

## Original article

## The value of latissimus dorsi flap with implant reconstruction for total mastectomy after conservative breast cancer surgery recurrence

Cristina Garusi<sup>a,\*</sup>, Visnu Lohsiriwat<sup>a,b</sup>, Fabricio Brenelli<sup>a</sup>, Viviana Enrica Galimberti<sup>c</sup>,  
Francesca De Lorenzi<sup>a</sup>, Mario Rietjens<sup>a</sup>, Fabio Rossetto<sup>a</sup>, Jean Yves Petit<sup>a</sup>

<sup>a</sup> Division of Plastic Surgery, European Institute of Oncology, Via Ripamonti 435, 20141 Milano, Italy

<sup>b</sup> Department of Surgery, Mahidol university, Siriraj hospital, Bangkok 10700, Thailand

<sup>c</sup> Molecular Senology Unit, European Institute of Oncology, Via Ripamonti 435, 20141 Milano, Italy

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## ABSTRACT

Total mastectomy is usually indicated after breast conservative treatment cancer recurrence. Breast reconstruction in this group can be performed with many options. We did 63 latissimus dorsi flap with implants reconstructions between 2001–2007. All of them were performed in breast cancer recurrence cases after breast conservative treatment and preceded for total mastectomy. The patient age range from 31 to 71 years old ( $50.1 \pm 7.3$  years). The follow-up was  $36.5 \pm 14.9$  months (22–141 months). Neither flap loss nor significant major donor-site complication was recorded. The capsular contraction Baker's grade III was observed in 2 cases (3.1%). The rest were grade I–II and there was no grade IV contracture. We purpose that LD flap with implant can be performed in irradiated breast with low capsular contracture rate. It is suitable in total mastectomy reconstruction after conservative breast cancer surgery recurrence.

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## Introduction

External radiotherapy (ERT) for breast cancer treatment is integrated as part of the treatment in most of breast conservative treatment and advance breast cancer patients. However, either the local effect of pre- or post-operative ERT can cause unpleasant surgical outcomes and complications for implant-associated breast reconstruction in these particular groups. The significant higher rate of capsular contracture and expander/implant-associated complications have been report in several literatures.<sup>1–4</sup> Latissimus dorsi (LD) flap with implant is one of the reconstructive procedures which is indicated for irradiated breast reconstruction to solve this issue. Both traditional myocutaneous LD flap with implant as well as extended LD flap with or without implant, have been used for immediate and delayed total breast reconstruction in many cases at the European Institute of Oncology (IEO), Milan, Italy. We retrospectively reviewed the cases of breast cancer recurrences after conservative surgery with previous radiation therapy and proceeded for total mastectomy. The surgical technique, results and complications of the LD flap for implant

reconstruction in the previously irradiated breast were reported in this study.

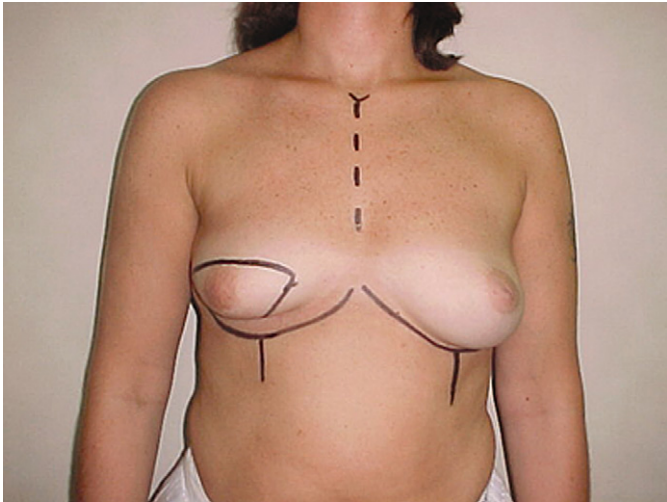
## Materials and methods

This study is a retrospective review of all patients who underwent breast reconstruction with LD flap with implant for immediate reconstructions at the European Institute of Oncology between February 2001 and February 2007. We had 63 cases of total breast reconstruction for of breast cancer recurrences after conservative surgery. All cases were treated with previous external radiation as a part of breast conservative surgery before developed cancer recurrence and proceeded for total mastectomy with immediate reconstruction. Inform consent was given by the patient before the operation. All of the procedures were carried out by plastic surgeons in our department.

## Surgical technique

We had 63 LD flap for total breast reconstructions with the extended and traditional LD flaps with implants. There were 55 cases of traditional myocutaneous or muscle only LD flaps and 8 cases of extended LD flaps. All procedures were performed together with anatomical silicone implant insertions.

\* Corresponding author. Tel.: +39 0257489723; fax: +39 0294379203.  
E-mail address: [cristina.garusi@ieo.it](mailto:cristina.garusi@ieo.it) (C. Garusi).



**Fig. 1.** Preoperative photograph of a 47 year-old patient who has recurrence breast cancer 3 year after breast conservative treatment with radiation.

The mastectomy was performed with great caution to preserve the sub-mammary fold and the tunnel to bring the flap to the anterior chest area was slightly high not to disturb the lateral breast limit, thoracodorsal nerve was preserved as well as the LD tendon was left in place.

#### *Traditional LD flap (Figs. 1 and 2)*

It was performed together with implant in every case and usually indicated when the patient was thin with limited quantity of fat tissue. There were 55 traditional LD flaps with horizontal scar at the level of the bra line or vertical scar at the anterior axillary line. In 50 cases were performed with the horizontal scars, the small skin island not exceed  $6 \times 12$  cm were included in the flaps. Whilst, the vertical scars can be placed along the anterior axillary line with limited short scar less than 5 cm for harvesting LD muscle flap for breast reconstruction in patient without skin defect. The flap was transposed anteriorly and fixed on the chest wall along the limit of the original breast footprints and projection was obtained by the insertion of the anatomical implant.

#### *Extended LD flap*

It was selected when the adequate amount of fat tissue presented over the LD flap boundaries. The dorsal oblique design with



**Fig. 2.** Thirty-six months after operation with traditional LD flap with implant.

large skin island with maximum area of  $7 \times 25$  cm was obtained and all possible 5 areas of fat tissues were included within the LD flap according to the Delay et al. description.<sup>5</sup> The flap was transposed anteriorly and rotated  $180^\circ$ ; so that, the previous inferior part was used to recreate the upper part of the breast and the axillary tail while the previous superior part with supra-scapular extension was manipulated for inferior projection and shape. Implant was inserted in order to get symmetry for insufficient volume and achieve better projection of the autologous flap. The LD muscle was denervated in every intervention.

For both traditional and extended LD flap, no preoperative infiltration of local anaesthetic was performed. Intraoperative intercostal nerve block with Naropine (Ropivacaine Hydrochloride, Astra, Milan); the long lasting local anaesthetic agent, was locally injected when finish the flap harvesting for better postoperative pain control.

Two drains were placed in the donor area before skin closure with a double layer of subcuticular continuous suture in order to achieve a better aesthetic scar. Drains exited in the sub-mammary fold and the dressing was aimed to hold the reconstructed breast and prostheses medially. In first day, the patients' mobilization was instructed by the nurses in order to reduce the tension on the delicate donor site. Limited upper arm motion to  $90^\circ$  of abduction was suggested for the first 3 weeks. Brassiere was immediately applied the first postoperative day. Drains were left in place for more than 10 days before subsequent removal and the compression garment was used soon after drain removal.

If the contralateral breast was also operated with implant augmentation, a sub-pectoral insertion was performed with peri-areolar approach. If necessary, the nipple areola reconstruction is then completed at a late stage with tattooing and local flap or nipple sharing technique. The patients were followed up in our clinic by plastic surgeons who performed the operations.

## **Results**

From February 2001 to February 2007, we had 63 LD flaps for total breast reconstruction with the extended and traditional LD flaps with anatomic implants. The patient age range from 31 to 71 years ( $50.1 \pm 7.3$  years). The average follow-up was  $36.5 \pm 14.9$  months with the range of 22–141 months.

The previous oncological procedures were 34 quadrantectomy with sentinel node dissections, 20 quadrantectomy with axillary node dissections and 9 quadrantectomy without axillary procedures. The duration between the previous radiation therapy to the breast reconstruction was 54.4 months (range from 7 to 141 months). The oncological procedures after the BCT recurrence were 31 skin sparing mastectomy, 28 nipple sparing mastectomy and 4 radical mastectomy.

There were 18 patients who underwent contralateral symmetrical procedures. There were 7 contralateral reduction mammoplasty, 7 contralateral mastopexy and 4 contralateral breast augmentation performed for symmetrical procedures.

The final histology were 48 infiltrative ductal carcinoma, 13 ductal carcinoma in situ, 1 infiltrative lobular carcinoma and 1 sclerosing adenosis. Tumor staging were stage 0 13 cases, stage I 13 cases, stage IIA 14 cases, stage IIB 14 cases, stage IIIA 2 cases, stage IIIB 1 case and no stage IV.

#### *Complications*

Neither flap loss nor significant major donor-site complication was recorded. There was no case of skin necrosis or infection. Although, there were 2 cases of small area of wound dehiscence at the donor site and were salvaged with wound revision under local

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