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ORIGINAL ARTICLE

Masculinizing chest-wall surgeries in transgender patients, a retrospective single-center study

Opérations chirurgicales de masculinisation thoracique chez les patients transgenres, une étude monocentrique rétrospective

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KEYWORDS

Masculinization;
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Summary

Introduction. – Masculinizing chest-wall contouring surgery is an important surgical intervention for most transmasculine patients; a vast improvement in quality of life for this group of patients has been documented as a result of receiving surgery. The aim of this study was to evaluate the results of such surgeries performed at our university hospital between 2008 and 2020, as well as the current quality of life of the patients.

Methods. – All 16 patients operated between 2008 and 2020 were sent a questionnaire consisting of both BREAST-Q and BODY-Q modules, considered fitting for our study purposes, as well as the BECK Depression Index and a short two-question form with space for feedback. Patients were divided into groups called double incision (DI) and periareolar (PA) depending on the surgical technique used.

Results. – We found an overall complication percentage of 31.3%, with the DI group scoring 33.3% and PA 28.6%, while secondary aesthetic corrections were necessary for 50% of all patients. The questionnaires yielded 6 responses (37.5%). Participants rated on a scale of 1 to 10 their willingness to undergo the operation again if given the choice; the DI group averaged 10/10, and the PA group 9/10, despite the statistically significant complication and correction rates.

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MOTS CLÉS

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Conclusions. — Masculinizing chest-wall contouring surgery has significant complication risks. In our study, frequency of complications did not appear to depend on the surgical technique used. Additionally, the complication rates found in our low volume centre seem to be comparable with those reported from bigger units.

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Résumé

Introduction. — Les opérations chirurgicales de masculinisation thoracique représentent une intervention chirurgicale importante pour la plupart des patients transmasculins, et une amélioration considérable de la qualité de vie de ce groupe de patients a été documentée à la suite de ces opérations. L'objectif de cette étude était d'évaluer les résultats de ces interventions chirurgicales réalisées dans notre hôpital universitaire entre 2008 et 2020, ainsi que la qualité de vie actuelle des patients.

Méthodes. — Les 16 patients opérés entre 2008 et 2020 ont reçu un questionnaire comprenant les modules BREAST-Q et BODY-Q, considérés comme adaptés aux objectifs de notre étude, ainsi que l'inventaire de dépression de BECK et un court formulaire de deux questions avec un espace pour des commentaires. Les patients ont été divisés en groupes appelés double incision (DI) et périaréolaire (PA) en fonction de la technique chirurgicale utilisée.

Résultats. — Nous avons constaté un pourcentage global de complications de 31,3 %, avec un score de 33,3 % pour le groupe DI et de 28,6 % pour le groupe PA, tandis que des corrections esthétiques secondaires ont été nécessaires pour 50 % de tous les patients. Les questionnaires ont donné lieu à 6 réponses, soit 37,5 %. Les participants ont évalué sur une échelle de 1 à 10 leur volonté de subir à nouveau l'opération s'ils en avaient le choix ; le groupe DI a obtenu une moyenne de 10/10 et le groupe PA de 9/10, malgré des taux de complications et de corrections statistiquement significatifs.

Conclusions. — Les opérations chirurgicales de masculinisation thoracique présente des risques de complications importants. Dans notre étude, la fréquence des complications ne semble pas dépendre de la technique chirurgicale utilisée. De plus, les taux de complications constatés dans notre centre traitant un faible volume de patients semblent comparables à ceux rapportés dans des unités plus importantes.

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Introduction

'Transgender' is a broad umbrella term used to describe people whose gender-identity does not match the gender assigned to them at birth [1]. Transgender individuals often experience gender dysphoria [2] due to this incongruence, which may have a severe negative effect on their mental health [3] and decrease their quality of life [4,5]. For these reasons, many transgender individuals seek to undergo transition. Transitioning is a process unique to each patient, and may include social and legal changes as well as medical gender-affirming interventions [1].

Medical transitioning for transmasculine individuals typically includes cross-sex hormones, also called hormone replacement therapy (HRT) and surgical interventions [1]. Breasts are often very visible and strongly associated with femininity, and therefore masculinizing chest-wall contour surgery is an important surgical intervention. It has been documented to vastly improve the quality of life in this patient group in terms of mental and, sometimes, also physical health [6].

There are several surgical techniques available in chest-wall masculinizing surgery, and the optimal operative method should be chosen based on anatomical characteristics of the patient [7]. No one single technique has been

proven to provide superior results compared to another. Selecting the best technique for each individual is often done by assessing skin elasticity, the degree of ptosis, and size of the patient's breasts [7–9].

The number of international studies on masculinizing chest-wall contouring surgeries, especially those that include patient-reported quality of life (QoL) in addition to objective results, is currently limited [10–13]. The primary aim of this study was to publish short-term results of masculinizing chest-wall contour surgeries performed at our academic teaching hospital.

Methods

This study was approved by the Ethics Committee of the University of Eastern Finland (1254/2021). The study population consisted of 16 consecutive patients who had undergone masculinizing chest-wall contouring surgery at the Kuopio University hospital between 2008 and 2020. Patients were operated on by plastic surgeons who frequently operate breast tissue in order to treat breast cancer or other, benign, conditions.

Clinical data was collected from the hospital's patient administration system. Patients were divided into two separate groups for the analyses according to the surgical tech-

nique used for the chest-wall reconstruction. The first group was named periareolar (PA) and consisted of patients who had undergone surgery using a semicircular, transareolar, or concentric circular technique. In these techniques, a small incision is made into or around the areola depending on how much skin needs to be excised. The breast tissue and excess adipose tissue are then removed via this small incision in order to create a more masculine chest contour. The advantage of these techniques is less noticeable postoperative scarring, which is preferable to some patients. The second group was named double incision (DI) and consisted of patients whose surgery was performed using transverse double incisions or inverted T incisions, with free or pedicled nipple grafts. The DI techniques are used in cases where the breasts are originally large, the degree of ptosis is great, or the skin quality of the patient is poor. The nipple-areola complex (NAC) is harvested as a full thickness graft, after which wide horizontal incisions are used to perform a bilateral mastectomy. Excess tissue, including skin, breast, and adipose tissue, is removed to give the chest wall a more masculine contour, after which the NACs are transplanted onto the appropriate locations on the newly-shaped chest. Using double incisions leaves larger postoperative scars, but achieves better results in patients with large breasts. To achieve the most acceptable result to the patient, it is advisable to consult the patient on preferences regarding scarring, postoperative nipple sensation and NAC preservation, among other factors.

Self-reported QoL was collected using a survey sent by mail to these patients, with return envelopes included. The survey was sent twice, first in May 2022 and again in August 2022. The survey included modules from the Finnish versions of the BREAST-Q (sexual well-being, physical well-being, satisfaction with surgeon, and satisfaction with surgical team) and BODY-Q (body image, psychological function, social function, satisfaction with chest, satisfaction with nipples, and appraisal of body contouring scars) questionnaires. The questionnaires prompted patients to rate the degree of their functionality, satisfaction, or well-being on three potential scales: from totally disagree to totally agree, from very unsatisfied to very satisfied, and from never to all the time. The answers were then converted into a score ranging from 0 (worst) to 100 (best) according to the conversion tables and instructions included in the BREAST-Q and

BODY-Q questionnaires. On a separate form, patients were asked to fill in the BECK Depression Inventory (BDI) and to rate their willingness, on a scale of 1 to 10, to undergo the same surgery now, knowing their results. Patients were also provided some free space where they could write personal feedback if they wished.

Results

The mean age of the patients when undergoing surgery was 25.0 (±7.00) years and their mean body mass index (BMI) was 24.5 (±4.50). All patients were undergoing HRT at the time of their operation. The precise duration of the HRT was not found in the patient records. The patient group was in a good somatic health; one patient had asthma, another the celiac disease, and a third hypothyroidism. We found a high comorbidity of mental health disorders, with 62.5% of patients having a secondary psychiatric diagnosis in addition to their transgender diagnosis. For 60% of these patients, the secondary diagnosis was depression, while anxiety disorders were the next most common (33.3%) diagnoses. 28.6% of the patients were smokers. The mean follow-up time after surgery was 79.7 months (Table 1).

Of the 16 patients, eight were operated on with the PA technique and eight with the DI technique. The mean age in the PA-group was 22.8, and in the DI-group, 27.5 years. The mean BMI was 21.7 kg/m² and 27.8 kg/m², respectively (Table 1). There were three (33.3%) patients in the PA-group and two (28.6%) patients in the DI-group that had postoperative complications. Only one patient, belonging to the PA-group, required a reoperation due to an early complication. Postoperative complications are reported in more detail in Table 1. A total of eight patients required secondary corrections after their primary operation, due to unsatisfactory aesthetic results following the original surgery; five from the PA-group, and three from the DI-group (Tables 1 and 2).

A total of six patients returned the questionnaires, yielding a response rate of 37.5%. Two of the six responders were from the DI-group, and four were from the PA group. The biggest difference between the groups was noted in ratings of satisfaction with chest appearance; the DI group rated aesthetic satisfaction at 85/100, while the PA group rated it at only 47/100. In both groups, the responders rated on a scale of 1 to 10 their willingness to undergo the operation

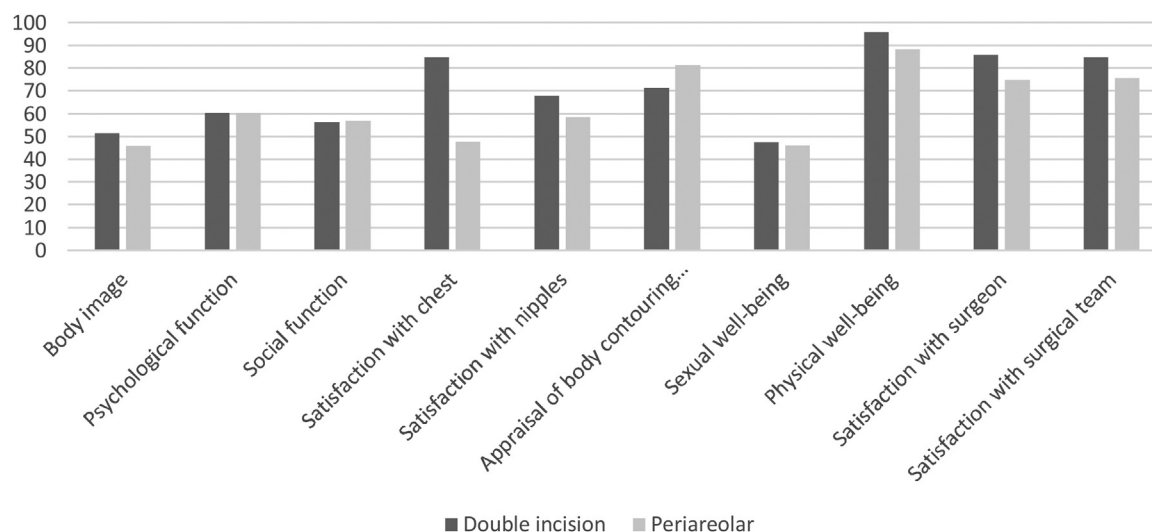
Table 1 Basic characteristics of the patients.

	All patients (n = 16)	Double incision (n = 8)	Periareolar (n = 8)
Follow-up time in months (mean ± SD)	79.7 ± 41.0	69.1 ± 31.9	90.3 ± 46.1
Age (mean ± SD)	25.1 ± 6.80	27.5 ± 9.15	22.8 ± 3.10
BMI (mean ± SD)	24.5 ± 4.50	27.8 ± 2.92	21.7 ± 2.52 ^a
Patients with complications, n (%)	5 (31.3)	2 (28.6)	3 (33.3)
Wound healing issue, n (%)	2 (12.5)	0	2 (28.6)
Haematoma, n (%)	2 (12.5)	1 (1.11)	1 (1.11)
Infection, n (%)	3 (3.33)	2 (2.22)	1 (1.11)
Seroma, n (%)	1 (6.25)	1 (1.11)	0
Nipple graft necrosis, n (%)	1 (6.25)	1 (1.11)	0
Reoperations, n (%)	9 (56.3)	3 (33.3)	6 (85.7)
Secondary aesthetic corrections, n (%)	8 (50.0)	3 (33.3)	5 (71.4)

^a n = 6.

Table 2 Complications according to the Clavien-Dindo classification.

Clavien-Dindo classification	Double incision	Periareolar	Total
1		1	1
2			
3a	1		1
3b	1	2	3
4a			
4b			
5			

**Figure 1** Patient reported quality of life results.

again if given the choice with very favourable results, the DI group scoring an average of 10/10 and the PA-group 9/10. The mean BDI score was 11 (± 6.84) (Fig. 1).

Discussion

Masculinizing chest-wall contouring surgery is an important part of gender reassignment for transmasculine patients and is often the only surgical operation they choose to have. In Finland, there is no nationwide reporting on the results of these types of surgeries, although one previous study on the subject has been published by Kääriäinen et al. in 2017, reporting the results of Tampere University hospital [14].

In our study, the percentages of complications were similar to those reported by Kääriäinen et al., with 33.3% of our patients in the double incision (DI) group and 28.6% of the patients in the periareolar group having had complications; in the Kääriäinen study, the percentages were 32.1% in their transverse incision and 34.5% in the concentric circular group. The need for secondary aesthetic corrections was 50% in our study and 40.4% in the study by Kääriäinen et al. [14]. The overall rates of complications in previous studies vary from 11% to 35% [13–15], and the need for aesthetic revisions varies between 11% and 41% [16, 17]. In accordance with the results of other studies [7, 18], we also noted that a more minimally invasive surgery, in our case the PA technique,

requires secondary aesthetical corrections more often (71.4%) compared to the more invasive DI (33.3%).

Van der Grift et al. [10] applied in their study some of the same BODY-Q modules also used in ours. They received psychological and social function scores of 60 and 64 respectively, which were quite close to our 60 and 56. Their chest and nipple satisfaction scores of 67 and 58, which in our study were 67 and 63, were also similar. For sexual and physical well-being ratings, we used the same BREAST-Q modules Agarwal et al. [12] also used in their study. In this case, however, our scores of 47 (sexual well-being) and 92 (physical well-being) differed from their 71 and 80, respectively.

In the additional space provided for personal comments, most respondents expressed being content with their surgery results, with complaints mostly concerning the long waiting times between referrals. Three respondents chose to emphasize the positive effect on their lives the surgery has had, reporting that it has been one of the best things they have done, allowing them to lead their lives with more confidence in their bodies and decreasing their body dysphoria considerably. It should be noted that one of the six responders had detransitioned and that some of their scores perhaps reflects this difference to the rest of the study sample.

As the study was done retrospectively, the possible changes in patient quality of life cannot be reliably assessed. It should be also noted that, for most patients the questionnaires were sent years after the surgery. Previous similar

studies involving questionnaires being sent to patients have had sample sizes of 17 to 58 patients, out of which 48–98 % returned questionnaires, depending on how participants were recruited [12,13,16]. Chest-wall contouring surgeries are performed in several Finnish hospitals. McEvenue et al. speculated, that mastering masculinizing chest-wall contour surgeries requires extensive surgical experience, noting in their study a decreasing trend in complications and reoperations as the operating surgeon's experience with the procedures increased [17]. The possible benefits of centralizing these surgeries in Finland may be speculated.

In addition, the overall small sample size and poor response rate to the questionnaires imposed further limitations on our study, causing it to not hold scientific significance. This means that our data cannot be generalized to reflect more than the results of our clinic during the study period of 2008–2020 and that comprehensive conclusions about patient satisfaction and quality of life cannot be made based on this study. One likely reason for this low response rate may be inaccuracies in the contact information of some of the patients. Another issue was the language used in the BREAST-Q questionnaire, which is exclusively aimed at patients who identify as women. A patient-reported outcome measure questionnaire designed more specifically for the needs of transgender people will be necessary. Currently at least one such questionnaire, the Gender-Q, is in development, and will likely prove to be a valuable tool for studies such as ours in the future.

Conclusion

Masculinizing chest-wall contouring surgery has significant complication risks. The choice of the operation technique is based on the anatomical considerations for each individual patient and seems not to affect the risk of complication significantly. Additionally, the complication rates found in our low volume centre seem to be comparable with those reported from bigger units.

Disclosure of interest

The authors declare that they have no competing interest.

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