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The Use of the Latissimus dorsi Flap in Breast Reconstruction of Post-Mastectomy Patients: Is Superior to the Use of Expander / Prosthesis?

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Abstract

Background: Breast cancer is the most common malignancy in women. Current treatment is based on optimal oncological and aesthetic results, since it will affect to body image, sexuality and physical, mental and social life. The objective is to evaluate the level of satisfaction of patients after immediate breast reconstruction, and assess differences depending on the type of reconstruction (reconstruction with Latissimus dorsi flap and prosthesis vs. expander-prosthesis).

Methods and findings: Retrospective study including all women with non-metastatic breast cancer and mastectomy and subsequent reconstruction with expander / prosthesis or Latissimus dorsi flap from January 2008 to September 2015, evaluating the level of satisfaction with MBROS body image questionnaire. We obtained a total of 48 patients, 27 with mastectomy and reconstruction with expander / prosthesis and 21 patients with mastectomy and reconstruction with Latissimus dorsi muscle flap and prosthesis. The score obtained from the patients in the first group (expander / prosthesis) ranged between 24 and 33; the score obtained from patients in the second group (Latissimus dorsi and prosthesis) ranged between 31 and 37.

Conclusion: Mastectomy patients reconstructed with an expander and prosthesis appear to have more physical and psychological effects, as well as greater altered body image and sexuality, when compared to mastectomy patients reconstructed with Latissimus dorsi flap and prosthesis.

Keywords: Breast reconstruction; Dorsi latissimus; Tissue expander; Breast implants; Patient satisfaction

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Introduction

Actually, breast cancer is the most common malignancy in women, followed by colorectal cancer and cervical cancer [1].

The current treatment strategy in breast cancer is based on achieving a good oncology and aesthetic results. For the majority of patients with breast cancer the different treatments can affect to their body image, sexuality, physical, psychological and social life [2].

There are multiple alternatives to surgical treatment. The choice should be made depending on the characteristics of the tumour, the breast size and a consensus with the patient. Authors as Fisher et al. [3], Veronesi et al. [4] and Arriagada et al. [5] demonstrated a similar overall survival and disease-free survival between conservative surgery and radical surgery of the breast. For this reason, in the absence of contraindications, the patient must choose her own surgical treatment strategy.

Currently, conservative surgery allows a lot of reconstructions without a radical surgery, and the symmetrisation of the contralateral breast with excellent results. However, sometimes, the size of the tumour or the breast volume is a contraindication to this type of surgery. In these cases, the treatment is a mastectomy [6].

There are multiple methods of reconstruction after mastectomy:

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reconstruction with expander / prosthesis, the reconstruction with muscle flaps, reconstruction with autologous tissue and mixed techniques [2, 7].

In general, the expander / prosthesis reconstruction is being associated with more complications than muscle flaps reconstruction [8]. Also, it involves one more surgery, to remove the expander and to collocate the prosthesis [8].

The assessment of quality of life of patients with breast cancer after the treatment has become increasingly important, due to the multiple therapeutic options and the increase of the survival of the patients. Blazeby et al. [9] and Lee et al. [10] evaluated the quality of life and the prognosis in these patients. They concluded that, in the therapeutic decision, the quality of life is as important as the oncological prognosis [9, 10]. This evaluation can be done from the assessment of different areas around the patient: physical, psychological and social [11].

The MBROS Body Image Questionnaire is specifically designed to assess the changes in body image and physical appearance of patients treated for breast cancer, with 9 questions [12]. It consists in 7 items [13, 14], wherein 5 of them the general satisfaction is evaluated, and in 2 of them the aesthetic results are evaluated [13, 14] **(Table 1).**

The objective of this study is to evaluate the degree of satisfaction of patients after breast reconstruction and see if there are differences depending on the type of reconstruction (Latissimus dorsi flap and prostheses or expander / prosthesis).

Methods

This is a retrospective study where all patients with non-metastatic breast cancer with mastectomy and reconstruction are included. The study was done between January 2008 and September 2015.

The minimum follow-up was 5 months after surgery. The study includes patients from the Hospital Punta de Europa, about 1,50,000 inhabitants. All patients were valued by the multidisciplinary Committee before the therapeutic decision. Later, the decision was agreed upon with the patient.

The inclusion criteria were: non-metastatic breast cancer, armpit clinically negative, and mastectomy with current reconstruction. The exclusion criteria were: patients with metastatic breast cancer and conservative surgery.

Two groups were created: patients with expander / prosthesis reconstruction (first group) and patients with Latissimus dorsi flap and prosthesis reconstruction (second group). Patients of the first group with the expander in the moment of collection of data, has been excluded.

After informed consent, a telephone survey is done for all patients. The survey is based on MBROS *Body Image Questionnaire* [12].

Results

A total of 48 patients were included, 27 with mastectomy and reconstruction with expander-prosthesis (first group) and 21 patients with mastectomy and reconstruction with Latissimus dorsi flap and prosthesis (second group).

In 61% of the cases (29 patients) the tumour was located in upper external quadrant; in a 18.75% (9 patients) was located in lower external quadrant; in a 14.58% (7 patients) was located in upper internal quadrant; and, finally, in a 6.25% (3 patients) was located in lower internal quadrant. The demographic and oncologic characteristics are enumerated in **Table 2**.

In relation to the histology, the 85.41 % of the cases (41 patients) had an infiltrating ductal carcinoma and the 14.59% (7 patients) an invasive lobular carcinoma. The estrogenic hormone receptors were positive in the 72.91% of the cases (35 patients), progesterone receptors were positive in the 54.16% (26 patients), and Her2neu was positive in the 10.41% (5 patients). A 16.67% of our sample (8 patients) had a triple negative.

The global punctuation in the MBROS body image questionnaire, in the first group was between 24 and 33; and in the second group was between 31 and 37.

In relation to the questionnaire **(Figures 1 and 2)**, the most frequent score on the first item, *I feel whole* has been about 3 points in the first group (52.94% of the patients) and 4 points in the second group (85.71% of the patients). The most frequent punctuation in the second item, *I like the way my blouses / sweaters fit* has been about 1 point in the first group (47.05% of the patients) and 5 points in the second group (71.42% of the patients).

Table 1 MBROS questionnaire.
Name, surname:
Type of surgery:
Questionnaire: You must answer with punctuation between 1 and 5.

QUESTION	1 (Never)	2 (Hardly ever)	3 (Not sure)	4 (Sometimes)	5 (Always)
I feel whole					
I like the way my blouses / sweaters fit					
I like the way I look in a bathing suit					
My bra fits comfortably					
I feel attractive					
I think of my cancer when I look at my breasts					
I like the appearance of my breasts					
my significant other likes the appearance of my breasts					
I feel self-conscious during sexual activity because of the appearance of my breasts					

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In the third item, *I like the way I look in a bathing suit*, the most frequent score has been of 1 point for the first group (41.17%) and 3 points for the second group (71.42%). In the item *my bra fits comfortably* we have obtained 3 points in the first group (41.17%) and 4 points in the second group (57.14%). For the next, *I feel attractive* the 70.58% of the patients in the first group gave 3 points, and 50% of patients in the second group gave 4 points. In the next item, *I think of my cancer when I look at my breasts*, the 58.82% of the patients in the first group gave 4 points, and the 71.42% of the patients in the second group gave 3 points. In the item "I like the appearance of my breasts", a 41.17% of the patients in the first group gave 3 points and a 64.28% of the patients in the second group gave 4 points. For the last two items, "my significant other likes the appearance of my breasts", the most frequent score in the first group was 3 points (41.17% of the patients) and the most frequent in the second group was 4 points (64.28% of the patients). Finally, in the item "I feel self-conscious during sexual activity because of the appearance of my breasts", the 41.17% of the patients in the first group gave 3 points and 57.14% of the patients in the second group gave 4 points.

Table 2 Patients characteristics.

Characteristic	*N* (%)
Patients (*n*)	48
Group 1 (expander / prosthesis)	27
Group 2 (Latissimus dorsi / prosthesis)	21
Localization	
- *Upper external quadrant*	29 (61)
- *Lower external quadrant*	9 (18.75)
- *Upper internal quadrant*	7 (14.58)
- *Lower internal quadrant*	3 (6.25)
Histology	
- *Ductal carcinoma*	41 (85.41)
- *Lobular carcinoma*	7 (14.59)
- *Estrogenic receptors*	35 (72.91)
- *Progesterone receptors*	26 (54.16)
- *Her2 neu*	5 (10.41)
- *Triple negative*	8 (16.67)

Discussion

The surgical treatment of the breast cancer includes a successful excision of the oncological disease with an optimal aesthetic result as possible. We have various techniques for breast reconstruction after mastectomy. The most frequent are the reconstruction of an expander / prosthesis or reconstruction with muscular flap and placement of prosthesis [2, 7].

The quality of physical life can be affected in patients with mastectomy depending on the moment of reconstruction (immediate or deferred), the use of muscular flap and the lymphadenectomy [7]. The postoperative complications, the use of radiotherapy or chemotherapy can also affect the quality of life negatively [7, 15]. Elsewhere, the problems with the muscle flap could cause severe alterations of the body-image and sexuality [7].

For all these reasons, the creation of specific quality of life questionnaires is very important in breast cancer patients [7, 16].

There are three groups of breast questionnaires: the general quality of life questionnaires, body-image scales and breast reconstruction questionnaires [16]. Although all the questionnaires are validated, some of them provide information more rigorously than others, depending on their extent and the type of questions [16]. MBROS Satisfaction Questionnaire values the satisfaction of the patient in two ways: general satisfaction in 5 items and aesthetic satisfaction in 2 items. This scale was designed specifically to assess the perception of the changes in

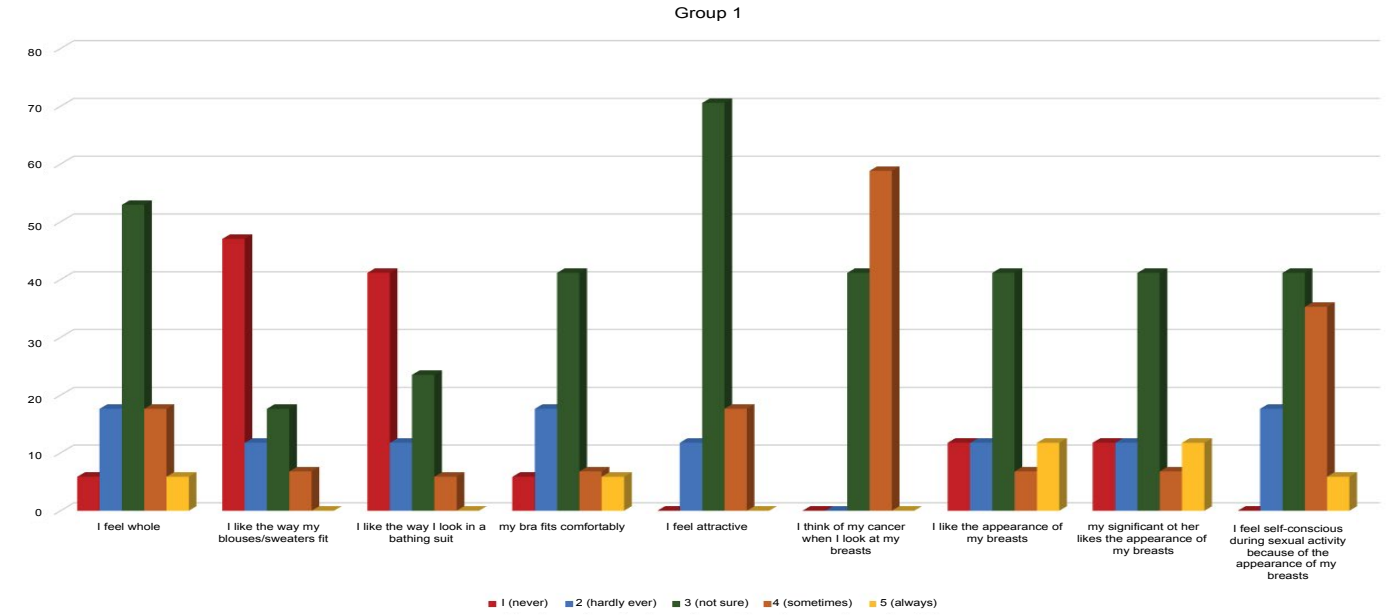

Figure 1 Group 1 questionnaire between 24 and 33.

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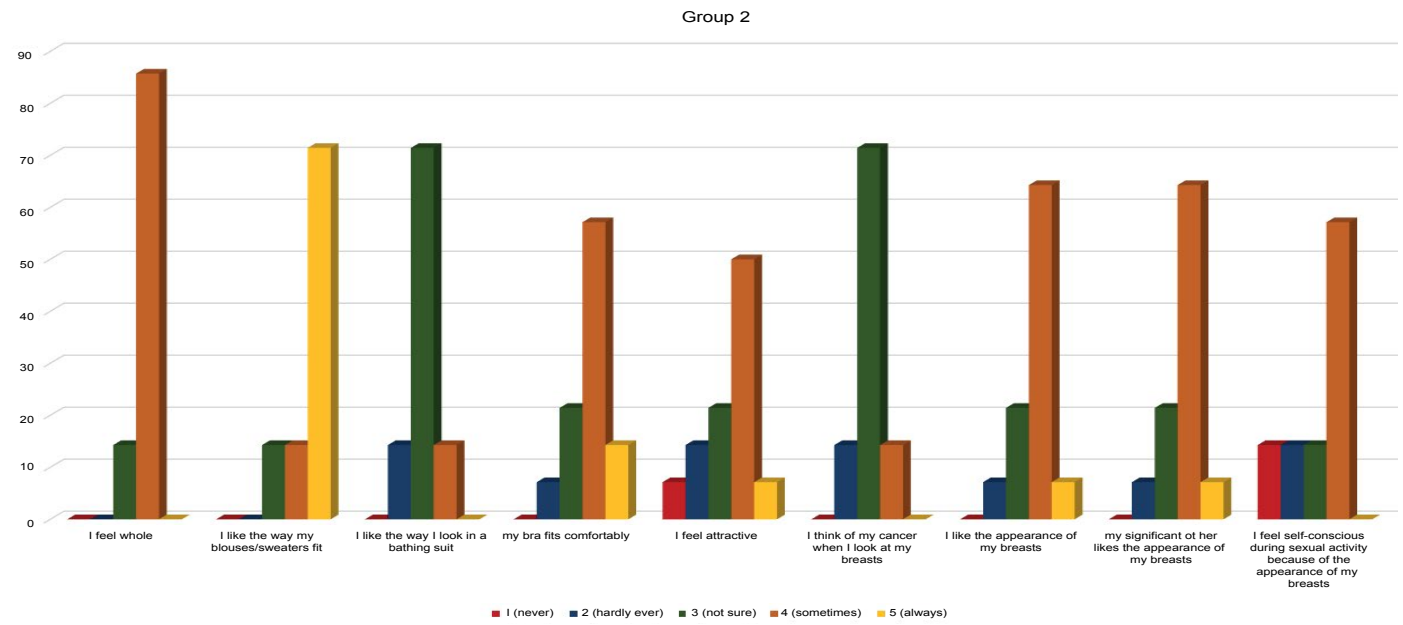

Figure 2 Group 2 questionnaire between 31 and 37.

body image and physical appearance of the patients undergoing surgery for breast cancer, from 9 questions [17].

The expander / prosthesis reconstruction has been associated with more complications than Latissimus dorsi flap reconstruction [8]. Also, in the first group, a second surgery is necessary. In our study, patients with an expander / prosthesis have indicated a worse punctuation in the questionnaire MBROS, between 24 and 33 points, opposite to the patients with Latissimus dorsi reconstruction, that they gave a punctuation in the questionnaire between 31 and 37 points.

In our series, body image seems to have been more affected in the group of patients with mastectomy and expander / prosthesis. A 47.05% of the patients in this group replied that they have never liked *the way her blouses / sweaters fit* and a 41.17% of the patients pointed out that never liked *the way she looks in a bath suit*. In these aspects, the second group gave 5 points and 3 points respectively. This fact may be due to the patients of first group need a second surgery to change the expander by the definitive prosthesis.

The psychological aftermaths in our patients are also more important in the first group (expander-prosthesis). This effect has been reported by Winters et al. [7] and Cordeiro [15]. A 52.94% of the patients attributed 3 points to the item *I feel whole* and a 58.82% gave 4 points to the item *I think of my cancer when I look at my breasts*. These scores are also smaller in the second group (Latissimus dorsi flap and prosthesis), with 4 and 3 points respectively.

The sexuality has also been affected in our series, in the first group more than in the second, too. A 41.17 % of the patients in the first group attributed 3 points to the item *my significant other likes the appearance of my breasts* compared to the 4 points of the second group. However, in the item *I feel self-conscious during sexual activity because of the appearance of my breasts* the majority of the patients in the first group attributed 3 points, compared to 57.14% of the patients in the second group that attributed 4 points. The literature reviewed supports this finding. It could be due to the alteration of the body image that suffers the mastectomised women, and the necessity of a second surgery to place the prosthesis [8, 14].

Therefore, we can conclude that mastectomised patients who perform a reconstruction with expander / prosthesis seem to have greater physical and psychological aftermaths and a greater alteration of body image and sexuality, when compared with patients who performs a reconstruction with Latissimus dorsi flap and prosthesis. However, it would be necessary a study with a greater sample size and longer follow-up to evaluate more fully these aspects.

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