The Breast 21 (2012) 475–479

Contents lists available at SciVerse ScienceDirect

The Breast

journal homepage: www.elsevier.com/brst

Original article

Updated follow-up of patients treated with the oncoplastic "Crescent" technique for breast cancer

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ARTICLE INFO

Article history:
Received 18 May 2011
Received in revised form
19 October 2011
Accepted 13 November 2011

Keywords:
Breast carcinoma
Oncoplastic surgery
Lower quadrant

ABSTRACT

Background: Conservative treatment of lower pole breast cancer in small or medium sized breasts could be attended with poor cosmetic outcomes. The purpose of this study was to assess the results of the "Crescent" Oncoplastic technique in this indication.
Material and methods: Prospective study in 54 breast cancer patients undergoing the technique.
Results: Post-operative recovery was uneventful except 1 hematoma and 6 breast seromas. With a mean follow-up period of 45 months (range 27–64), no local recurrences was detected. Five patients had fat necrosis. Cosmetic results were assessed as being excellent (39%), good (35%), fair (20%) and mediocre (6%).
Conclusion: We therefore advise this technique as a first step oncoplastic surgery technique for tumors situated near the inframammary fold. We also recommend the systematic check of the final cosmetic results in the standing position in order to obtain the best possible results.

Introduction

Conservative treatment of lower pole breast cancer in small sized breasts is associated with poor cosmetic results that are often worsened by post-operative radiotherapy.[1–5] Reduction mammoplasty techniques, the so called "Oncoplastic Surgery Techniques", have been suggested by several authors in the early 1990s as a solution to avoid these poor cosmetic sequelae.[3–11] While superior pedicle reduction mammoplasty is widely used for medium and large sized breasts, the technique is not feasible for smaller ones. We developed an original oncoplastic technique for those patients based on the use of a deepithelialized submammary fasciocutaneous flap to fill the lumpectomy cavity. In 2008, we published the details of the "Crescent" Technique (named after the shape of the flap) and the 1-year follow-up results of the first 14 patients.[12] In this follow-up, a larger number of patients (54) were assessed at a longer follow-up duration (4 years).

Patients and methods

This prospective study was carried out between two centers namely Georges Pompidou Hospital and the Paris Breast Center. From August 2005 to March 2009, 54 consecutive patients, including 14 patients from the preliminary study, with small (cup size A/B) or medium (cup C) sized breasts were enrolled.[12] Patient selection for this technique was based on the ratio of tumor/ breast volume, tumor location and fat repartition in the chest wall. All patients had either invasive or ductal carcinoma in situ (DCIS) located in the lower pole of the breast near the inframammary fold. They all had wide local excision followed by the "Crescent" technique reconstruction. No controlateral breast symmetrization was performed initially.

Surgical description of the "Crescent" technique

1. Patients are placed supine and fastened on an electrically foldable operating table. Both breasts are included in the sterile operating field, for comparison.
2. The "Crescent" is designed by drawing two lines, the first situated 0.5 cm above the true inframammary fold and the second 1 cm below it, corresponding to the width of the flap (Fig. 1).

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0960-9776/$ – see front matter © 2011 Elsevier Ltd. All rights reserved.
doi:10.1016/j.breast.2011.11.004

3. The skin is first incised at the superior line situated above the inframammary fold.
4. Wide local excision is performed (Fig. 2).
5. Orientation, marking and weighting of the excised breast tissue.
6. Deepithelialization of the skin area situated between the incision and the inferior line (Fig. 3).
7. Incising the inferior line laterally on both sides while leaving the central skin and subcutaneous tissue attachment so as to create a fasciocutaneous flap in the shape of a "Crescent" (Fig. 4). No preoperative or intraoperative check for intercostals artery perforators was performed. The random pattern flap is formed of the full thickness of tissue starting from the deepithelialized skin till the fascia above the muscle. The length of the flap is calculated according to the required size for the rotation flap, in case of lateral or medial defect. The length of the base of the flap is calculated to be equal to the length of a hemiflap.
8. After checking volume of the flap and bleeding of its extremity, the two edges of the "Crescent" are approximated, positioned and stitched together to fill the wide local excision cavity using a 2/0 absorbable suture (Fig. 4).
9. The skin is closed using an interrupted absorbable 3/0 suture followed by a continuous subcuticular one.
10. Final result is assessed while the patient is in the sitting position (Fig. 5).

Patient's evaluation and follow-up

Local recurrence and fat necrosis assessment

All patients were clinically assessed for signs of locoregional recurrence as well as fat necrosis and were followed up with yearly mammograms for the same purpose. Reporting followed the American College of Radiologists (ACR) Breast Imaging Reporting and Data System (BI-RADS) assessment categories. No systematic MRI was performed.

Cosmetic assessment

Patients were assessed yearly for the cosmetic outcome. Assessment was performed by both the surgeons and the patients. In order to do that, follow-up pictures were taken from both views front, lateral and with the arms up. Patients were asked about their opinion with regard to the global results of surgery, including:

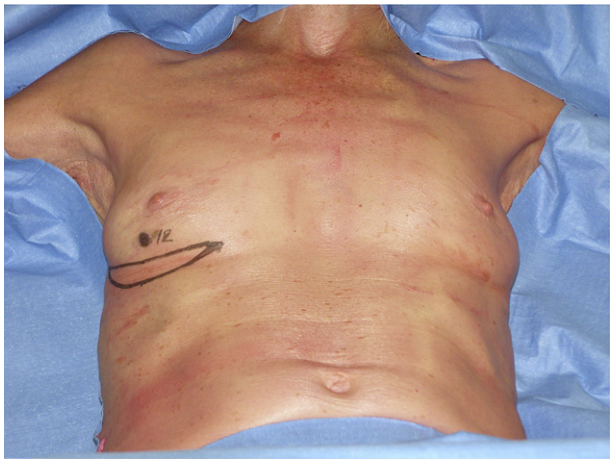

Fig. 1. Patient with a 12 mm tumor in the lower quadrant (6 o'clock), cup size A. Drawing of the "Crescent": the upper line is 0.5 cm above the real fold, and the lower line is 1 cm below the real fold.

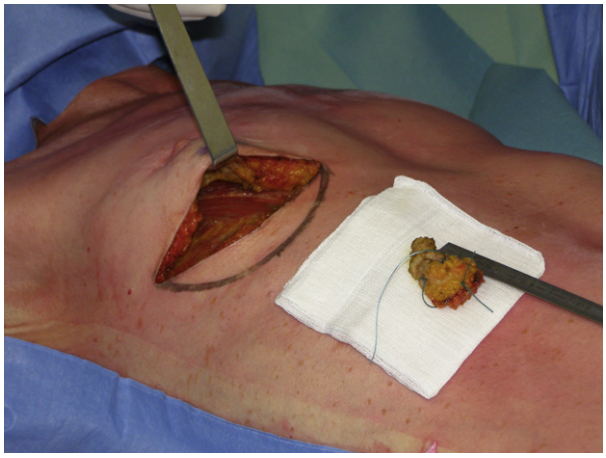

Fig. 2. Intraoperative photograph showing the wide local excision specimen and the post-excision defect just before the reconstruction.

symmetry, radiotherapy and breast symptoms on a scale from 5 to 1 (5 = excellent (Fig. 6), 4 = good, 3 = fair, 2 = mediocre, 1 = poor). For our point of view, we used the same objective assessment scale of the cosmetic results that we used in our previous studies,[5,7,12] but assessment between excellent and good results was done taking into consideration the different positions of the patient's arms, in the anatomical position and above the head (Figs. 5 and 6). We considered that excellent results were achieved if there was no shape defect even with the arms up.

Results

The mean age of the 54 patients was 54.2 years (range: 35–76). All tumors were adjacent to the inframammary fold: 24 (44%) in the lower inner quadrant, 8 (15%) in the lower outer quadrant and 22 (41%) at the 6 o'clock position at the junction of the lower quadrants. Seven patients (13%) had a breast cup size A, 31 (57%) cup B, 16 (30%) cup C. The mean body mass index (BMI) was 22.3 kg/ m^2 (range: 18–27). Only two patients had a T2 tumor while the large majority (45 patients: 83 %) had a T1c tumor and 7 patients had a T1a or b. Fourteen preoperative mammograms were reported as BI-RADS 4 (suspicious of malignancy with lumps or microcalcifications) and 30 as BI-RADS 5 (highly suggestive of malignancy).

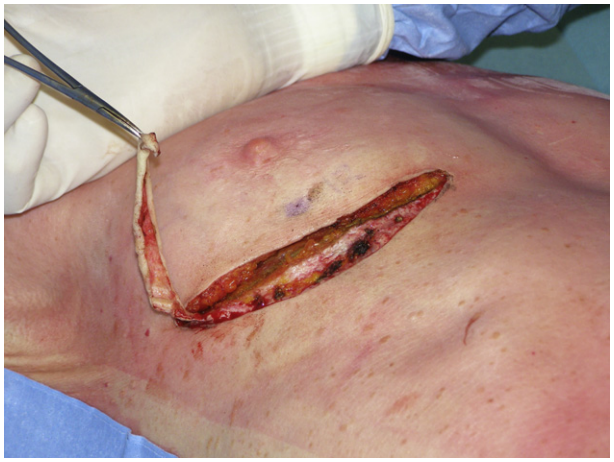

Fig. 3. Intraoperative photograph showing the deepithelialized fasciocutanous flap at the submammary fold.