

Indications and Controversies in Total Breast Reconstruction With Lipomodeling

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KEYWORDS

• Breast reconstruction • Fat grafting • Lipomodeling • Fat transfer • Lipofilling

KEY POINTS

- In case of total breast reconstruction with fat grafts, patients should be carefully selected depending on their fat deposits, on the shape and size of the contralateral breast, and patient acceptance of multiple surgeries.
- When delayed breast reconstruction is performed, the breast envelope can be reconstructed using a combination with an abdominal advancement flap.
- With each lipomodeling session, more fat grafts can be transferred.
- This surgery is a surgery with very satisfying results if the case selection is good and the surgeon is experienced with fat grafting.

INTRODUCTION

Breast reconstruction has as its first purpose of volume and skin replacement. Many techniques were developed in order to obtain a better aesthetic result with little scar and functional impact, from implants to pedicled and free flaps.

Fat grafting proved its efficacy,¹⁻³ and it became a constant tool in breast surgery. Fat transfer has an important role when used as a complement for breast reconstruction with different flaps,⁴⁻⁷ or for the treatment of breast-conservative surgery sequelae.⁸

There is still no consensus for fat harvesting, purification, and transfer methods.^{9,10} However, it appears that most plastic surgeons adhere to Coleman's principles,¹ which follow the work of Fournier.¹¹ The authors have adapted these principles for mega-volume transfer.

The technique of fat grafting is frequently used in facial aesthetic surgery,¹² as a complement in breast reconstruction,¹³ and in general, for defects across the body either produced by surgery or other types of local treatments, or because of congenital malformation.

The ideal reconstructive technique should be easy to perform, with low impact on the patient's body integrity, and should be reproducible, autologous, and with minimal scars. In this context, breast reconstruction with fat grafts, which are also called lipomodeling,^{13,14} appears ideal. This technique can be used alone¹⁵ or in combination with the BRAVA system.¹⁶⁻¹⁸

The goal of this article is to present the surgical technique, indications, limitations, and controversies of total breast reconstruction with lipomodeling.

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PATIENT INFORMATION

The first consultation should give insight into the patient's medical history and her expectations from breast reconstruction. Each patient is informed in detail about the surgical technique, its advantages and disadvantages, and the possible complications. The patient needs to have a stable weight because the transferred fat keeps the memory of the original site. Between operations, there is a 3-month pause to allow fat integration.

The authors clearly explain to the patient that to obtain a good result several operations are required, between 3 to 5 for the nonirradiated breasts and 1 to 2 more when irradiated. They explain that during the first sessions they are going to transfer small quantities of fat grafts and that the purpose of these sessions is to improve skin trophicity and thickness, not to bring significant volume. The authors also tell patients that part of the transferred fat will be lost in the postoperative period (over the first 3 months). The quantity lost is estimated at about 30% of injected grafts. Patients should expect ecchymosis and pain in the donor sites that diminish progressively over 2 to 3 weeks.

In cases of delayed breast reconstruction, the authors incorporate an abdominal advancement flap. The patient is informed about the possibility of a moderate asymmetry of the abdominal wall and that for the first week after surgery they should keep a slightly bent position to avoid sutures tearing and loss of inframammary fold definition.

A balancing surgery can be planned for the contralateral breast, depending on size and shape.

According to the authors' protocol, patients with delayed breast reconstruction have a mastectomy site ultrasound to rule out recurrence. The authors explain that this surveillance should be resumed 1 year after finalizing reconstruction.

The recurrence risk is discussed with the patient along with the risk of a coincidence between lipomodeling and local relapse.

SURGICAL TECHNIQUE

Total breast reconstruction with lipomodeling is suitable for women with small breasts, A and B cup, that have enough fat deposits to allow 4 or 5 harvesting sessions.

Before starting the surgery, an informed consent is obtained.

Before surgery, the patient is marked in a standing position. In cases of immediate breast reconstruction, the breast base and the inframammary fold are drawn. For delayed breast reconstruction,

the breast base is designed using the contralateral breast as a pattern, and the abdominal advancement flap is marked to obtain 5 to 7 cm more skin (**Fig. 1A**). In both cases, the donor sites are marked.

The authors begin to harvest the fat. During fat harvest, the operating nurse has time to prepare the fat grafts while surgery is continued. The fat grafts are harvested using a blunt 3.5-mm-diameter cannula linked to 10-mL Luerlock syringes after infiltration 1:1 with saline and epinephrine solution (1 mg epinephrine in 500 mL saline). The incisions are performed with a number 15 scalpel, and their position depends on the site to be harvested. The surgeon creates a small and progressive negative pressure (2–3 mL) in the syringe using the hand in order to reduce the trauma exerted to the adipose tissue. At the end of the operation, a Naropeine (Ropivacaine) 75 mg 50% solution is infiltrated in order to decrease the postoperative pain in the first 24 hours after surgery. The incisions are closed by points of rapid absorbable sutures.

The harvested fat is treated by centrifugation at 3000 rotations per minute for 20 seconds.

In the case of immediate breast reconstruction, the fat is transferred directly into the pectoralis major muscle; the inframammary fold is fixed with Vicryl 1 separate sutures, and the mastectomy incision is closed in the classical manner. A drain is used to drain the cavity. Three months later, the second surgery can be performed.

In the case of delayed breast surgery, depending on the skin quality, the abdominal advancement flap can be performed during the first surgery or during the second or third when the skin has improved. The purpose of the abdominal advancement flap is to bring in more skin and to create a new inframammary fold. The incision is made through the mastectomy incision. The mastectomy scar is excised and sent for histopathology examination. The skin on the upper pole is not undermined. The abdominal flap is dissected in a tunnel fashion to the supraumbilical area (see **Fig. 1B**). Then, with the patient in a sitting position on the operating table, the abdominal tissues are pulled. The thumb is used to fix the future inframammary fold. Then, the electric cautery is used to incise the superficial fascia. The lower rim is fixed to the thoracic wall using Vicryl 1 separate sutures (see **Fig. 1C**), and this is used to hold the tension. The upper rim is fixed to the thoracic wall using a Vicryl 1 continuous suture, and this is used to define the inframammary fold. Once the abdominal advancement flap is in place, the fat grafts can be transferred into the pectoralis major muscle and into the advancement flap (see **Fig. 1D**) using a 2-mm blunt single-hole cannula

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