

Clinical feasibility of a new oncoplastic technique for breast lumps of the external quadrants: half moon lateral crescent technique

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Summary

The authors describe a new oncoplastic technique for lateral breast lumps. A double lateral submammary incision: elongated S (left) or Z (right) as half moon below and above the natural lateral submammary line allow a large excision of the lump and a reconstruction of the defect with two half flaps brought together in the middle. The complications of this procedure are very few and the cosmetic results are excellent.

Key words: Breast oncoplasty; Crescent flap; Breast surgery; Lateral incision.

Introduction

Conservative treatment of laterally localized breast cancers could be associated with poor cosmetic results that are often worsened by postoperative radiotherapy. Multiple oncoplastic techniques have been suggested by several authors depending of tumor localization. Furthermore, it was shown that oncoplastic surgery results in excision of larger volume of breast tissue with wider surgical margins as compared to conventional breast cancer surgery [1]. Even in patients who classically “need” mastectomy (as in greater than 5 cm multicentric tumors), oncoplasty (extreme oncoplasty) could be proposed [2]. The purpose of this study is to present a new oncoplastic technique for lumps localized 2.5-3 cm away from the nipple between the one and five o'clock positions (left breast). (Figure 1) The “justifications” of this technique are to make an aesthetic scar, to avoid probable defects of other techniques (e.g. “bird beak”), and also to remove the sentinel node(s) or to perform axillary dissection through the same scar. This technique avoids possible cosmetic problems (scars, glandular defect) of other similar techniques for lateral lumps (e.g. racquet technique, McKissock [3]), used in a spectrum of cases [4].

Materials and Methods

Twelve patients with large tumors were included in the study. Eight patients had invasive breast cancer, two patients had fibroadenomas, one patient had a phylloid tumor, and one patient had clustered microcalcifications in two areas of the (left) breast

at the five and three o'clock positions. In invasive breast cancer cases, six patients had T1 tumors (≤ 2 cm) and two patients had T2 tumors (> 2 to ≤ 5 cm). Patients age was 38, 44, 45, 56, 60, 62, 64, and 69 years for those with breast cancer, 26 and 28 years for those with fibroadenomas, and 59 and 60 years for those with phylloids tumor and microcalcifications respectively.

Preoperative assessment of the patients include breast magnetic resonance imaging (BMRI) with gadolinium, as strongly recommended by some authors in cases of invasive breast cancers [5] (reiterated by Tabar L. in the 2016 “Advanced Course on Multimodality Detection and Diagnosis of Breast Diseases”), to exclude multifocal or bicentric tumors which will be treated more often by mastectomy. Bifocal tumors were accepted as inclusion criteria in the present practice. However, according to recent data, there is no difference in the disease-free survival between patients receiving a preoperative BMRI and those without preoperative imaging [6].

Between 2013 and 2016, the present authors performed many oncoplastic surgical techniques for other localizations, depending on the size and the position of the tumor in accord with Clough's classification. Regarding lumps of the external quadrants, they performed 12 cases with the half moon lateral crescent technique (HMCT), invented by the first author and edited by the two first authors of this article, making a synthesis of the submammary crescent technique and the lateral axillary incision. They compared these cases to eight cases of lumpectomy operated classically with radial incisions or inverted T. The procedures were performed by the same surgical teams in Rea Hospital and Ioannina University Hospital in Greece. All patients consented to be treated with this new technique.

All patients were admitted the same day of the surgery in the hospital and all the preoperative exams were performed. In case of surgery for clustered microcalcifications, a wire hook was inserted 30 minutes before surgery in the Radiology Department. Then the patients were taken to the operative room and the surgeon drew the scars and the surgical procedure on the skin with

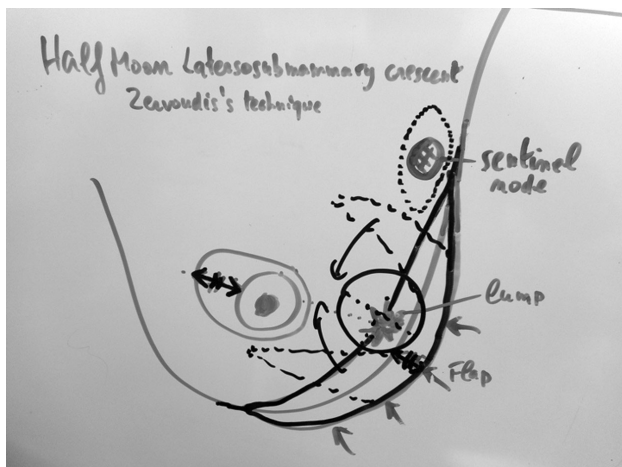


Figure 1. — Scheme of half moon Zervoudis' technique.



Figure 2. — Intranipple injection of patent blue.

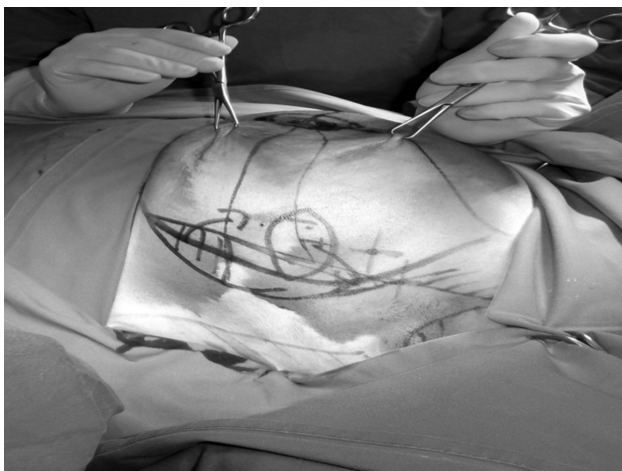


Figure 3. — Drawing of the three laterocentral lines.



Figure 4. — Incision of the skin, gland, and lumpectomy.

the patient in a seated position. After general anesthesia, the authors proceeded with the surgical technique.

1) In case of breast cancer, they first performed an injection of colouring liquid to detect the sentinel nodes using 2 cc of patent blue. The injection was performed by intranipple technique [7]. (Figure 2) Then they proceeded to breast massage for five minutes. Three lines were drawn, the first line started 4 cm below the axilla in the low part of the Spence tail and finished at six o'clock with a shape of a "S" elongated (left breast) or a "Z" elongated (right breast) and followed the lateral and submammary line of the breast gland. The second line was drawn 1 cm above the true inframmary line and lateral line of the breast. The third line was drawn 1 cm below these lines. (Figure 3). The authors started the incision on the up part of the superior line with a cold knife. This incision allowed the removal of the lump with a good surgical field and the removal of the axillary nodes if necessary by the same incision. About 10-15 minutes after the injection of the blue colorant, they proceeded first with the sentinel node excision: sentinel node biopsy (SNB). The sentinel(s) is (are) recognized after following the afferent lymphatic vessels which were colored. The

authors performed a frozen section of the sentinel node(s) and in case they were positive, they extended the surgical procedure to level 1 and 2 (axillary lymphadenectomy) unless in case of small tumor (< 1cm) with good prognostic factors according to American College of Surgeons Oncology Group (ACOSOG) Z0011 study [8]. The continued the skin incision from the submammary area to the Spence tail beginning by the superior line with a cold knife, then they proceeded to the incision of the inferior line. Undermining the skin was used to facilitate a wide excision of the tumor with clear margins and mobilization of the gland to help the reconstruction with intraglandular superior and inferior flaps. The excision of the tumor was performed in an ellipse shape with a larger base to allow to be later filled by the lateral superior and inferior glandular flaps. The excised specimen (lumpectomy) was oriented with different colors or with different stitches at 12, three, six, and nine o'clock and sent to laboratory department for frozen section of the margins. In the present hospitals the authors accept free margins > 1 mm in invasive carcinoma, > 3mm in ductal carcinoma in situ (DCIS), and 10 mm in phyllod tumor. In case of clustered microcalcifications, at least 3 mm are recommended.



Figure 5. — Building the two hemiflaps and attaching in the cavity.



Figure 6. — Draining the cavity with negative pressure.



Figure 7. — Closure of the mammary gland and dermis.



Figure 8. — Closure of the skin.

Moreover a radiography of the specimen was performed after removing the pathological area. Hemostasis of the lump cavity, insertion of two titanium clips left in the tumor bed for later radiotherapy boost. Incision of the skin of the lower line and desepithelialization (undermining) of the skin were performed between the central line and the inferior line with special care taken for the small subcutaneous vessels: only the skin was removed and the subcutaneous tissue was preserved. Deeper incision was made of the inferior and the lateral line until the muscles leaving the subcutaneous tissue to the muscle fascia in the central part in case that the tumor was in central position of the scar (3-4 o'clock) or in the lower part of the subcutaneous tissue to the muscle fascia in case that the tumor is in the higher position (1-2 o'clock) (left breast). The second option was more appropriate but it needed to mobilize the flap to insert it higher to fill the cavity of the lumpectomy. The base of the flap which remained had to be at least one-third of all the length of the flap (Figure 4). The flap was fitted to the glandular tissue as much as possible in the upper and inner edges of the cavity with absorbable suture stitches (vicryl 2/0). The flap consisted of a tissue from the underskin to the fas-

cia above the muscle and the vascularization of the flap was performed by this base. In case two hemiflaps were performed up and down and the central part of the remained tissue, the rotation of the hemiflaps allowed to be attached together to fill the cavity. (Figure 5). Hemostasis of the flaps was done with accuracy and economy to avoid necrosis of the fat tissue and verification of their vitality. The authors placed an aspiration drain (wound vac) in case of large flap (more than 6-7 cm) for a few days and was removed when the quantity of seroma was less than 30 cc. (Figure 6). The dermis was closed with PDS 3/0 stitches to bring the skin margins closer, then the skin was closed with a continuous subcuticular stitch of Monocryl 4/0. (Figures 7 and 8). Repositioning of the nipple areola complex (NAC) in the majority of the cases was performed and when the removed tissue was larger than 4×4 cm with the technique of double circle, the first circle was done 5 mm inside the areola and the second larger circle was done 15 mm internal and 5 mm external of the areola, as a variation of Round Block technique (Benelli). This technique avoids displacement of the nipple towards the excision defect (Figure 9).

After undermining the skin between the large and the small cir-



Figure 9. — Double circle incision of the areola.



Figure 10. — Complex type Benelli closure of the nipple area .



Figure 11. — Cosmetic result three months later.

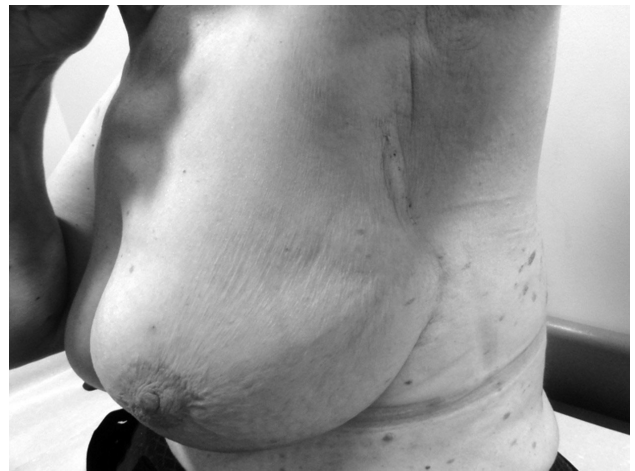


Figure 12. — Cosmetic results with NAC reposition six months later.

cle, the areola was stitched to the dermis of the external circle with PDS 3/0. Then, continuous stitches of Monocryl 6/0 closed the skin of the large circle to the areola (Figure 10).

Results

All patients were followed up yearly with a detailed history, clinical examination mammography, and breast ultrasound for signs and symptoms of locoregional recurrence (and possible fat necrosis). Taking into account “strict” guidelines for breast MRI, no systematic MRI was performed several months after the surgery. Mammography reports followed the American College of Radiologists (ACR) Breast Imaging Reporting and Data System (BI-RADS).

In the present series of 12 cases with half moon latero-crescent technique, there was a very low rate of complications: one case with seroma resolved after two punctures

and one hematoma resolved spontaneously after one month. There was no infection and no postsurgical pain. In all the 12 cases the margins were free and did not need a second surgical excision. In the series of eight cases operated with classical racquet incision, there was also one case of hematoma which resolved spontaneously after two weeks and also within free margins. Finally, there were no significant differences between the two groups.

Cosmetic results were considered very good to excellent in most cases of “HMCT” group (Figures 11 and 12). After a follow-up of six months to four years (depending of the date of the surgery), percentages of satisfaction for the patients and for the surgeon were: 91.6% (11 of 12 patients) and 83.3% (10 of 12 patients), respectively. In contrast, in the group of “classical incision” there were only five of eight patients (62.5%) that were satisfied and satisfaction of the surgeon was observed in only four of the eight patients

(50%). Patient satisfaction was measured with a scale from 1 to 5, and the authors considered satisfaction with a score > 4. Surgeon satisfaction was evaluated by two surgeons: the surgeon who operated the patient and another surgeon of the team. Despite the assessment of satisfaction and the cosmetic aspect are subjective, the authors' technique provided much more happiness of the patients because the scars are hidden in the normal laterosubmammary line, and they did not have more complications than in the classical technique with lumpectomy.

Discussion

Conservative treatment of breast cancer could be associated with poor cosmetic results that are often worsened by postoperative radiotherapy. To avoid these unwanted effects, oncoplastic (surgery) techniques have been suggested and described by several authors for different quadrants of the breast [9-11] and some of them are proposed for all breast quadrants [12]. In general, oncoplastic lumpectomy is considered a safe alternative to standard lumpectomy for selected breast cancer patients [13, 14] that can be offered usually as an immediate reconstruction procedure [15]. However, there are few reports of long-term follow-up of cosmetic results. The present cosmetic results could be described as "excellent" although the follow-up period has (so far) a moderate duration. Furthermore, the present authors' technique is easy to perform and it respects most oncological "rules" of breast cancer surgery. The technique is brand new and is different from all other techniques used for tumors detected at this portion of the breast. Marginally similar techniques were described mainly for inferior pole breast tumors [16-18]. Symmetrization of the contralateral breast is seldom required (depending of the size of the tumor and/or the breasts).

It must be emphasized that the safety of oncoplastic techniques has been confirmed by multiple studies [19]. However, many oncoplastic techniques have been suggested by several authors (depending of tumour localization). Lack of training and access to experienced surgeons and/or plastic surgeons are significant barriers to the adoption of appropriate oncoplastic procedures [20]. Despite the present authors' enthusiasm, it should be mentioned that while oncoplastic techniques allow wider resections, sometimes the tissue rearrangement performed in reconstruction may complicate the management of positive margins if a second surgery is scheduled. This problem occurs more in larger tumors with high grade, positive nodes, lymphovascular invasion, in case of neoadjuvant chemotherapy, and in younger age [21, 22].

In conclusion this new surgical technique could be an alternative to classical lumpectomy or to other oncoplastic techniques in case of localization of the tumor in external quadrants, with very good oncological and cosmetic results and with high level of satisfaction.

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