



Commentary

Commentary on: Autologous Fat Grafting in Reconstructive Breast Surgery: Clinically Relevant Factors Affecting the Graft Take

Nicolas Abboud, MD^{*}; and Marwan Abboud, MD

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It was our pleasure to review the paper published by Dr Luze et al entitled “Autologous Fat Grafting in Reconstructive Breast Surgery: Clinically Relevant Factors Affecting the Graft Take.”¹ The authors should be congratulated for their precise work on fat survival in a prospective study on 10 patients who underwent fat grafting following skin-sparing mastectomy. Luze et al first analyzed the harvested fat through punch biopsies, and the lipoaspirate histologically, for gene expression and through scanning electron microscopy. The fat was then grafted to the breast, and its take rate was evaluated utilizing a lipometer.

The authors showed a statistically significant correlation between fat take and subcutaneous adipose tissue thickness, as well as reduced cell damage in the lipoaspirates prepared with the LipiVage System (Genesis Biosystems, Lewisville, TX). However, some of their results, such as the correlation between the fat take rate and the amount of fat grafted, and the correlation between fat take and the number of grafting sessions, did not reach statistical significance because the sample size was too small, which is a limitation of this study. Moreover, all of the participants were operated for prophylactic mastectomies. It would have been pertinent also to include patients operated for therapeutic reasons, and patients undergoing other surgeries/treatments than nipple-sparing mastectomies, in order to better assess fat grafting as a reconstructive tool.

The authors report that they performed the lipometer measurements prior to surgery, immediately after surgery, and at 1 and 6 weeks after surgery. Although the results are promising, it would have been even more interesting

to analyze the subcutaneous adipose tissue thickness at 12 weeks. In fact, it has been proven by Kato et al that the fatty tissue remodels itself during the 3 months following grafting.² More precisely, adipogenesis is considered complete after 12 weeks, even though it was observed that nonregenerated areas were still evolving at that time.² Furthermore, in oncological breast surgery, a recommended thickness of breast flaps should be respected for both oncological safety and the survival of the flaps. Theoretically, after mastectomy, variability in flap thickness between patients should be minimal.³ However, here it is unclear why the preoperative subcutaneous adipose tissue thickness ranged from 35.15 mm to less than 10 mm.

Ultimately, it was stated that “Future studies investigating a possible effect of different diameters on the viability of adipocytes are of utmost importance to define a standard of reinjection.” However, it has been proven in the literature that fat injection in “micro-ribbons” and avoiding large aliquots (>3 mm) are essential to avoid complications and increase fat survival.⁴ Another condition for optimizing fat survival is to reduce the tension in the breast matrix to avoid high interstitial pressures that would reduce capillary perfusion.⁴ Therefore, it would be interesting to analyze this extra parameter before and after fat grafting.

From the Plastic and Reconstructive Surgery Department, Hôpital Delta, Brussels, Belgium.

Corresponding Author:

Dr Nicolas M. Abboud, 23 Avenue Pénélope, 1190 Brussels, Belgium.
E-mail: nicolasabboud94@gmail.com



Video. Watch now at <http://academic.oup.com/asj/article-lookup/doi/10.1093/asj/sjac212>

We agree with the authors that the matrix of the recipient site plays an essential role in fat survival following fat grafting. This is in fact one of the key elements on which we based the power-assisted liposuction loops and lipofilling (PALLL) technique, an innovation that we have published for many indications in breast surgery. We introduced the concept of “matrix dissociation,” in which the breast matrix and perimammary tissues are extensively tunnelized, reducing the tension in the breast, liberating the subcutaneous attachments, and enabling the mobilization of these tissues. This is followed by “matrix modeling,” in which an adipocutaneous flap is recruited from the axilla and upper abdomen utilizing internal threads passed transcutaneously and subcutaneously around the breast. These steps decrease the breast tension and increase the breast skin surface and volume, thus augmenting the breast matrix (Video). Due to this recruitment, we observed a higher fat take rate with fewer complications related to fat grafting and the possibility to inject higher volumes, even though high volumes of lipofilling are usually not required because the volume recruited with the loops is generally significant.⁵⁻⁸ In our series of oncological breast reconstruction cases, up to 250 mL were recruited with the loops (with a mean volume of 197 mL), and up to 2 or 3 sessions of fat grafting were required with an average of 153, 190, and 110 mL of fat injected during the first, second, and third sessions, respectively.⁶ In conclusion, this study confirms the key role of the breast subcutaneous tissue in fat survival following lipofilling through precise and objective measurements.

Supplemental Material

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