

Fat Grafting to the Breast, a Simple Procedure for a Very Complex Reconstruction

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Summary: Usually, complicated reconstructions demand complex procedures. However, we report an unpublished situation where lipofilling was the only effective procedure for breast reconstruction, once 4 previous procedures, including 2 microvascular free flaps, had failed. The reported case describes a woman without subcutaneous tissue in the left breast topography, with radiation sequelae resulting in a fibrotic, hyperchromic, unexpandable skin that was tethered to her costal bone and pleura. The 4 previous attempts of breast reconstruction resulted in unavailable nearby recipient vessels, and this situation appointed breast lipofilling as the most feasible procedure. This report shows the power of breast lipofilling, a simple procedure that can be used even for the more complex reconstructions. (*Plast Reconstr Surg Glob Open* 2016;4:e594; doi: 10.1097/GOX.0000000000000580; Published online 18 January 2016.)

Usually, the reconstruction of complex deformities of the breast resulting from oncological resection along with radiation sequelae of the surrounding area demands complex surgeries. However, a quite simple procedure may represent an important exception.

CASE REPORT

A 44-year-old woman mastectomized due to a 3.5-cm infiltrative ductal carcinoma (GII-SBR, LUNINAL A, p53 negative) with 3 positive lymph nodes from 17 dissections (though a breast cancer with a high risk of recurrence) underwent immediate breast reconstruction of the left breast using latissimus dorsi myocutaneous flap along with silicone-filled breast implant. At the sixth postoperative month, after she had finished radiation therapy with cobalt and in course of adjuvant chemotherapy, she developed Baker III capsular contracture. Breast implant replacement and capsulotomy were performed after 1 year of breast reconstruction along with symmetrization of her contralateral breast, when the chemotherapy treatment was concluded. About 6 months after the second surgery, she developed Baker III capsular contracture again that was conducted with clinical treatment due to intense radiation damage to the skin. Eight months later, she was presented to us with breast implant rupture and extrusion after local trauma 2 weeks earlier. New surgical procedure was immediately performed to remove the breast implant; fibrotic and unexpandable skin was observed intraoperatively even over the latissimus dorsi flap. So, the site was exhaustively cleaned with saline solution and antibiotics, followed by primary closure.

A microsurgical breast reconstruction with deep inferior epigastric perforator flap was performed

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Received for publication July 30, 2015; accepted December 2, 2015.

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DOI: 10.1097/GOX.0000000000000580

Disclosure: The authors have no financial interest to declare in relation to the content of this article. The Article Processing Charge was paid for by the authors.

Supplemental digital content is available for this article. Clickable URL citations appear in the text.

1 year after breast implant removal. The atrophic latissimus dorsi flap was resected. The internal mammary vessels were used as recipient, because the thoracodorsal vessels of the latissimus dorsi flap were unsuitable for microvascular anastomosis. At the second postoperative day, the flap developed intense congestion that demanded re-exploration. A huge hematoma was found to be the cause of venous congestion. Salvage procedures were ineffective because the recipient vein was unable to re-establish flow and no other proper recipient vein was available at intercostal space, superior or lateral thorax. So, the flap was removed and primary closure was performed through traction maneuvers.

Six months after deep inferior epigastric perforator flap removal and almost 5 years after mastectomy, the patient still needed breast reconstruction. At this time, she had no subcutaneous tissue in the left breast topography, the skin was fibrotic, hyperchromic, unexpandable, and tethered to the costal bone. At the site where the fourth costal cartilage was removed to access the recipient vessels for the microsurgical anastomosis, the skin was tethered to the pleura and her respiratory movements were easily noticed (Fig. 1A and see Fig., Supplementary Digital Content 1, which displays a flowchart overview of the case report, <http://links.lww.com/PRSGO/A162>).

After 4 ineffective breast reconstruction procedures, including 2 microvascular surgeries, lipofill-

ing to the breast was proposed. Three sessions with average interval of 3 months between them were performed with a total of 440 mL of fat (centrifuged at 3000 rpm/3 minutes, grafted using 3-mL syringes and 1.8-mm diameter cannulas—120, 150, and 170 mL of fat were, respectively, grafted per session). Six months after conclusion of lipofilling, complete remission of skin radiation sequelae was observed and the skin was soft and elastic again (see Fig., Supplementary Digital Content 1, which displays a flowchart overview of the case report, <http://links.lww.com/PRSGO/A162>) and with a minimum subcutaneous thickness of 2 cm at whole left breast topography (confirmed by ultrasonography and magnetic resonance imaging controls; see video, Supplementary Digital Content 3, which shows a complete remission of skin radiation sequelae. The skin is soft and elastic again at 3 years of breast lipofilling and 2 years of breast implant inclusion. <http://links.lww.com/PRSGO/A164>). So, a silicone-filled breast implant was inserted in the left breast, and a mastopexy was performed at the right breast. After breast implant insertion, it was observed that over projection of the upper medial portions of the left breast resulted from the fullness of grafted fat (that was expected to have a partial absorption) and a lack of volume at the lower lateral portion. One year after this procedure, neither any absorption nor any sliding of the grafted fat over the implant toward the lower pole of the breast happened (Fig. 1B and see

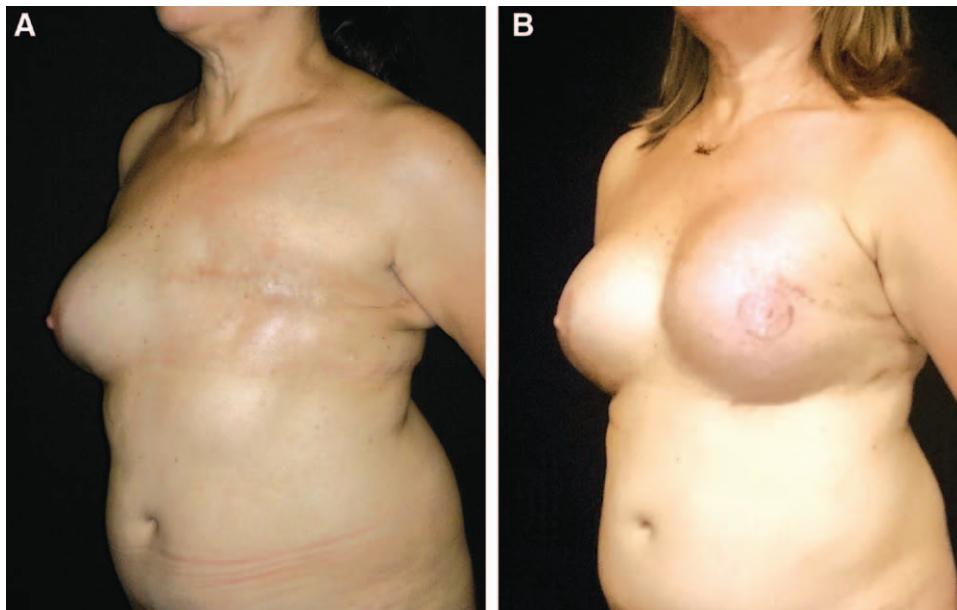


Fig. 1. A, View of her left breast after 4 ineffective breast reconstruction attempts. There was no subcutaneous tissue in the left breast topography; the skin was fibrotic, hyperchromic, unexpandable, and tethered to the costal bone. At the site where the fourth costal cartilage was removed to access the recipient vessels for the microsurgical anastomosis, the skin was tethered to the pleura and her respiratory movements were easily noticed. B, View of her left breast at 3 years of breast lipofilling and 2 years of breast implant inclusion.



Video 1. See video, Supplementary Digital Content 3, which shows a complete remission of skin radiation sequelae. The skin is soft and elastic again at 3 years of breast lipofilling and 2 years of breast implant inclusion. <http://links.lww.com/PRSGO/A164>.

Fig., Supplementary Digital Content 1, which displays a flowchart overview of the case report, <http://links.lww.com/PRSGO/A162>). So, a liposuction of the upper pole and additional lipofilling to lower and lateral portions of the left breast were proposed. However, she declined to undergo another surgery, stating that she was completely satisfied with her breasts.

At the moment, the patient is in the second postoperative year of breast implant inclusion and no clinical complication has been observed. She remains completely happy, with active social and sexual life at 52 years old. Clinical, mammographic, ultrasonographic, and magnetic resonance imaging controls have not shown any evidence of breast cancer relapse after 8 years of mastectomy and 3 years of lipofilling (Fig. 2). Curiously, trying to justify why she does not want to undergo an additional procedure to aesthetically improve her reconstructed breast, she sent me some pictures of her breast, showing how she and her boyfriend

see her breasts while she is standing (left) and lying (see Fig., Supplementary Digital Content 2, an image sent from the patient displaying her reconstructed breast. Left, standing; right, lying. Observe the low mobility of the reconstructed breast when compared with the mammary tissue due to higher density of the grafted fat. <http://links.lww.com/PRSGO/A163>).

DISCUSSION

The use of fat tissue for breast reconstruction has been described for more than 100 years.^{1,2} Due to the high potential of neovascularization of the adipose tissue, some reports have been made of its effectiveness in treating radiation sequelae¹⁻⁴ However, a case of such complexity, where a lipofilling was the only effective procedure for breast reconstruction, when pedicle myocutaneous flaps and microvascular free flaps had failed, in a patient with fibrotic skin tethered to the costal bone and pleura without subcutaneous tissue or near recipient vessels, has not been published before.

This case shows the power of lipofilling to the breast as an effective procedure able to revert radiation sequelae, allowing aesthetic scars, without donor site deformity, with low complexity, and low cost.¹ The questioned oncological risk of fat grafting to the mammary gland was stated^{5,6} based on theoretical hypothesis regarding the obesity and reported in “in vitro” experiments with adipocytes,⁷⁻¹⁰ and remains not sustained in clinical practice.^{1,2} However, it was reported that the mature adipocytes of the breast represent a true potential for breast cancer,⁸ and the fat grafting procedure by itself is not able to induce any oncological risk.¹⁰ This means that the grafted fat does not seem to increase the risk of breast cancer if we take into account that the native unmanipulated adipocytes

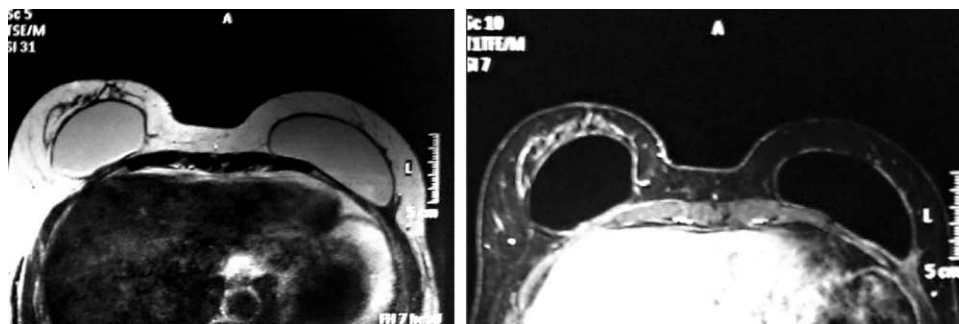


Fig. 2. No clinical complication was observed after the breast implant inclusion. Controls have not shown any evidence of breast cancer relapse after 8 years of mastectomy, 3 years of lipofilling, and 2 years of breast implant. Magnetic resonance imaging controls (pictures above) show the maintenance of subcutaneous thickness without any sign of capsular contraction or radiological findings at the reconstructed breast.

of breast have their own paracrine activity over the glandular cells.

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