after immediate or delayed autologous breast reconstruction: a multicentre study. Ann Plast Surg 81(5):523–552