

# Breast Reconstruction: Does It Worth to Start If the Patient Is Not Sure to Take All the Process Along?

Jesús Ricardo García-Corral\*, José Martínez-Lopez, Rodrigo Davila-Diaz, Blanca Arambula-Sanchez, Marco Cuervo-Vergara, Fernando Barbosa-Villarreal, Daniel De Luna, Ana Priscila Campollo Lopez, Fernando Isaac Recio Espana, Alfredo Chama Naranjo, Jaime García, Alejandro Costa, David Flores-Soto, Selina Marioni-Manriquez, Patricia Lopez-Medellin, Erika Barlandas-Quintana, Edgar Guillen-Martinez, Steve Rodriguez-Alanis, Cuahutemoc Marquez

Departamento de Cirugía Plástica y Reconstructiva, Hospital Central Sur de Alta Especialidad PEMEX, Mexico City, Mexico  
Email: \*drriocardogarciacorral@gmail.com

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## Abstract

**Introduction:** Breast cancer is the most common cancer in women worldwide, representing a major public health problem. There is still little information comparing the satisfaction of the patients who finished their process against the ones who start it but did not finish it. The aim of our retrospective study was to analyze the results in terms of satisfaction after one year of undergoing to complete breast reconstruction (CBR) vs incomplete breast reconstruction (IBR). **Materials and Methods:** Retrospective study of patients that underwent breast reconstruction (BR) surgery after mastectomy for breast cancer treatment. Performed at Hospital Central Sur de Alta Especialidad PEMEX in Mexico City, including patients from January 1, 2015 to January 01, 2020. Demographic baseline variables were included. BREAST-Q satisfaction questionnaires one year after the last reconstructive procedure were analyzed. **Results:** A total of 44 patients fulfilled the inclusion criteria. Of these 44 patients, 11 were included in the IBR group, and 33 patients in the CBR group. There were no statistically significant differences between the two groups in terms of age (IBR 56.09 vs CBR 53.06 years,  $p = 0.321$ ); BMI (IBR 27.94 vs CBR 26.40,  $p = 0.253$ ), time from mastectomy to first reconstructive procedure (IBR 22.8 vs CBR 31 months,  $p = 0.957$ ), history of chemotherapy (IBR 27.3% vs CBR 33.3%,  $p = 0.709$ ) and radiotherapy (IBR 54.5% vs CBR 42.4%,  $p = 0.484$ ), additionally type of reconstruction, affected side or complication rate were not significantly different. Regarding postoperative satis-

faction, only the second module of satisfaction with breasts displayed statistically significant differences, with a higher score in the CBR group (46.27 vs 52.27,  $p = 0.019$ ). Other items explored didn't show significant differences.

**Discussion:** The data reported in this study suggest that regardless of whether the last stage of a BR is reached, the results in these settings can be very similar in terms of psychosocial well-being, sexual well-being, physical well-being regarding the chest area, with some degree of better perception of her breasts. **Conclusion:** This study suggests that the results in terms of satisfaction in BR after mastectomy for breast cancer are quite similar for patients who decide to take only the first reconstructive stage, compared with those that finished all the process along, this may be a valuable tool for decision making.

### Keywords

BREAST-Q, Breast Reconstruction, Satisfaction Index, Quality of Life, Breast Cancer, Patient's Decision Making

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## 1. Introduction

Breast cancer is the most common cancer in women worldwide, representing a major public health problem [1], due to this, the policies of national and international health authorities have been redirected to ensure comprehensive treatment, which has to not only consider the outcomes related to recurrences and mortality, and take care of different physical and psychosocial spheres of women who suffer from this disease, together with the implications related to its treatment, prognosis, the modifications in the social, family and sexual aspects. It is important not to lose sight of possible consequences such as depression, anxiety, uncertainty, stress, etc. and do not ignore the possible impacts on family dynamics, since it has been observed that other members may also present emotional distress, secondary to changes in their psychosocial needs and their responsibilities within the family [2].

For all the above, it is necessary to offer a protocol for the reconstruction of the amputated breast, with the aim of reestablishing well-being in the aforementioned areas and reducing the emotional burden to which our patients are subjected. However, this represents a whole process where in most cases it involves months or years of visits to the doctor, expenses, and of course surgical interventions, with multiple factors that can influence the patient's decision of whether to reconstruct or not. In this regard, there is little reliable data to support the surgeon and medical team to guide our patients on what are the expectations in terms of satisfaction and wellbeing should they decide to carry out their reconstructive protocol. Even more; There is currently no data available to help us identify the factors that can lead to a patient initiating but not completing the process and ending up with a breast that is "half reconstructed", parallelly, the usefulness of such information can be extended for clarifying doubts

related to what is expected for patients who begin their reconstructive process restoring their breast mound, but are not so sure of wanting to undergo all the way in the processes that are required to achieve a “completely reconstructed” breast, which in most cases, it is defined as those with a defined, symmetrical breast mound with a nipple-areola complex (NAC) [3].

Although there are multiple alternatives, breast reconstruction (BR) can be defined in two main groups: the use of autologous or prosthetic elements (heterologous), however, it must be understood that they represent procedures that complement each other rather than oppose [4]. Currently, the superiority of one method over another has not been established in terms of perception of functionality, general health, vitality, social and emotional wellbeing, mental health, pain, and other aspects. These sections can be measured and compared with the Breast-Q system [5], which uses multiple items composed of questionnaires that explore specific points related to well-being in physical, psychosocial, and sexual aspects, satisfaction with her reconstructed and native breast as well as patient’s experience regarding satisfaction with information, and some aspects of the relationship with the surgeon, medical team, and office staff [6].

Of course, patients may have doubts and fears about what could happen if they start BR but don’t take it all along the process, this may influence the final decision to perform BR or not. While there are multiple reports of satisfaction evaluations, comparing different methods and reconstructive protocols [6] [7] [8] [9] [10], there is still little information comparing the satisfaction of the patients who finished their process against the ones who start it but not finish it. The aim of our retrospective study was to analyze the results in terms of satisfaction after one year of undergoing to complete breast reconstruction (CBR, breast mound plus symmetrization process and NAC reconstruction) vs incomplete breast reconstruction (IBR, only breast mound creation).

## 2. Materials and Methods

We conducted a retrospective study, enrolling patients that underwent breast reconstruction (BR) surgery after mastectomy for breast cancer treatment. The study was performed at Hospital Central Sur de Alta Especialidad PEMEX in Mexico City, including patients from January 1, 2015 to January 01, 2020. All patients who underwent BR surgery after mastectomy for breast cancer treatment were included. Both autologous and heterologous-based BR were included. BREAST-Q questionnaires were applied by medical staff at one year follow-up consultation, based on the last scheduling to operating room. We divided these patients into two study groups: IBR and CBR. IBR was defined as breast mound reconstruction without NAC recreation, in a patient who explicitly refuses further reconstructive operations. CBR was defined as breast mound reconstruction plus a NAC recreation in a patient who is not planned for additional reconstructive operations by self-patient’s decision.

Four types of BR were recognized based on the technique for primary recon-

struction: 1) Dorsal flap plus implant, 2) Transverse rectus abdominis myocutaneous flap (TRAM), 3) Tissue expansion and 4) Direct implant.

Patients were excluded if they had history or manifestations of recurrent disease, previous or active advanced disease, patients who underwent BR for diagnoses other than breast cancer. Also, those who did not have a complete medical record including all the measured variables were not included in the study.

The two groups were compared based on the division of patients according to whether they completed or not BR as defined above (IBR or CBR). Variables were classified as baseline demographic at the time of beginning BR, and postoperative satisfaction after one year of last reconstructive procedure. Demographic baseline variables included: Age (years), body mass index (BMI) expressed in kg/m<sup>2</sup>, reconstructed side (left right or bilateral), postoperative complications (pathological scarring, flap necrosis, fat necrosis, hematoma, exposure of prosthetic material, necrosis of NAC), history of chemotherapy and radiotherapy treatment as adjuvant in current disease and, time from mastectomy to first reconstructive procedure (months) were recorded.

As part of institutional following protocol, satisfaction questionnaires were filled by the patients themselves under medical supervision, taken at one year after last reconstructive procedure. All patients underwent BREAST-Q (Licensed Version 2.0 Reconstruction Module) in Spanish Version, published by The Memorial Sloan Kettering Cancer Center and The University of British Columbia [11]. Postoperative satisfaction variables included: Psychosocial well-being, sexual well-being, and Physical well-being regarding the chest area, satisfaction with breasts first and second modules, patient experience regarding satisfaction with information, surgeon, medical team, and office staff. Records were analyzed according to BREAST-Q guidelines.

Statistical analysis: We summarized data as means (standard deviation), medians (interquartile range) or number of patients (percentages). The Chi-Square test or Fisher's exact test was used for qualitative variables and the Student's t test or Mann-Whitney U two-sample tests were used for continuous variables depending on distribution. A two-sided p value < 0.05 was statistically significant. All statistical analyses were performed using the SPSS version 26.0 for Windows (SPSS Inc. Chicago, IL, USA).

The research was performed in accordance with relevant institutional national and international guidelines/regulations.

### 3. Results

After revision of all BRs performed from January 1, 2015 to January 01, 2020 in our center, a total of 44 patients fulfilled inclusion criteria. Of these 44 patients, 11 were included in the IBR group, and 33 patients in the CBR group.

Baseline demographic data is summarized in **Table 1**. There were no statistically significant differences between the two groups in terms of age (IBR 56.09 vs CBR 53.06 years,  $p = 0.321$ ); BMI (IBR 27.94 vs CBR 26.40,  $p = 0.253$ ), time from

**Table 1.** Baseline demographic variables.

<i>Baseline Demographic Variables</i>	<i>IBR</i>	<i>CBR</i>	<i>p</i>
<i>Age (years), median (SD)</i>	56.09, (9.40)	53.06, (8.44)	0.321
<i>Bilateral reconstruction, % (n)</i>	0.0%, (0)	9.1%, (3)	0.407
<i>BMI (kg/m<sup>2</sup>), median (SD)</i>	27.936, (3.70)	26.406, (3.82)	0.253
<i>TFMFRP (months), median (SD)</i>	22.82, (22.26)	31.00, (35.72)	0.957
<i>Radiotherapy, % (n)</i>	27.3%, (3)	33.3%, (11)	0.709
<i>Chemotherapy, % (n)</i>	54.5%, (6)	42.4%, (14)	0.484
<i>Overall Complications, % (n)</i>	36.4%, (4)	24.2%, (8)	0.434

IBR: Incomplete Breast Reconstruction; CBR: Complete Breast Reconstruction; BMI: Body Mass Index; TFMFRP: Time From Mastectomy to First Reconstructive Procedure; n: Number of Cases; SD: Standard Deviation.

mastectomy to first reconstructive procedure (IBR 22.8 vs CBR 31 months,  $p = 0.957$ ), history of chemotherapy (IBR 27.3% vs CBR 33.3%,  $p = 0.709$ ) and radiotherapy (IBR 54.5% vs CBR 42.4%,  $p = 0.484$ ), additionally type of reconstruction, affected side or complication rate were not significantly different (shown in **Table 2** and **Table 3** respectively).

Regarding postoperative satisfaction, only second module of satisfaction with breasts displayed statistically significant differences, with a higher score in the CBR group (46.27 vs 52.27,  $p = 0.019$ ). Otherwise, Psychosocial well-being, Sexual well-being, Physical well-being regarding the chest area, satisfaction with breasts (first module), didn't showed significant differences, similarly patient's experience regarding satisfaction with information, surgeon, medical team, and office staff suggest being similar between groups. Data is summarized in **Table 4**.

#### 4. Discussion

Is part of our labor to approximate and make efforts to understand our patient's motivations? Especially in postmastectomy women who usually have a big emotional load regarding their illness. There are patients who decide not to start a BR, probably due to fear of undergoing more surgical procedures, more visits to health facilities and not being willing to past trough another long process additionally to the one they have already gone on treating breast cancer. Previous efforts have been made to assess breast cancer patient perceptions and identify the determinants of patient decisions to undergo or not to BR after mastectomy. As reported by Aljaaly *et al.* [12], they found high rates of Arab women unwilling to perform BR (61%), they suggested factors that can influence this decision as age, which was clearly higher in the patients who refused to reconstruct and was highlighted as the most associated factor. The authors suggests that the older women may be expected to better deal with physical changes and presents more comorbidities that may generate more doubts about procedures safety. In contrast

**Table 2.** Type of reconstruction.

<i>Type of Reconstruction</i>	<i>IBR</i>	<i>CBR</i>
<i>DFI, % (n)</i>	0%, (0)	9.1%, (3)
<i>TRAM, % (n)</i>	36.4%, (4)	30.3%, (10)
<i>TE, % (n)</i>	45.5%, (5)	54.5%, (18)
<i>DI, % (n)</i>	18.2%, (2)	6.1%, (2)

IBR: Incomplete Breast Reconstruction; CBR: Complete Breast Reconstruction; DFI: Dorsal Flap Plus Implant; TRAM: Transverse Rectus Abdominis Myocutaneous Flap; TE: Tissue Expansion; DI: Direct Implant; n: Number of Cases.

**Table 3.** Complications.

	<i>IBR</i>	<i>CBR</i>	
<i>Complications Incidence % (n)</i>	18.2% (2)	24.1% (8)	<i>p</i> = 0.375
<i>Type of Complication</i>			
<i>PS, % (n)</i>	0% (0)	9.1% (3)	
<i>Flap Necrosis, % (n)</i>	18.2% (2)	3% (1)	
<i>Fat Necrosis, % (n)</i>	0% (0)	3% (1)	
<i>Hematoma, % (n)</i>	0% (0)	3% (1)	
<i>EPM, % (n)</i>	0% (0)	3% (1)	
<i>Necrosis of NAC, % (n)</i>	0% (0)	3% (1)	

IBR: Incomplete Breast Reconstruction; CBR: Complete Breast Reconstruction; PS: Pathological Scarring; EPM: Exposure of Prosthetic Material; n: Number of Cases.

**Table 4.** Postoperative satisfaction variables.

<i>Postoperative satisfaction variables</i>	<i>IBR</i>	<i>CBR</i>	<i>p</i>
<i>PSWB, median (SD)</i>	80 (6.87)	48.33 (3.64)	0.069
<i>Sexual well-being, median (SD)</i>	22.36 (7.17)	24.45 (5.65)	0.326
<i>Sat Breast 1st, median (SD)</i>	12.55 (2.95)	14.18 (1.93)	0.108
<i>Sat Breast 2nd, median (SD)</i>	46.27 (7.77)	52.27 (6.85)	0.019
<i>PWB Chest, median (SD)</i>	15.09 (2.98)	13.82 (3.19)	0.251
<i>Info Sat, median (SD)</i>	51.73 (8.86)	53.42 (8.60)	0.577
<i>Sat Surgeon, median (SD)</i>	46.55 (3.88)	46.97 (3.71)	0.574
<i>Sat Team, median (SD)</i>	28 (0.0)	27.88 (0.60)	0.894
<i>Sat Office, median (SD)</i>	27.82 (0.60)	27.88 (0.70)	0.789

IBR: Incomplete Breast Reconstruction; CBR: Complete Breast Reconstruction; PSWB: Psychosocial Well-Being; PWB Chest: Physical Well-Being regarding the Chest Area; Sat Breast 1<sup>st</sup>: Satisfaction with breasts first module; Sat Breast 2<sup>nd</sup>: Satisfaction with breasts second module; Info Sat; Satisfaction with Information; Sat Surgeon: Satisfaction with Surgeon; Sat Team: Satisfaction with Medical Tea; Sat Office: Satisfaction with Office Staff; n: Number of Cases; SD: Standard Deviation.

our study suggests no differences in terms of age between groups, perhaps this can be attributed to cultural and regional factors. This is supported for some authors; Tseng JF *et al.* [13] conducted a retrospective study where they found that African American women underwent immediate BR at significantly lower rates compared with white women, Hispanic women, and Asian women. In addition, Alderman *et al.* proposed that the reconstruction rate varies significantly even among regions of the same country and is influenced by age and race.

Regarding the quality of information and relationship to the staff, our results differed significantly with other authors, as Soon PS *et al.* [14], they reported that all women in their study expressed a desire for more information about BR and more support to make their decision about BR; Opposing with our findings, that apparently in our population it wasn't a heavy decision-making factor for continuing and finishing the process.

Although there aren't validated instruments to measure the psychosocial spheres of non-reconstructed patients with similar parameters as those of Breast-q, it is fair to expect that patients who did not have BR after a mastectomy will have lower satisfaction rates about self-perception than those who did. The data reported in this study suggest that regardless of whether the last stage of a BR is reached, the results in these settings can be very similar in terms of psychosocial well-being, sexual well-being, physical well-being regarding the chest area, with some degree of better perception of her breasts, which is of course, expected in the patients who completed her BR process to the last stage. This is independent to age, BMI, reconstructed side(s), occurrence of postoperative complications, history of chemotherapy and radiotherapy for current disease and, the time lapsed from mastectomy to first reconstructive procedure.

Although patient experience about satisfaction with information, surgeon, medical team, and office staff are prime important issues, our findings didn't differ significantly between groups, so we cannot address its direct influence on decision making, nevertheless, we suggest that inequality of circumstances, results in logic to assume that while better the relationship with the staff, the better the outcome will be, and the patient will feel more comfortable [14] [15].

Limitations regarding study design should be noted, there are some difficult to determine factors that influenced the patient's initial motivations and preferences to take the reconstructive procedure, thus, prospective design should be considered in the future to clarify and control bias inherent to this study design.

## 5. Conclusion

This study suggests that the results in terms of satisfaction in BR after mastectomy for breast cancer are quite similar for patients who decide to take only the first reconstructive stage, compared with those that finished all the process along, this may be a valuable tool for decision making, BREAST-Q scores showed very similar results in global wellbeing for both groups, with exception of postoperative satisfaction with breast; wish includes questions regarding breast shape, symme-

try and good looking; nevertheless, this seems to have little impact in psychosocial and sexual spheres, as suggested by results in other modules that evaluate these topics. Subsequent studies with another methodology could help to clarify the impact of BR in any of its stages in relation to the presented spheres. Of course, we are going to need further comparative studies, this may provide more information that could change the patient's decision on making no effort to restore an amputated breast due to cancer disease, with all its emotional, sexual, physical, and psychological implications that this can carry.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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