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ORIGINAL ARTICLE
Gender-Affirming Surgery

Patient Satisfaction Using BREAST-Q and Breast Implant Illness after Breast Reconstruction in Transwomen

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Background: Gender-affirming breast augmentation comprises an increasing portion of breast augmentations performed by plastic surgeons. Satisfaction and breast implant illness (BII) symptoms in this population have not been well studied. This study aimed to evaluate satisfaction and BII symptoms in transwomen who received nontextured implants as part of their breast reconstruction.

Methods: We conducted a retrospective review of transwomen who underwent breast augmentation for gender-affirming surgery. We performed telephone survey evaluation using the BREAST-Q questionnaire preoperatively, 6 months and 1 year after breast implant placement. Survey evaluation asking about BII symptoms was also administered at the same time points.

Results: Twenty-six patients completed the BREAST-Q survey, which demonstrated significantly improved satisfaction postoperatively at 6 and 12 months when compared with median preoperative scores for psychosocial ($P < 0.001$; $P < 0.001$), sexual ($P < 0.001$; $P < 0.001$), and overall satisfaction with breasts ($P < 0.001$; $P < 0.001$). Physical well-being of the chest decreased at 6 months ($P < 0.001$) but improved in comparison with 12 months ($P < 0.001$). Thirty-four patients completed the BII survey, with 18% reporting symptoms at 3 months and 29% at 1 year. Zero patients requested explantation.

Conclusions: Transwomen exhibit a significant increase in breast, psychosocial, and sexual well-being after breast augmentation. However, patients experienced a decreased physical well-being, and many report symptoms associated with BII. These results can be used to better counsel these individuals preoperatively and set reasonable postoperative expectations. Further studies investigating long-term satisfaction in larger cohorts are needed. *(Plast Reconstr Surg Glob Open 2024; 12:e5787; doi: 10.1097/GOX.0000000000005787; Published online 13 May 2024.)*

INTRODUCTION

Gender-affirming breast augmentation for transwomen is frequently sought out for gender-affirming treatment of gender dysphoria. As a result, plastic surgeons are conducting gender-affirming procedures for transwomen with increasing frequency. Between 2015 and 2020, there has been a 461.4% increase in facial, breast/chest, and genital surgery for transwomen.[1,2] Many studies have been performed in ciswomen reporting improved overall satisfaction with their breasts, as well as improved psychosocial, sexual, and physical well-being using the validated BREAST-Q questionnaire.[3] Studies have also examined symptoms associated with breast implant illness (BII) in these individuals.[4] However, satisfaction and BII symptoms in transgender individuals have not been well studied using the current standard of care in the United States, nontextured implants. This study aimed to evaluate whether transwomen also exhibit improved satisfaction and can experience symptoms associated with BII after breast augmentation as part of their breast reconstruction in gender-affirming surgery.

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METHODS

Inclusion Criteria

After institutional review board approval, patients with gender dysphoria who underwent breast augmentation as part of their gender affirmation at Denver Health Medical Center from 2018 to 2021 were retrospectively reviewed. Only patients who obtained a smooth implant were included. Informed consent was obtained from each patient before conduction of the survey.

Data Collection

Individual patients were contacted via telephone and asked to participate in this study. Participating patients verbally completed the BREAST-Q augmentation modules on psychosocial well-being, sexual well-being, physical well-being of the chest, satisfaction with breasts, and overall satisfaction with outcome at multiple time points. They also verbally completed the questionnaire evaluating whether they have experienced new symptoms previously reported in the literature associated with BII after their augmentation. Survey questions to evaluate for BII can be seen in Table 1. Patients were asked to recall and answer questions at multiple time points, including preoperatively, 6 months postoperative, and 12 months postoperative. All interviews were conducted by one individual. Patients who reported having any symptoms before surgery were considered to have preexisting conditions that were not associated with BII postoperatively. Only patients who completed either survey at all timepoints were included.

Electronic medical records were reviewed for all patients to collect patient and treatment characteristics. This included age, race, ethnicity, smoking status, length of hormone treatment before surgical consultation, physical examination characteristics, including sternal notch-to-nipple distance (SN-N), nipple to inframammary fold (IMF) distance (N-IMF), base width, implant type, implant volume, and implant pocket used.

Table 1. BII Survey Questions

How satisfied are you with your breast implant appearance?
Very dissatisfied 0 1 2 3 4 5 very satisfied
How satisfied are you with the feel of your breast implant?
Very dissatisfied 0 1 2 3 4 5 very satisfied
Have you had any revision of your breast implant surgery so far? If yes, what type?
Unstructured answer
Since getting breast implants, have you developed any of these symptoms?
Joint and muscle pain
Chronic fatigue (from no obvious cause)
Memory and concentration problems
Breathing problems
Sleep disturbance
Rashes/skin problems
Dry mouth/dry eyes
Anxiety
Depression
Headaches
Hair loss
Gastrointestinal problems
Body odor
If yes to any of the above symptoms, did you have the symptom(s) before getting the chest reconstruction?

Takeaways

Questions: Are transwomen who receive gender-affirming breast augmentations satisfied? Furthermore, do they experience symptoms of breast implant illness (BII)?

Findings: At various timepoints after breast implant placement, we performed telephone surveys using the BREAST-Q questionnaire and evaluated BII symptoms. Results show significantly improved satisfaction postoperatively at 6 and 12 months. With regard to BII symptoms, 18% reported symptoms at 3 months and 29%, at 1 year. Of these patients, none requested explantation.

Meaning: Transwomen have significant satisfaction after their gender-affirming breast augmentation, and a minority experience BII symptoms, but none choose to have an explantation.

Statistical Analysis

An equivalent Rasch transformed score was calculated for each of the BREAST-Q subscale scores. Descriptive statistics were used for patient demographic, characteristics, and treatment factors to calculate frequencies of categorical variables and mean and SD of continuous variables. BII rates were reported as percentages of patients surveyed. We used *t* tests to compare equivalent Rasch transformed scores for each subscale at the three different time points. A significance level of 0.05 was used for all statistical tests using R (version 4.3.0) within RStudio (version 3.1.446).

RESULTS

Patient Characteristics

A total of 57 patients were contacted to participate in the study, of whom 26 (45.6%) consented to participate in the BREAST-Q survey, 34 (59.6%) consented to participate in the BII survey, seven (12.3%) declined, and 24 (42.1%) did not respond. The patient characteristics are described in Table 2. The population had an average age of 34.9 and was predominantly White and non-Hispanic. The mean length of hormone treatment before consultation for gender-affirming breast augmentation was 5.5 years. All patients had undergone at least 2 years of hormone therapy before consultation. Preoperative chest characteristics demonstrated a mean SN-N of 21.2 ± 1.9 cm, base width of 12.8 ± 1.2 cm, and N-IMF of 6.6 ± 5.3 (Table 2). All 26 patients received smooth implants with a mean volume of 417.4 ± 117.3 mL (Table 2). The implants were placed in the subglandular pocket for two (7.7%) patients, subfascial for five (19.2%), subpectoral for nine (34.6%), and in a dual plane for 10 (38.5%; Table 2). Figure 1 demonstrates preoperative and postoperative images.

BREAST-Q Scores

All 26 patients completed the preoperative, 6 months postoperative, and 12 months postoperative BREAST-Q survey. The scores for these subsections for each timepoint are shown in Figure 2 and Table 3. There was a significant increase in scores between the preoperative and 6 months postoperative scores for the psychosocial (25.4 versus 71.8, $P \leq 0.0001$), sexual well-being (27.9 versus 63.4, $P \leq 0.0001$), and satisfaction with breasts (13.2 versus 73.1, $P \leq 0.0001$). The score for physical well-being of the chest significantly decreased from preoperative to 6 months postoperative (94.4 versus 74.2, $P \leq 0.0001$). This trend was re-demonstrated when comparing preoperative values with 12 months postoperative values for psychosocial (25.4 versus 71.5, $P \leq 0.0001$), sexual well-being (27.9 versus 75.6, $P \leq 0.0001$), satisfaction with breasts (13.2 versus 71.5, $P \leq 0.0001$), and physical well-being of the chest (94.4 versus 85.8, $P = 0.02$). Additionally, between 6 months and 12 months postoperative, sexual well-being (63.40 versus 75.60, $P = 0.007$) and physical well-being of the chest (74.24 versus 85.8, $P = 0.0004$) significantly increased. There was not a significant difference in psychosocial well-being, satisfaction with breasts, or satisfaction with outcome between 6 months and 12 months postoperative.

Table 2. Patient Demographics, Baseline Chest, and Implant Characteristics

Patient Demographics	Value
Age at the time of surgery, y (mean ± SD)	34.9 ± 10.6
Race, N (%)	
American Indian	1 (3.8)
Asian	1 (3.8)
Black	2 (7.7)
White	22 (84.6)
Ethnicity, N(%)	
Hispanic	5 (19.2)
Non-Hispanic	21 (80.8)
Active smoking, N(%)	4 (15.4)
Length of hormone treatment, y (mean ± SD)	5.5 ± 5.9
Chest characteristics (cm, mean ± SD)	
Sternal notch-to-nipple distance	21.2 ± 1.9
Base width	12.8 ± 1.2
N-IMF	6.6 ± 5.3
Pocket used N (%)	
Subglandular	2 (7.7)
Subfascial	5 (19.2)
Subpectoral	9 (34.6)
Dual plane	10 (38.5)
Implant volume, mL (mean ± SD)	417.4 ± 117.3

BII Results

An estimated 34 patients completed the survey evaluating whether they experienced new symptoms associated with BII after their breast augmentation. Six (17.6%) patients reported symptoms at 3 months, and 10 (29.4%) reported symptoms at 1 year. The patients who reported symptoms at 1 year included all the patients who reported symptoms at 3 months. Reported symptoms included joint and muscle pain (5; 14.7%); sleep disturbance (4; 11.8%); chronic fatigue (4; 11.8%); anxiety (2; 5.9%);

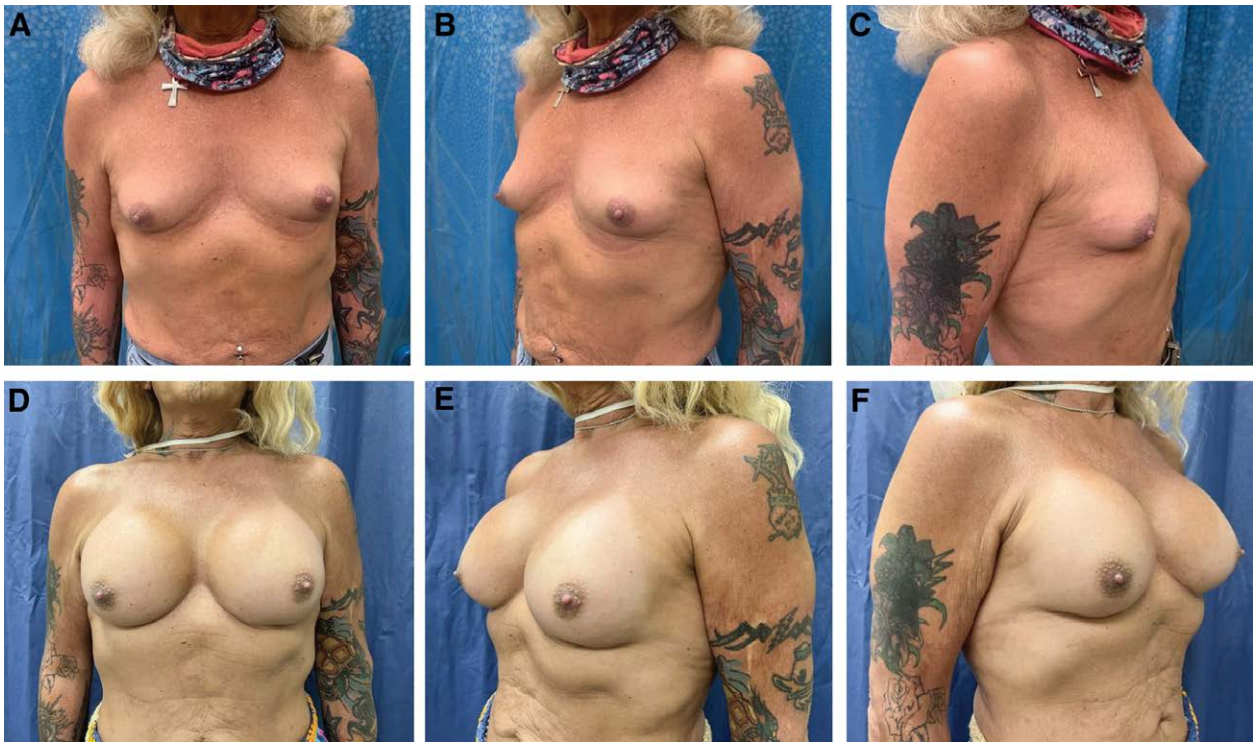

Fig. 1. Images of a 66-year-old transwoman. A–C, Preoperative images: frontal view (A), left lateral view (B), and right lateral view (C). D–F, Postoperative images: frontal view (D), left lateral view (E), and right lateral view (F).

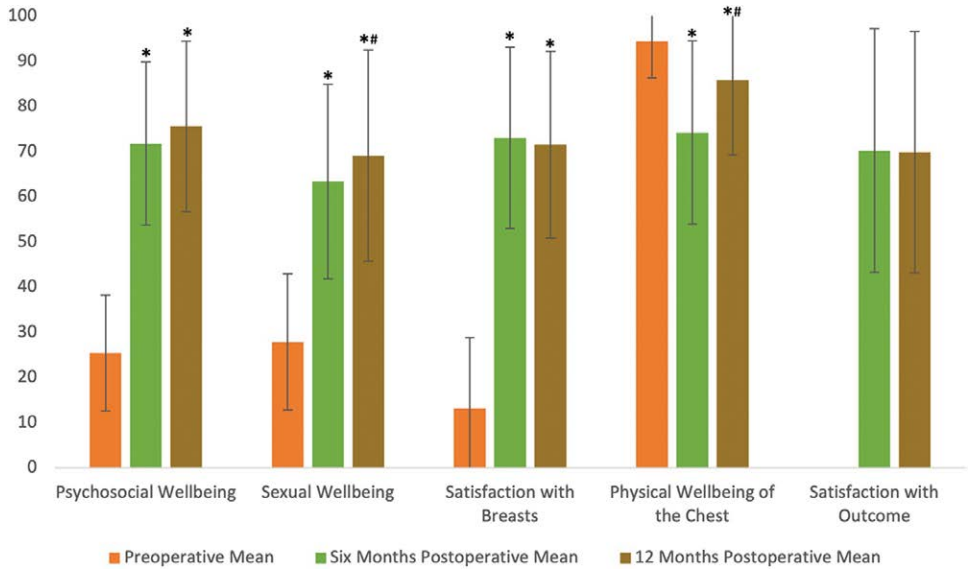

Fig. 2. Preoperative, 6 months postoperative, and 12 months postoperative BREAST-Q subsection scores. *Indicates significance compared with preoperative values. #Indicates significance compared with 6 months postoperative values.

Table 3. Preoperative, 6 Months, and 12 Months Postoperative BREAST-Q Subsection Scores

BREAST-Q Subsection	Preoperative, Mean ± SD	6 Months Postoperative, Mean ± SD	12 Months Postoperative, Mean ± SD	Mean Value (*P*) for Preoperative Compared with 6 Months Postoperative	Mean Value (*P*) for Preoperative Compared with 12 Months Postoperative	12 Months vs 6 Months Postoperative, *P*
Psychosocial well-being	25.4 ± 12.8	71.8 ± 18.0	71.5 ± 18.9	<0.0001	<0.0001	0.5
Sexual well-being	27.9 ± 15.1	63.4 ± 21.6	75.6 ± 23.4	<0.0001	<0.0001	0.007
Satisfaction with breasts	13.2 ± 15.6	73.1 ± 20.0	71.5 ± 20.6	<0.0001	<0.0001	0.8
Physical well-being of the chest	94.4 ± 8.0	74.2 ± 20.3	85.8 ± 16.6	<0.0001	0.02	0.0004
Satisfaction with outcome	N/A	70.2 ± 26.9	69.9 ± 26.8	N/A	N/A	0.8

hair loss (2; 5.9%); dry mouth/eyes (1; 2.9%); depression (1; 2.9%); breathing problems (1; 2.9%); GI problems (1; 2.9%); headaches (1; 2.9%); memory/concentration difficulty (1; 2.9%); and rashes/skin problems (1; 2.9%). No patients were requesting removal of implants at the time of survey (Table 4).

Table 4. Reported Symptoms of BII at 1 Year Postoperative

Symptoms of BII Reported	Patients Reporting Symptoms, N (%)
Sleep disturbance	4 (11.8)
Chronic fatigue	4 (11.8)
Joint and muscle pain	5 (14.7)
Anxiety	2 (5.9)
Hair loss	2 (5.9)
Dry mouth/eyes	1 (2.9)
Depression	1 (2.9)
Breathing problems	1 (2.9)
GI problems	1 (2.9)
Headaches	1 (2.9)
Memory/concentration difficulty	1 (2.9)
Rashes/skin problems	1 (2.9)

DISCUSSION

Breast augmentation is an operation frequently sought out by transwomen as part of their gender affirmation journey.[5] Considering that all surgery is associated with risk and potential complications, it is essential to understand patient satisfaction outcomes postoperatively.[6] This study demonstrates improved satisfaction in transwomen at 6 months and 12 months postoperative in measures of psychosocial, sexual well-being, and overall satisfaction with breasts. Although the physical well-being of the chest worsened at 6 months postoperatively, it improved between the 6-month and 12-month time point.

Psychosocial well-being is an essential measure of postoperative success after gender-affirming surgery. Prior studies have shown more frequent mental health diagnoses in transgender individuals as compared with their cisgender peers.[7] In transmasculine mastectomy, rates of depression and anxiety have ranged from 44.4% to 70.3%, and 33.2% to 66.3%, respectively.[7,8] Across transgender individuals,

studies suggest that gender-affirming treatments have a positive association with improved mental health.[5,9] Significant improvement in psychosocial well-being has previously been demonstrated in study of transwomen using textured anatomical implants in 35 patients.[5] In our study, gains in psychosocial well-being after augmentation with smooth implants were seen in the first 6 months, and gains were maintained between 6 and 12 months. The early and significant gains in psychosocial well-being suggest that gender-affirming breast augmentation surgery has helped to relieve some mental distress in these individuals.

Sexual well-being is another important outcome measurement. A prior study on the sexual well-being of transgender individuals showed that transgender patients have lower sexual esteem and body image compared with their cisgender counterparts.[10] In this study, there was improvement in sexual well-being, predominately in the first 6 months, with continued improvements over 12 months. This may indicate immediate and persistent acceptance of their new body image.

Physical well-being of the chest evaluated areas of breast pain and tightness, sleep disturbance and difficulty with lifting. This is one area that worsened in the first 6 months after surgery in this study. Prior literature on textured implants showed either no change in physical well-being or no restriction in daily activities.[5,6] Worsening of physical well-being in the first 6 months is likely multifactorial. Symptoms may be associated with postoperative pain, tightness of the implant, breast pain with heavy lifting, and difficulty sleeping on the chest. As physical well-being improved between the 6-month and 12-month timeframe, this is a further indication these initial postoperative concerns are abating and may be temporary.

Patient satisfaction with their breasts is essential to a positive outcome. In the scant literature outside of the United States assessing transwomen undergoing gender-affirming breast augmentation with textured implants, patients were similarly satisfied.[5,6] In our study, patients report significant satisfaction with their breast at both 6 and 12 months. These findings suggest that these patients are satisfied with their clinical outcome with our use of smooth round implants.

BII remains a poorly understood condition and has been inadequately researched with few long-term studies on the cis-female population and none in transwomen. The prevalence of the condition in ciswomen has conflicting evidence from studies showing a prevalence of 0.1% up to 84.7%.[11,12] Our study found that 29.4% of transwomen patients experience symptoms of BII by 1 year postoperative. Some prior studies on ciswomen have showed that between 17% and 80% have significant improvement of their symptoms after explantation.[13,14] However, a large number of these patients can have recurrence of their symptoms.[13] When asked about explantation for relief of BII symptoms, none of the transwomen patients elected to undergo the reversal surgery, which is significantly different from cis-female BII patients. However, should transwomen express a desire for explantation in the early postoperative period, surgeons should counsel patients to wait, considering that symptoms may be unrelated and could potentially resolve. Given that all of the patients reporting symptoms at 12 months chose to keep their implants, it may suggest that the symptoms of gender dysphoria may outweigh any associated with BII.

Limitations of this study include its retrospective nature leading to recall bias during the survey interviews and small sample size. Social, medical, and psychological confounding factors were not investigated which may overlap with BII symptoms that patients reported. The transwomen in this study also had varying implant pocket locations, which was not controlled for and may impact the results. Additionally, when consenting these patients for inclusion in the study, they were informed of the study goals, potentially introducing a bias that could influence their responses. The surveys in this study also asked patients to recall and answer questions at different time points, which may introduce significant recall bias into the answers provided by the patients. Patients' perceptions and interpretations of past events may influence their responses. Patients' satisfaction with their outcome may be influenced by the number of needed revision procedures. This introduces the possibility of inaccuracies in the data gathered, as patients may distort their recollection of past events. Another limitation includes the small sample size, which did not allow for subgroup analysis based on patient characteristics or implant pocket placement.

Given that this is a rapidly increasing component of the plastic surgeon's practice, additional studies need to be conducted. Future research should focus on larger cohorts of transwomen patients with long-term follow-up and comparison to a cisgender cohort to truly evaluate long-term satisfaction rates as well as capture patients with BII symptoms who pursue explantation.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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