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Original Research Article

Outcomes in breast reconstruction using the BREAST-Q questionnaire at a third level hospital center in Mexico City

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ABSTRACT

Background: Breast reconstruction can have a significant impact on the physical, emotional and psychological well-being of patients undergoing mastectomy. The type and timing of breast reconstruction influence the satisfaction index of reconstructed patients.
Methods: A retrospective examination was carried out on patient records from 2016 to 2024 at general hospital of Mexico. The analysis encompassed 210 patients who underwent breast reconstruction during this frame time. The BREAST-Q questionnaire was administered in March 2024 and at various intervals during each patient´s post-operative care. Patients were stratified according to multiple variables such as: oncological therapy, timing of reconstruction, type of reconstruction and educational attainment.
Results: The average age of the participants was 50.3 years. In terms of reconstruction timing, 25.24% underwent immediate reconstruction, while 74.76% opted for delayed reconstruction. When it came to BMI, the average was 26.99 kg/m². Regarding the type of flap used for reconstruction, the majority (82.86%) had a latissimus dorsi flap. The overall demonstrated a mean psychosocial well-being scale score of 76±6.6.
Conclusions: Breast reconstruction goes beyond physical restoration; it can profoundly impact a patient's emotional recovery, self-image, and quality of life. By addressing not only the physical changes but also the emotional and psychological aspects of breast cancer treatment, reconstruction plays a vital role in helping patients move forward with confidence, resilience, and a sense of empowerment. Regardless of when we first contact the patient, it is always worthwhile to provide her with information and the option of reconstruction.

Keywords: Breast reconstruction, BREAST-Q questionnaire, Latissimus dorsi flap, Mastectomy, Breast

INTRODUCTION

Breast cancer stands as among the most prevalent malignancies affecting women worldwide, ranking as the second leading cause of cancer-related mortality.[1,2] In 2020, an estimated 275,000 women in the United States received diagnoses of this disease, with a survival rate exceeding 90% over the subsequent five years.[3] The American society of plastic surgeons (ASPS) reported a significant number of 160,000 breast reconstruction procedures conducted in 2019 alone. While approximately 60% of mastectomy patients in the U.S. opt for breast reconstruction, this percentage notably declines in countries like Mexico due to distinct social dynamics.[4,5] Despite potential challenges in obtaining detailed national statistics, breast cancer treatment requires a multidisciplinary approach involving surgery, chemotherapy, and radiotherapy.[6]

Breast reconstruction is a significant procedure aimed to restoring the shape of breast following an oncologic procedure due to breast cancer or congenital deformities. There are several methods of breast reconstruction, each with its own benefits and considerations: implant-based reconstruction, autologous of tissue flap reconstruction and combination of both implants and flap.[7] In our center, the latissimus dorsi flap with alloplastic material is the workhorse, however, we also have the option of doing the breast reconstruction through microsurgery being the DIEP flap the most common flap in this area.[7]

This procedure can be an essential part of recovery process for many women, helping to improve their quality of life, self-esteem and emotional well-being after breast cancer treatment. It encompasses physical, emotional and psychological dimensions. The success of the procedure can profoundly affect a patient's quality of life, self-image, and overall well-being.[8] Several factors contribute to patient satisfaction with breast reconstruction, including surgical outcomes, psychological support, realistic expectations, and ongoing care.[8]

The BREAST-Q is a tool that was introduced in 2009, to address the need for valid, reliable and responsive patient-reported outcome measure within breast reconstruction.[9] This tool assesses nine domains: physical well-being, psychosocial well-being, sexual well-being, satisfaction with breasts, satisfaction with the outcome, satisfaction with information, satisfaction with the surgeon, satisfaction with the medical team, and satisfaction with admin staff.[10]

In summary, breast reconstruction plays a vital role in enhancing the overall quality of life for breast cancer patients, addressing multiple dimensions of well-being, as evaluated by the BREAST-Q tool.[10] The demand for breast reconstruction in Mexico is rising, driven by advancements in surgical techniques and increasing awareness among women about their post-mastectomy options.

This study seeks to comprehensively assess the outcomes of breast reconstruction procedures in women treated at our institution, utilizing the BREAST-Q questionnaire to provide a detailed analysis of patient experiences and satisfaction levels.

METHODS

A retrospective analysis was conducted on patient records from 2016 to 2024 at general hospital of Mexico. This study included 210 patients who underwent breast reconstruction within this period. Patients were categorized based on oncological treatment, timing of reconstruction (in mediate of delayed), type of reconstruction (implant-based, autologous tissue or both), educational attainment and pertinent factors such as surgical complications, sociodemographic characteristics.

A comprehensive analysis was conducted, which included the final step of symmetrization. The BREAST-Q questionnaire was applied in March 2024 and at various intervals during each patient´s post-operative care. This assessment tool was employed to gauge patient satisfaction, psychosocial health, sexual well-being, and physical chest well-being, in conjunction with the additional variables under scrutiny. We collected data using Microsoft excel V16.471 and analyzed data with SPSS software, v23.0. For the analysis of the relationship between types of flap and numerical variables obtained from the survey, the Kruskal-Wallis test was used, based on the sample distribution. For the analysis of the relationship between the time of breast reconstruction and the numerical variable yielded by the surveys, an ANOVA test was used due to the type of data distribution in both groups.

RESULTS

A total of 210 women completed the survey, meeting the inclusion criteria of having undergone reconstruction at the general hospital of Mexico between 2016 and 2024, expressing willingness to participate, and correctly filling out the questionnaire.

The mean age of the participants was 50.3 years (SD 10.01), with ages ranging from a minimum of 21 years to a maximum of 87 years (Figure 1). Regarding the timing of reconstruction, 53 patients (25.24%) underwent immediate reconstruction, while the majority, 157 patients (74.76%), had delayed reconstruction.

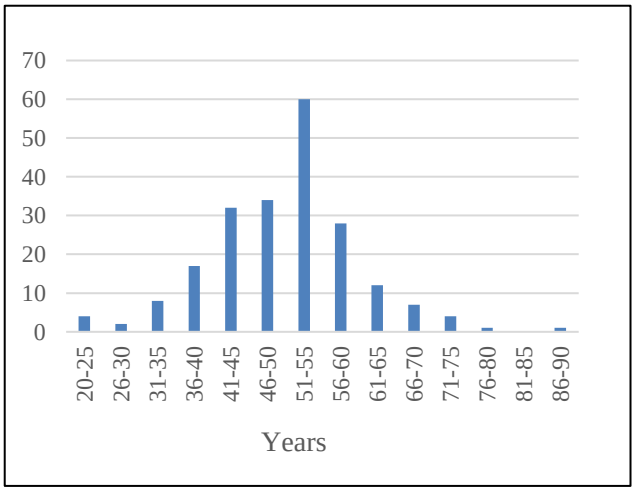

Figure 1: Age distribution within the studied population.

Regarding BMI, the mean was 26.99 kg/m² (SD 4.98). The distribution was as follows: 54 patients (25.7%) had normal weight, 104 patients (49.5%) were overweight, 42 patients (20%) had class I obesity, 8 patients (3.8%) had class II obesity, and 2 patients (0.98%) had class III obesity. The median number of pregnancies was 2, with an interquartile range (IQR) of 2-3 (Table 1).

Table 1: Distribution of the BMI in all the patients.

BMI (kg/m^2)	N	Percentage (%)
Normal weight	54	25.7
Over weight	104	49.5
Class I obesity	42	20
Class II obesity	8	3.8
Class III obesity	2	0.95
Total	210	100

In terms of the type of flap utilized for reconstruction, 174 patients underwent reconstruction with a latissimus dorsi flap (82.86%), 7 with a TRAM flap (3.33%), 6 with a DIEP flap (2.86%), 1 with a SIEA flap (0.48%), and 22 patients received treatment with a skin graft (10.48%). A total of 33 patients (15.7%) underwent summarization, while the remaining 177 patients (84.29%) did not undergo summarization (Table 2).

Table 2: Distribution of the type of flap in our population.

Type of flap	N	Percentage (%)
Latissimus dorsi flap	174	82.86
TRAM flap	7	3.33
DIEP flap	6	2.86
SIEA flap	1	0.48
Skin graft	22	10.48
Total	210	100%

BREAST-Q module

The overall demonstrated a mean psychosocial well-being scale score of 76±6.6. Patients who received breast reconstruction with a TRAM flap achieved an average score of 81.5 points (p=0.0302). A 3-point score discrepancy was noted between immediate and delayed reconstruction, indicating a higher median score of 77 points in the immediate reconstruction group (p=0.4005) (Table 3).

The overall reported an average sexual well-being scale score of 64.6±8.7. Among the different reconstruction methods, women who underwent TRAM flap reconstruction achieved the highest score of 71.8 points. In comparison, the latissimus dorsi flap group scored 64.1 points, the SIEA flap group scored 66 points, and the DIEP flap group had the lowest score of the four at 54.1 points (p=0.0051) (Table 4). In the comparison between the immediately reconstructed and the delayed reconstruction groups, both exhibited an identical mean scale score of 66 points (p=0.4805).

For the breast satisfaction module, the average scale score was 78±13.2 points. The TRAM flap group had the highest mean score at 87.7 points, followed by the latissimus dorsi flap group at 75.8 points, the skin graft flap at 78.2 points, and the DIEP and SIEA flap groups with the lowest scores of 57.6 and 65 points respectively. The median score for both timing groups was 72 points (p=0.95) (Table 5).

In the physical well-being with chest domain, the median scale score stood at 76 points (SD= 7.7, IQR72-85). The latissimus dorsi group achieved the highest score at 78.2, followed by the TRAM flap group with a mean of 76.1 points. The DIEP flap group obtained a mean score of 64.1 points, while both the SIEA flap group and the skin graft group received a mean score of 72 points each (p=0.33).

The satisfaction with implants module had a median score of 87 points (SD=9.7, IQR=75-100), while the satisfaction with abdomen module achieved a median score of 87 points (SD=9.7, IQR=83-91). Additionally, the average score for back satisfaction was 82.5 points (SD=8.4), for back and shoulder satisfaction was 77.3 points (SD=6.3), and the effects of radiation scored an average of 65 points (SD=13.2).

Concluding with the satisfaction with information module, the average score reached 80 points (SD=6.5). Moving to the satisfaction with the surgeon module, the mean score was 88.9 points (SD=7.1). Across the five groups representing diverse reconstruction types, the skin graft group emerged as the highest scorer, achieving a mean of 91.2 points (p=0.3303). The satisfaction level with the medical team reached a mean score of 91.13 points (SD=7.1), while the satisfaction with office worker scored 87.8 points (SD=8.4).

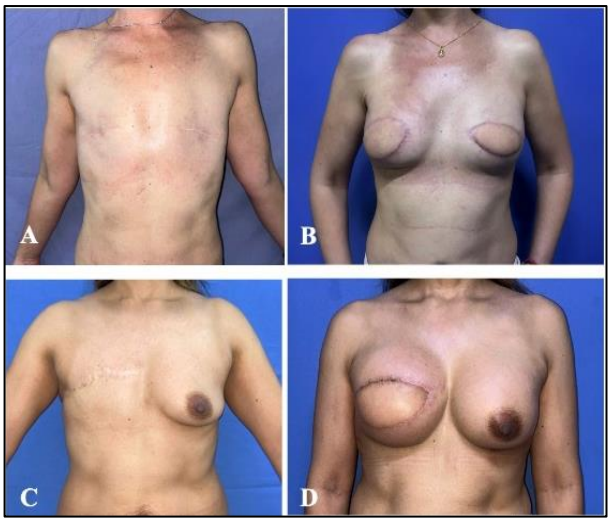

Figure 1: Patient scheduled for delayed breast reconstruction. Bilateral reconstruction with latissimus dorsi flap and 210 cc implants; (A and B) patient scheduled for delayed bilateral breast reconstruction, with latissimus dorsi flap and 210 cc implant; (C and D) patient scheduled for delayed unilateral breast reconstruction with latissimus dorsi flap and 430 cc implant in the reconstructed breast along with augmentation mammoplasty of the left breast using 250 cc implant.

Figure 2: (A and B) Patient scheduled for inmediate breast reconstrcution. Six months postoperative of latissimus dorsi flap with alloplastic; (C and D) unilateral reconstrcution with DIEP flap.

Table 3: Mean and median scores for each domain of the BREAST-Q questionnaire.

BREAST-Q	Mean	DS
Psychosocial well-being	76	6.6
Sexual well-being	64.6	8.7
Satisfaction with breast	78	13.2
Physical well-being	Median 76	IQR 72-85
Satisfaction with implants	Median 87	IQR 75-100
Satisfaction with abdomen	Median 87	IQR 83-91
Back satisfaction	82.5	8.4
Back and shoulder satisfaction	77.3	6.3
Effects of radiation	65	13.2
Satisfaction with information	80	6.5
Satisfaction with surgeon	88.9	7.1
Satisfaction with medical team	91.13	7.1
Satisfaction with office staff	87.8	8.4

Table 4: Mean scores for each domain of the BREAST-Q categorized by type of flap.

Type of flap	Psychosocial well-being		Sexual well -being		Satisfaction with breast		Physical well- being		Satisfaction with surgeon	
	Mean (DS)	P value	Mean (DS)	P value	Mean (DS)	P value	Mean (DS)	P value	Mean (DS)	P value
SIEA flap	71		66		65		72		86	
Latissimus dorsi flap	76.4 (6.7)		64.19 (8.1)		78.5 (12.6)		78.2 (6.5)		88.4 (7.3)	
TRAM flap	81.5 (4.8)	0.0302	71.8 (9.09)	0.0051	87.7 (12.7)	0.0037	76.1 (4.9)	0.3303	90.5 (5.1)	0.3303
DIEP flap	74.1 (5.1)		54.1 (10.77)		57.6 (13.3)		64.1 (7.6)		91.1 (0.4)	
Skin graft	78.9 (5.6)		69 (10.3)		78.2 (13.5)		72.4 (8.0)		91.2 (7.5)	

Table 5: Mean score of the primary category based on timing of reconstruction.

Category	Immediate reconstruction	Delayed reconstruction	P value
Psychosocial well-being	Median 77 (IQR 71-80)	Median 74 (IQR 71-83)	0.4005
Sexual well-being	Median 66 (IQR 62-70)	Median 66 (IQR 56-70)	0.4805
Satisfaction with breast	Median 72 (IQR 65-82)	Median 72 (IQR 65-83)	0.95

DISCUSSION

At our center, the predominant reconstruction method involves combining an autologous flap with alloplastic material, making it the most prevalent technique. The two-stage process is the preferred surgical approach, with positive satisfaction scores across various areas.[7] In contrast, in the United States, implant-based reconstruction is more prevalent, reflecting a notable divergence from the economic considerations shaping healthcare services in Mexico.[11]

The majority of patients undergoing reconstruction were overweight, mirroring the prevalence among Mexican women within these age groups. This places them at an increased risk of post-operative complications, a factor that was not considered in this study.

Concerning the timing of breast reconstruction, a notable preference for delayed reconstruction was observed, highlighting patients' limited awareness of this treatment option.[12] This trend is likely influenced by the socioeconomic status of the majority of patients in this

institution. Global programs and awareness drives are enlightening more women about their choices for breast reconstruction post-mastectomy. The emergence of patient advocacy organizations and online information accessibility is amplifying interest and endorsement of these treatments.[13] In Mexico, the surge in demand for breast reconstruction is propelled by advancements in surgical methods and growing awareness among women regarding the options available after mastectomy.

In the type of breast reconstruction, we must highlight that most of the patients are reconstructed using a pedicled flap, as our hospital center is a pioneer in this type of breast reconstruction, recently pioneering a breakthrough in microsurgical services. We have recently implemented the DIEP flap, which is currently regarded as the gold standard in breast reconstruction.

Analyzing the scores in different modules of the questionnaire, we can highlight the significant difference between satisfaction with the breast and sexual well-being depending on the type of flap used, with the TRAM flap (which improves both thoracic and breast appearance) being the best-ranked in both modules, potentially enhancing the patient's confidence. There is no significant relevance in terms of the surgeon's satisfaction with the chosen type of reconstruction for the patient.

It is worth noting that the timing of breast reconstruction (whether immediate or delayed) does not show a significant difference in terms of scores on psychosocial, sexual, and physical well-being, emphasizing to the surgeon that regardless of when we first contact the patient, it is always worthwhile to provide her with information and the option of reconstruction.

Breast reconstruction has demonstrated significant psychosocial and quality of life advantages for breast cancer patients who have undergone mastectomy.[14] The evaluation of patient experience holds particular significance within the field of breast surgery, given its primary objective to ensure patient satisfaction concerning psychosocial outcomes, physical functionality, and perceptions of aesthetic outcomes.[15]

A significant limitation of this study is the variation in post-surgical timing among patients. This discrepancy could potentially impact the questionnaire results, as patients at different stages of reconstruction may perceive and respond differently. Another constraint of this study is its focus on a single demographic group. Broadening the scope to include other reconstructive centers would be beneficial for understanding broader trends and variations in outcomes.

CONCLUSION

In Mexico, breast reconstruction remains a relatively under-discussed topic despite recent promotional efforts. This oncological process should be much less burdensome for patients, and nowadays there should be no need to undergo a psychological crisis such as post-mastectomy. This study demonstrates that even after significant delays in undergoing reconstruction, patients scored highly on the BREASTQ questionnaire. It is essential to consider breast reconstruction using flaps that plastic surgeons are proficient in, whether pedicled or free, aiming to perform surgery with minimal errors to prevent complications and reduce hospital stay duration. Pedicled flaps continue to be crucial in centers where microsurgery options are less prevalent; they should not be disregarded but rather emphasized to complete the reconstruction process for all patients. This study represents a milestone in assessing the follow-up care of patients undergoing reconstruction at a public hospital center in Mexico.

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