



“TRANS”-questionnaire (TRANS-Q): a novel, validated pre- and postoperative satisfaction tool in 145 patients undergoing gender confirming mastectomies

Jonathon Wanta¹ · James Gatherwright² · Rebecca Knackstedt³  · Tobias Long¹ · Daniel A. Medalie⁴

Received: 22 March 2019 / Accepted: 14 June 2019 / Published online: 4 July 2019
© Springer-Verlag GmbH Germany, part of Springer Nature 2019

Dear Sir or Madam:

Despite a recent increase in the number of scientific publications on transgender surgery, there is a dearth of well-organized, prospective evaluations of or evaluation tools for this patient population [1]. To that end, we have created a novel questionnaire, which we adapted from the BREAST-Q and from other surveys in the transgender literature. We have validated survey items and propose a revised version based on our results.

Following IRB approval, from 2015 to 2017, 440 consecutive patients scheduled to undergo gender confirming mastectomy by a single surgeon were asked to complete a novel, transgender-specific, preoperative survey (TRANS-Q). Postoperative surveys were sent approximately 6 months after surgery. Principle component analysis with correlations and a Scree plot were performed as a preliminary assessment of survey reliability. This was followed by a Cronbach's alpha reliability test. Survey items were then individually assessed and removed if they worsened reliability (Table 1).

Two hundred forty-five patients completed the preop survey (51%) and 146 completed both the pre- and postoperative surveys (33%). The average age for the 245 patients was 26.7 years (range 17.7–61.6), and the median follow-up for the postop surveys was 6.2 months (range 5–14 months).

86.7% of patients underwent a double incision (DI) mastectomy, and 13.3% underwent a mastectomy with a peri-areolar approach.

Ninety-eight percent of patients reported that they were either satisfied or very satisfied with the procedure, and 95% stated that they would encourage individuals in similar circumstances to undergo the procedure. Postoperative satisfaction was good or very good regarding multiple post-operative queries on scarring (location—96.6%, appearance—88.4%, color—87.7%, length—81.8%, width—83.1%, and symmetry—90.5%). Postoperative satisfaction was good or very good in regard to nipple changes (appearance—80.4%, location—95.3%, color—89.9%, symmetry—88.5%).

Patients were asked to grade their satisfaction for various components using a Likert-scale. There were statistically significant (all $p < 0.001$) improvements in patients' assessment of their chest shape (1.43 pre vs 4.59 post), appearance with (1.66 vs 4.90) and without clothes (1.22 vs 4.42), symmetry (2.113 vs 4.48), ease during sexual activity (2.522 pre vs 4.25 post), confidence in sexuality (2.837 vs. 4.09), sexual satisfaction (3.086 vs. 3.95), and self-assessed attractiveness with (2.641 vs 4.37) and without clothes (1.690 vs. 3.87) (Fig. 1).

Sixty-six percent and 22.8% of individuals reported having contemplated or attempted suicide, respectively, preoperatively. This improved to 38.5% and 8.1%, respectively, postoperatively ($p < 0.001$). 80.5% of patients reported depressive episodes preoperatively vs 49.3% postoperatively ($p < 0.001$). Patients reporting anxiety attacks preoperatively decreased from 66.5 to 40.8% ($p < 0.001$). There was a significant reduction in the number of patients reporting chronic pain postoperatively, from 27.3 to 9.4% ($p = 0.009$). However, mental health assessments when subjected to reliability analysis were unable to be validated and were subsequently removed from the final survey.

Numerous studies have demonstrated increased confidence and satisfaction following gender-confirming

✉ Daniel A. Medalie
damedalie@gmail.com

¹ Division of Plastic and Reconstructive Surgery, Department of Surgery, University Hospitals Cleveland Medical Center, Cleveland, OH, USA

² Division of Plastic Surgery, Metrohealth Medical Center, Cleveland, OH, USA

³ Department of Plastic and Reconstructive Surgery, Cleveland Clinic Foundation, Cleveland, OH, USA

⁴ Case Western Reserve; Cleveland Plastic Surgery (private practice), 25700 Science Park Drive, Suite 190, Beachwood, OH 44122, USA

Table 1 validated pre- and postoperative survey questions

Preoperative questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. I am satisfied with the shape of my chest	1	2	3	4	5
2. I am satisfied with how my chest looks with clothes on	1	2	3	4	5
3. I am satisfied with how my chest looks with clothes off	1	2	3	4	5
4. I am satisfied with the symmetry of my chest	1	2	3	4	5
5. I am comfortable/at ease during sexual activity	1	2	3	4	5
6. I am confident sexually	1	2	3	4	5
7. I am satisfied with my sex life	1	2	3	4	5
8. I feel sexy/attractive in my clothes	1	2	3	4	5
9. I feel sexy/attractive when unclothed	1	2	3	4	5
Postoperative questions					
1. Overall, I am satisfied with the procedure	1	2	3	4	5
2. I am satisfied with location of my scars	1	2	3	4	5
3. I am satisfied with how my scars look	1	2	3	4	5
4. I am satisfied with the color of my scars	1	2	3	4	5
5. I am satisfied with the texture/feel of my scars	1	2	3	4	5
6. I am satisfied with the length/width of my scars	1	2	3	4	5
7. I am satisfied with the symmetry of my scars	1	2	3	4	5
8. I am satisfied with location of my scars	1	2	3	4	5
9. I am satisfied with location of my nipples	1	2	3	4	5
10. I am satisfied with how my nipples look	1	2	3	4	5
11. I am satisfied with the color of my nipples	1	2	3	4	5
12. I am satisfied with the sensation of my nipples	1	2	3	4	5
13. I am satisfied with the symmetry of my nipples	1	2	3	4	5
14. I am satisfied with location of my nipples	1	2	3	4	5
15. I am satisfied with the shape of my chest	1	2	3	4	5
16. I am satisfied with how my chest looks with clothes on	1	2	3	4	5
17. I am satisfied with how my chest looks with clothes off	1	2	3	4	5
18. I am satisfied with the symmetry of my chest	1	2	3	4	5
19. I am comfortable/at ease during sexual activity	1	2	3	4	5
20. I am confident sexually	1	2	3	4	5
21. I am satisfied with my sex life	1	2	3	4	5
22. I feel sexy/attractive in my clothes	1	2	3	4	5
23. I feel sexy/attractive when unclothed	1	2	3	4	5
24. I would encourage others in a similar situation to seek surgery	1	2	3	4	5
25. If presented with the option, I would choose to have surgery again	1	2	3	4	5

surgery [2–5], thus, it will be crucial to continue to follow our patients and determine if satisfaction continues long-term. Similar to insurance justification for breast reduction, the ability to demonstrate a significant improvement in a condition through surgery may lead to

more insurance companies being willing to financially support the procedures.

The initial survey included items that did not withstand statistical rigor. However, the validation processes are crucial as other studies in this field continue to report

Fig. 1 Changes in subjective appearance and comfort pre- and postoperatively. *denotes $p < 0.001$

Pre-Operative Questions					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I am satisfied with the shape of my chest	1	2	3	4	5
2. I am satisfied with how my chest looks with clothes on	1	2	3	4	5
3. I am satisfied with how my chest looks with clothes off	1	2	3	4	5
4. I am satisfied with the symmetry of my chest	1	2	3	4	5
5. I am comfortable/at ease during sexual activity	1	2	3	4	5
6. I am confident sexually	1	2	3	4	5
7. I am satisfied with my sex life	1	2	3	4	5
8. I feel sexy/attractive in my clothes	1	2	3	4	5
9. I feel sexy/attractive when unclothed	1	2	3	4	5

Post-Operative Questions					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Overall, I am satisfied with the procedure	1	2	3	4	5
2. I am satisfied with location of my scars	1	2	3	4	5
3. I am satisfied with how my scars look	1	2	3	4	5
4. I am satisfied with the color of my scars	1	2	3	4	5
5. I am satisfied with the texture/feel of my scars	1	2	3	4	5
6. I am satisfied with the length/width of my scars	1	2	3	4	5
7. I am satisfied with the symmetry of my scars	1	2	3	4	5
8. I am satisfied with location of my scars	1	2	3	4	5
9. I am satisfied with location of my nipples	1	2	3	4	5
10. I am satisfied with how my nipples look	1	2	3	4	5
11. I am satisfied with the color of my nipples	1	2	3	4	5
12. I am satisfied with the sensation of my nipples	1	2	3	4	5
13. I am satisfied with the symmetry of my nipples	1	2	3	4	5
14. I am satisfied with location of my nipples	1	2	3	4	5
15. I am satisfied with the shape of my chest	1	2	3	4	5
16. I am satisfied with how my chest looks with clothes on	1	2	3	4	5
17. I am satisfied with how my chest looks with clothes off	1	2	3	4	5
18. I am satisfied with the symmetry of my chest	1	2	3	4	5
19. I am comfortable/at ease during sexual activity	1	2	3	4	5
20. I am confident sexually	1	2	3	4	5
21. I am satisfied with my sex life	1	2	3	4	5
22. I feel sexy/attractive in my clothes	1	2	3	4	5
23. I feel sexy/attractive when unclothed	1	2	3	4	5
24. I would encourage others in a similar situation to seek surgery	1	2	3	4	5
25. If presented with the option, I would choose to have surgery again	1	2	3	4	5

on non-validated surveys and cite the need for a validated survey [4].

While this is the largest and first prospective study of its kind, it is not without limitations. There is a degree of selection bias as it only included patients who were interested in and underwent surgery by a single surgeon. As this was a study only examining patients who eventually pursued surgery, it is impossible to assess patients who would like to undergo mastectomies, but were unable to do so. Complete pre- and postoperative surveys were available for only 33% of patients. However, based on our standard deviation for survey response

items, this achieved a statistically acceptable survey response.

This is a prospective, comprehensive study of the pre- and postoperative patient satisfaction and the basis for proposing a statistically validated assessment for female to male who undergo gender confirming mastectomy. We were able to demonstrate a very high level of patient satisfaction and our validated pre- and postoperative survey has been shown to be statistically reliable in 145 patients. Continued study is needed to examine the long-term satisfaction outcomes of this group of patients.

Compliance with ethical standards

Conflict of interest Jonathon Wanta, James Gatherwright, Rebecca Knackstedt, Tobias Long, and Daniel A. Medalie declare that they have no conflict of interest.

Ethical approval IRB approval obtained.

Informed consent performed per IRB protocol.

References

1. Barone M, Cogliandro A, di Stefano N, Tambone V, Persichetti P (2017) A systematic review of patient-reported outcome measures following transsexual surgery. *Aesthet Plast Surg* 41(3):700–713
2. Wolter A, Diedrichson J, Scholz T, Arens-Landwehr A, Liebau J (2015) Sexual reassignment surgery in female-to-male transsexuals:

an algorithm for subcutaneous mastectomy. *J Plast Reconstr Aesthet Surg* 68(2):184–191

3. Richards C, Barrett J (2013) The case for bilateral mastectomy and male chest contouring for the female-to-male transsexual. *Ann R Coll Surg Engl* 95(2):93–95
4. van de Grift TC, Elfering L, Greijdanus M, Smit JM, Bouman MB, Klassen AF, Mullender MG (2018) Subcutaneous mastectomy improves satisfaction with body and psychosocial function in Trans men: findings of a cross-sectional study using the BODY-Q chest module. *Plast Reconstr Surg* 142(5):1125–1132
5. Agarwal CA, Scheefer MF, Wright LN, Walzer NK, Rivera A (2018) Quality of life improvement after chest wall masculinization in female-to-male transgender patients: a prospective study using the BREAST-Q and Body uneasiness test. *J Plast Reconstr Aesthet Surg* 71(5):651–657

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.