

# The Role of Fat Grafting in Breast Reconstruction



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## KEYWORDS

- Autologous breast reconstruction • Latissimus dorsi • Lipofilling • Fat grafting • Lipomodeling
- Liposuction • Poland syndrome • Tuberous breast

## KEY POINTS

- Careful preoperative clinical and radiologic assessment and clearance for the procedure are mandatory before fat grafting.
- Fat must be transferred in multilayers, starting from the deep plane to the superficial one.
- Fat must be transferred in fine tunnels (like the shape of a spaghetti noodle) in a regular manner to avoid fat necrosis.
- Fat transfer should be interrupted when the recipient site is saturated.
- Resorption rates and fat and recipient site quality must be taken into account to initially overcorrect the volumes.
- Great caution is mandatory when transferring fat in the subclavian region, especially in patients with Poland syndrome, because subclavian vessels may be situated much lower than in normal anatomy.

## OVERVIEW

Breast fat transfer is an old concept. In 1895, Czerny described the use of a voluminous lipoma to fill the breast after excision of a fibroadenoma.<sup>1</sup> Several researchers have then used different techniques for breast augmentation and reconstruction.<sup>2–11</sup> The techniques developed at the beginning of the 1980s were controversial. This controversy became so significant after the work of Bircoll,<sup>12–15</sup> and the American Society of Plastic and Reconstructive Surgery released a committee recommendation as follows:

*The committee is unanimous in deploring the use of autologous fat injection in breast augmentation, much of the injected fat will not survive, and the known physiological response to necrosis of this tissue is scaring and calcification. As a result, detection of*

*early breast carcinoma through xerography and mammography will become difficult and the presence of disease may go undiscovered.*

This decision was the end of the research and evaluations in this field. Comprehensive debate about this topic can be found in the authors' article published in 2009.<sup>16</sup> Following the work of Coleman<sup>17</sup> depicting the efficacy of fat transfer in the face, we evaluated fat grafting in breast reconstructive and plastic surgery.<sup>18</sup> As the main criticism of fat transfer in breast reconstructive surgery was the potential radiologic consequences, we studied them on a scientific basis.<sup>18</sup> We then applied fat grafting to the different techniques of breast reconstruction, sequelae of conservative breast surgery, and breast malformations.

Disclosures: The authors have nothing to disclose.

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Clin Plastic Surg 42 (2015) 315–323

<http://dx.doi.org/10.1016/j.cps.2015.03.003>

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## TREATMENT GOALS

Breast and thoracic lipofilling has numerous indications in breast surgery. Breast volume, shape, projection, consistency, and contour can be enhanced with this technique.

### *Latissimus Dorsi Reconstructed Breasts*

Autologous breast reconstruction does not have the implant-related complications and produces a more natural breast. Latissimus dorsi flap transfer without an implant is to us the gold standard technique,<sup>19–21</sup> as it has few postoperative complications and a better molding potential of thoracic volume. In some situations, however, reconstructed volume can be too small. The solution was then to add an implant under the flap. This solution was efficient, but reconstruction was no more autologous. In other situations, global results could be acceptable but some projection was missing or a localized defect prevented the results from being excellent.<sup>22,23</sup> Lipofilling of a reconstructed breast has many advantages: autologous reconstruction process, cost-effectiveness, reproducibility, natural consistency and appearance of the breast, breast symmetry, and last but not least, treatment of fat deposits in the donor regions. Combined with lipomodelling, the autologous latissimus dorsi flap is our first choice in autologous breast reconstruction (Figs. 1 and 2).

Latissimus dorsi flap is the most suited fat recipient because of its highly vascularized aspect.<sup>21,22</sup> Our experience showed that a large quantity of fat could be transferred in 1 session (up to 500 mL per breast) with excellent results. Lipofilling is started

from the bone plane to the pectoralis major and then to reconstructed breast, ending in the subcutaneous plane. Patients perfectly understand efficacy and concept of the technique and are then very satisfied with the surgery.

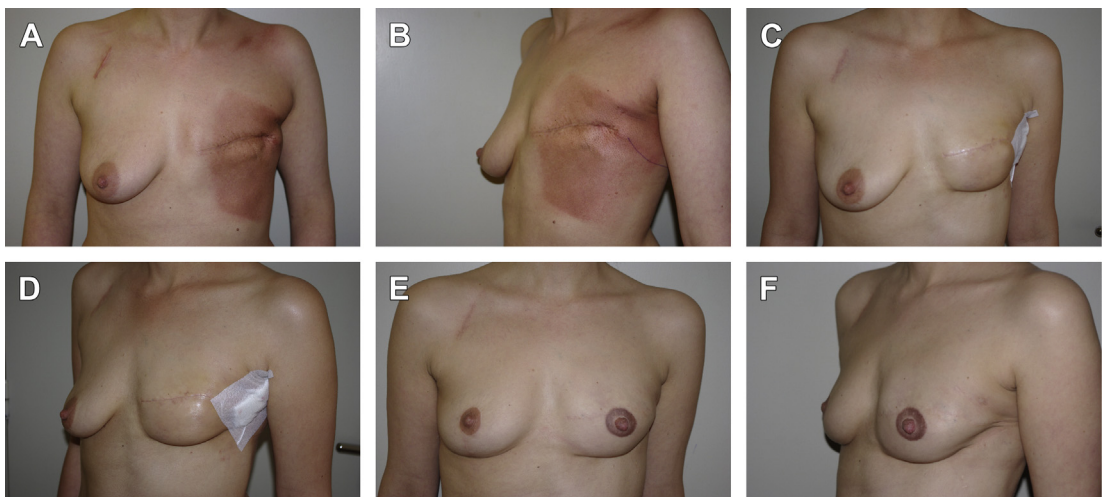
### *Implant Reconstructed Breasts*

Implant reconstructed breast deformities are of 3 types<sup>24</sup>: décolleté asymmetry with step appearance of prosthetic breast, medial deformity with step and too wide intermammary vallée, and lateral deformity with lack of volume above the anterior axillary line. Lipofilling represents 80 to 300 mL. In the décolleté, lipofilling is done in the pectoralis major muscle. In the internal part, lipofilling is in the pectoralis major and between the skin and capsule if implant change is planned. In the lateral aspect, lipofilling can be done only during an implant change, as it is between the skin and capsule (Fig. 3).

It seemed to us that fat grafting reduced capsulitis formation, but further studies are needed to prove this effect.

### *TRAM or DIEP Reconstructed Breasts*

Some researchers consider DIEP and TRAM flaps to be excellent breast reconstruction techniques. Some shape and volume defects can, however, be obvious. During the second stage of surgery, intrapectoral and intraflap fat grafting is done, mainly on locations which lack fullness. In some cases, lipofilling is done to increase global flap volume. It is mandatory to transfer less fat in a TRAM or a DIEP than one could do in a latissimus dorsi



**Fig. 1.** Patient aged 33 years. Left breast reconstruction after severe radiotherapy sequelae. (A) Preoperative view. (B) Preoperative oblique view. (C) Result immediately after delayed reconstruction with autologous latissimus dorsi flap. (D) Postoperative oblique view. (E) Final result at 1 year after 1 session of lipomodelling (200 mL) 2 months after the autologous dorsi flap. (F) Postoperative oblique view.

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