

A Comparison between the Oncological Safety of Oncoplastic and Conventional Conservative Breast Surgery

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Abstract

In recent years there has been a growing interest on enhancing the cosmetic and functional aspects of the oncological surgery of the breast, which resulted in ongoing development of oncoplastic surgery. This method presents several advantages, including the possibility of treating larger tumors with conservative procedures, better tumor-free margins, less carcinogenic risk in the future, better results with radiotherapy and finally, a better psychological profile of the patients. The most important factor regarding the oncological safety of conservative surgery of the breast is the capacity of each procedure in providing tumor-free margins after resection. Therefore, we know that procedures that provide larger free margins are safer from the oncological point of view. In this study, we aimed to verify the oncological safety of the oncoplastic procedures in comparison with the traditional procedures, by comparing variables measured in two groups of patients surgically treated in the Breast Service of the HUAP. We could conclude that since the group operated with oncoplastic procedures had significant larger margins than the group operated with traditional techniques, and that the other variables measured were alike, it is possible to say that the oncological safety of the oncoplastic surgery of the breast is, at least, equal to the safety of the conservative surgery with traditional techniques, and probably better.

Keywords: Breast cancer; Conservative surgery; Oncoplastic surgery; Oncological safety

Introduction

In a prior article, we have discussed the advantages of oncoplastic surgery in the treatment of breast cancer suitable for conservative surgery [1]. We summarized the techniques used in our service to perform such procedures and showed that the initial results in 30 patients allowed us to conclude that oncoplastic surgery of the breast is a safe way to provide wide resection margins and has several other advantages, as better aesthetic appearance and a very low local recurrence rate.

We then decided to compare the oncological safety parameters of this group of patients with a group of patients treated with conventional conservative surgery, to verify if the more sophisticated techniques translated into safer procedures from the oncological point of view.

Material and Methods

The medical and pathological reports of all patients submitted to conservative surgery for breast cancer in our service between January, 2003 and August, 2006 were revised, and the following variables analyzed: a. Age at diagnose b. Tumor size c. Margin status and size (Positive: margins in direct contact with the tumor; Negative: free margins over 2 mm in size; Close: free margins less than 2mm in size) d. Number of axillary positive lymph nodes e. Immunohistochemistry (oestrogen and progesterone receptors, p53, c-erbB-2 and Ki-67) f. Histological grade (Scarff, Bloom e Richardson, Nottingham modification) g. Peri-tumoral lymphovascular invasion h. Extensive intraductal component (over 25% of intraductal component in the invasive tumor) i. pTNM, UICC, 6th edition j. Follow-up time k. Clinical observation of local recurrence.

After excluding those in which we couldn't have access to all the variables defined for the study, we could gather 31 patients treated

with oncoplastic procedures (group I) and 36 patients treated with conventional techniques (group II). The criteria for choosing group II patients was to include all that were treated with conventional techniques in the same period of group I patients. All pathological slides from their tumors were then revised by the pathologists of our group, and the variables from the two groups compared with the appropriate statistical tests (Student T-Test, Mann-Whitney and Chi-Square, 5% confidence).

Results

Mean follow-up time was 52,9 months for group I (39,7 months min./68,1 months max.) and 57,5 months for group II (45,3 months min./75,4 months max.).

The mean size of the tumors were 2,65 for group I (0,7cm min./8cm max.) and 2,21cm for group II (1cm min./4cm/max.).

Two patients in group I and three patients in group II had in situ tumors. All other patients had invasive carcinoma.

Surgical techniques used in both groups are summarized in Table 1 and detailed in Table 2.

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ONCOPLASTIC SURGERY	CONVENTIONAL SURGERY		
<i>Surgical technique</i>	<i>N (%)</i>	<i>Surgical technique</i>	<i>N (%)</i>
L	1 (3,2%)	Segmentectomy + axillary clearance	19 (52,7%)
Liacyr I	16 (51,6%)	Segmentectomy	6 (16,6)
Liacyr III	1 (3,2%)	Tumorectomy + axillary clearance	5 (13,9)
Liacyr V	3 (9,6%)	Tumorectomy	6 (16,6)
Latissimus dorsi mini-flap	2 (6,4%)		
Periareolar	1 (3,2%)		
Pitanguy	6 (19,3%)		
Rotation mammaplasty	1 (3,2%)		
Total	31 (100%)	Total	36 (100%)

Table 1: Surgical techniques used.

Technique	Description
L	L shaped mammaplasty
Liacyr I	Mammaplasty with central-inferior glandular flap [14]
Liacyr III	Mammaplasty with central,medial and lateral-inferior glandular flap [14]
Liacyr V	Mammaplasty with the areola attached to an inferior pedicle [14]
Latissimus dorsi mini-flap	Partial latissimus dorsi flap used for partial reconstruction [15]
Periareolar	"Donuts" technique, removing a disc of periareolar skin and closing with purse string suture [16]
Pitanguy	Classical T shaped mammaplasty with superior areolar pedicle [17]
Rotation mammaplasty	Rotation of the whole breast mound to cover surgical defects [18]

Table 2: Technique description.

	Group I	Group II
Age (mean)	51,3 years	60 years
Shorter margin free of tumor (mean/max)	15.03mm/60mm	5,11mm/20mm
Positive/close margins (n)	1/0	7/3

Table 3: Variables with statistical significance.

Results in Table 3 are those where we found a difference with statistical significance between the two groups. The most distinguished was the difference in the size of the shorter margin free of tumor (mean 15.03mm, max. 60mm for group I and mean 5,11mm, max. 20mm for group II, $p=0,0001$). Group I had only one patient with a positive margin, whilst 7 margins were found to be positive in group II ($p=0,024$). Patients in group I were younger than in group II (mean 51,3 years x 62 years, $p=0,001$). The analysis of all other variables showed no statistical difference between them.

Discussion

There was a time when treatment of breast cancer was based in the mechanical removal of all detectable tumor and the organ containing it, the breast. That age is now referred to as the Halstedian era. Since then, our comprehension of the biology involving the breast cancer problem lead us in the direction of treatments that addressed not only the tumor, but it's host, the woman. Evidence of the importance of the psychological environment in the outcome of the disease resulted in the development of a new science that joined psychoneuroimmunology and cancer, leading to several researches that have demonstrated that a

better psychological profile can lead to better results in patient survival, not to mention quality of life [2-4]. These results find it's scientific grounds in immunological studies that demonstrated the impact of distress caused by cancer in the capacity of the patient's immune system to respond to the aggression [5,6].

All this knowledge became fertile soil where oncoplastic surgery of the breast rapidly flourished over the years. From the original work of old masters like Jean-Yves Petit [7] to the explosion of centers and breast surgeons eager to provide their patients with not only a better oncological treatment but also a normal quality of life (and we mean normal, not only good) we saw skeptic surgeons becoming enthusiasts of these methods, and sad women regaining happiness.

But with all the joy that a normal body image may bring, it would not be wise to sacrifice oncological safety to achieve this goal. So even today, we hear some debate as if the use of reconstructive surgery techniques may endanger this safety somehow, or if, on the contrary, it may contribute to the surgical safety of breast cancer surgery.

There's no absolute definition of what surgical oncological safety is, so we regard it as the capacity of a given procedure to remove all detectable tumor, providing as minimum local recurrences as possible. It's widely accepted that insufficient margins lead to more local relapses, which has been repeatedly proved over the years [8,9]. Clearly, when we speak of larger margins, we speak of larger resections, which directly lead to larger defects in the breast. If such larger defects are to be repaired to the point where no asymmetry is perceived in a women appearance, there's no way other than oncoplastic surgery. Other authors have already demonstrated that larger margins and lower local relapse rates can be obtained with the use of such procedures when compared to conventional ones [10]. And let's not forget that we are back to the point where we again believe that local relapses can impair survival [11,12], a fact that has been challenged for many years.

In our work, the margin size, measured in millimetres, was three times larger in group I than in group II. No case in group I had close margins, against three cases in group II. These findings were reflected in the number of positive margins in microscopy, one case in group one and seven cases in group II, leading to just one re-operation for margins enlargement in the first group and six re-operations in the second (one patients had only focal involvement of the margin and several comorbidities, so only radiotherapy was used).

All the other variables analysed showed no statistical difference, indicating biological homogeneity between the two groups.

It is into this context that our work add to the demonstration that this approach is not only as safe as the conventional one, but may surpass its safety standards by providing not only significantly larger free margins, but also a possibility of doing so in a way that does not disrupt the fragile psychological structure of breast cancer patients, what, as we pointed out, may impact on final cure rates. This last statement, though supported by current evidence, remains to be definitively proved in this specific context through a properly designed trial, which constitute into an exciting field for future research.

Regarding the absence of statistical difference between tumor sizes in the two groups, one may be inclined to think that the oncoplastic procedures were not able to allow resection of larger tumors. That's not the case. What it really shows is the commitment of our group to provide the best cosmetic outcome possible, despite of the patient's tumor size. Figures 1a, 1b and 1c are an example of this approach.

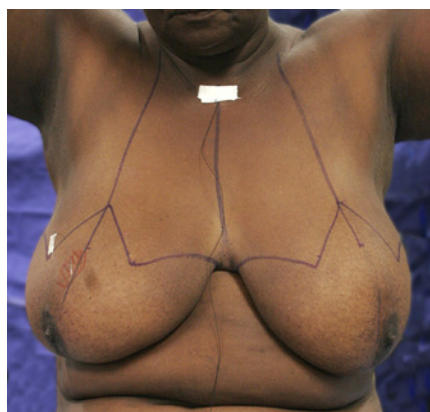


Figure 1a: Tumor marked with metal wire in the upper quadrants of right breast.

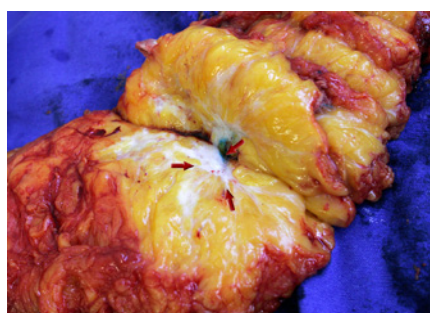


Figure 1b: Macroscopic aspect of the resected breast area and the tumor within.



Figure 1c: Result after 18 months.

This tumor in this breast could have been easily resected with a simple lumpectomy, but it stands out the fact that this woman found great benefit from the gland bilateral reduction, not only by the weight relief, but also by the reduction of breast parenchyma amount subject to malignant transformation in the future. It still must be noticed that the largest tumor resected in group I measured eight centimetres, against four centimetres in group II. The ultimate conclusion that can be drawn from this approach is that, in our opinion, oncoplastic surgery is not only a technique, but a treatment philosophy.

Because of all that was said above, we believe that it's not far the day where the expression "oncoplastic surgery of the breast" will disappear,

as we are going to refer to this practice as simply "oncological surgery of the breast", the only one taken into consideration. For that it may become true as soon as possible, we must invest in the preparation of the breast surgeon of the new millennium, as stated by Richard Rainsbury some years ago [13].

Conclusion

The analysis of the two groups allow us to conclude that the oncoplastic approach of breast cancer surgery is at least as safe (and probably safer) as the conventional conservative surgery based solely in resection of the tumor with free margins and local closure of the remaining gland. We believe that the oncoplastic approach should be always taken into consideration when planning conservative surgery for breast cancer.

References

1. Vallejo da Silva A, Destro C, Torres W (2007) Oncoplastic surgery of the breast: Rationale and experience of 30 cases. *Breast* 16: 411-419.
2. Andersen BL, Farrar WB, Golden-Kreutz D, Kutz LA, MacCallum R, et al. (1998) Stress and immune responses after surgical treatment for regional breast cancer. *J Natl Cancer Inst* 90: 30-36.
3. Kiecolt-Glaser JK, Glaser R (1999) Psychoneuroimmunology and cancer: fact or fiction? *Eur J Cancer* 35: 1603-1607.
4. Watson M, Homewood J, Haviland J, Bliss JM (2005) Influence of psychological response on breast cancer survival: 10-year follow-up of a population-based cohort. *Eur J Cancer* 41: 1710-1714.
5. Varker KA, Terrell CE, Welt M, Suleiman S, Thornton L, et al. (2007) Impaired natural killer cell lysis in breast cancer patients with high levels of psychological stress is associated with altered expression of killer immunoglobulin-like receptors. *J Surg Res* 139: 36-44.
6. Zamai L, Ponti C, Mirandola P, Gobbi G, Papa S, et al. (2007) NK cells and cancer. *J Immunol* 178: 4011-4016.
7. Petit JY, Lehmann A, Margulis A, Rigaut L (1982) [Technics of plastic surgery of the breast in breast cancerology]. *Ann Chir Plast* 27: 45-51.
8. Fowle B (1998) The significance of resection margin status in patients with early-stage invasive cancer treated with breast-conservation therapy. *Breast J* 4: 126-131.
9. Huston TL, Simmons RM (2005) Locally recurrent breast cancer after conservation therapy. *Am J Surg* 189: 229-235.
10. Rietjens M, Urban CA, Rey PC, Mazzarol G, Maisonneuve P, et al. (2007) Long-term oncological results of breast conservative treatment with oncoplastic surgery. *Breast* 16: 387-395.
11. Barros AC, Teixeira LC, Nisida AC, Pinotti M, Pinotti JA, et al. (2002) Prognostic effects of local recurrence after conservative treatment for early infiltrating breast carcinoma. *Tumori* 88: 376-378.
12. Casalini P, Carcangiu ML, Tammi R, Auvinen P, Kosma VM et al. (2008) Two distinct local relapse subtypes in invasive breast cancer: effect on their prognostic impact. *Clin Cancer Res* 14: 25-31.
13. Rainsbury RM (2003) Training and skills for breast surgeons in the new millennium. *ANZ J Surg* 73: 511-516.
14. Liacyr R (2005) Pedículos em mamoplastia. *MEDSI*.
15. Rainsbury RM (2002) Breast-sparing reconstruction with latissimus dorsi miniflaps. *Eur J Surg Oncol* 28: 891-895.
16. Bozola AR (2009) Periareolar breast reduction. *Aesthetic Plast Surg* 33: 228-34.
17. Pitanguay I (1961) [Mammoplasty. Study of 245 consecutive cases and presentation of a personal technic]. *Rev Bras Cir* 42: 201-220.
18. Acea-Nebril B (2005) [Conservative oncoplastic surgery in breast cancer. Indications and limitations to its application]. *Cir Esp* 78: 12-18.