

Decreased Quality of Life in Patients Who Desire Body Contouring Surgery after Bariatric Metabolic Surgery: A Multicenter Longitudinal Analysis

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Keywords

Bariatric surgery · Body contouring surgery · Quality of life · BODY-Q · Patient-reported outcomes

Abstract

Introduction: Excess skin after bariatric metabolic surgery may negatively impact quality of life (QoL). Nevertheless, not every eligible patient undergoes body contouring surgery (BCS), which may be explained by differences in QoL. The objective of this study was to assess the differences in QoL between patients with and without a desire for BCS after bariatric metabolic surgery and to identify predictive factors that contribute to this desire. **Methods:** Patients completed the BODY-Q and a question regarding any desire for BCS, 6 months and yearly after bariatric metabolic surgery. BODY-Q outcomes were compared between patients with and without a desire for BCS and corrected for excess skin. **Results:** A total of 380 patients who completed 3 years of follow-up were included. Of these patients, 69.5% desired BCS. Patients who did not desire BCS demonstrated significantly higher QoL scores across all domains at every

follow-up moment compared to patients who desired BCS (except physical functioning at 3 years). These associations were largely explained by the amount and burden of excess skin. Younger age was the only significant predictor for desiring BCS when correcting for excess skin. **Conclusion:** Patients with a desire for BCS demonstrated significantly lower QoL compared to patients without a desire due to a high burden of excess skin, which emphasizes the need for effective treatments aiming to improve QoL such as BCS.

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Published by S. Karger AG, Basel

Introduction

The prevalence of obesity has witnessed a remarkable surge in recent decades, consequently leading to an increase in the number of bariatric metabolic surgery procedures performed. Bariatric metabolic surgery is the most effective treatment regarding weight loss and health outcomes [1, 2]. However, a significant proportion of patients (up to 96%) develops excess skin or experiences

contour irregularities following bariatric metabolic surgery [3–5]. These negative sequelae can be accompanied by psychological and functional impairment [6], including reduced body image, a disengagement in physical activities, and physical consequences like pain or infections [7].

Body contouring surgery (BCS) is the most effective treatment option for removal of excess skin following bariatric metabolic surgery. The most common procedure sites include the breasts, abdomen, upper arms, medial thigh, back, and knees [8–11]. Research has shown that BCS improves overall quality of life (QoL), including body image, self-esteem, hygiene, daily function, and mobility [6, 12–14]. However, there remains a substantial disparity between the number of patients who desire a body contouring procedure (up to 70%) and those who actually undergo these procedures after bariatric metabolic surgery (10–30%) [12, 15, 16]. This disparity is at least partially caused by reimbursement issues [14].

Improving QoL is one of the most important drivers for people living with obesity to undergo bariatric metabolic surgery. Due to the negative impact that excess skin may have on QoL outcomes, it is important to investigate factors contributing to this decline in order to effectively identify patients who would benefit from BCS or additional behavioral interventions aiming to improve QoL. Although several studies have investigated QoL in patients who desire BCS after bariatric metabolic surgery, most research suffers from the use of suboptimal patient reported outcome measures (PROMs) to assess QoL after bariatric metabolic surgery [15, 17–19]. For example, the most frequently used PROM in bariatric metabolic surgery, the SF-36, has been shown to lack content validity and other essential psychometric properties due to the irrelevance of some items and lack of other items that are relevant to patients undergoing bariatric metabolic surgery [17]. Furthermore, most studies examining QoL employ cross-sectional research designs or focus solely on specific QoL domains, which may not be as comprehensive as overall QoL [9, 18, 20, 21]. To accurately measure QoL after bariatric metabolic surgery, a valid and reliable PROM, such as the BODY-Q, should be used longitudinally. This PROM has been recommended as the most suitable measurement instrument for use after bariatric metabolic surgery and BCS and has been rigorously developed incorporating expert and patients' views [22].

Therefore, this study aimed to achieve 3 objectives: (1) to assess which patients desire BCS after bariatric metabolic surgery, (2) to compare the QoL scores in patients with and without a desire for BCS, and (3) to evaluate the pre- and postoperative QoL scores in patients who have

undergone BCS after bariatric metabolic surgery. We aim to overcome the limitations of prior work by using the BODY-Q to measure QoL and longitudinal data analyses with up to 3 years of follow-up after bariatric metabolic surgery. The primary hypothesis of this study is that female gender, younger age, and lower preoperative body image are associated with an increased likelihood of desiring BCS. Furthermore, it is hypothesized that patients with a desire for BCS will exhibit significantly lower QoL scores across multiple domains, particularly those closely linked to the burden of excess skin, such as body image, physical symptoms, and sexual functioning.

Methods

Design and Participants

For this study, a subgroup of bariatric metabolic surgery patients who participated in a multicenter, prospective, longitudinal cohort study measuring QoL after bariatric metabolic surgery and BCS were analyzed [23]. Data from patients operated at the OLVG West Hospital in Amsterdam and St. Antonius Hospital in Nieuwegein, both located in the Netherlands, were included. Approval from the National Medical Ethics Review Committee and Institutional Ethics Committees were acquired before the start of this study (registration number NL60699.100.17). A detailed description of the data collection is provided elsewhere [23]. Only patients who completed the questionnaire on having a desire for BCS at least once were included in this study.

Data Collection

Demographic data were extracted from the electronic patient file of the participating hospital and Dutch Obesity Clinic (NOK). The Dutch Obesity Clinic provides a comprehensive pre- and postoperative, multidisciplinary, care program with regular assessments by physicians, dieticians, psychologists, and physical therapists specialized in obesity treatment. The data included age, gender, weight, obesity-associated medical conditions (hypertension, type 2 diabetes mellitus, dyslipidemia, obstructive sleep apnea syndrome, gastroesophageal reflux disease, and osteoarticular disease) and a (history of) psychiatric illness (depression, binge eating disorder, obsessive compulsive disorder, posttraumatic stress disorder, etc.). The obesity-associated medical conditions were confirmed by a physician specialized in obesity treatment working at the Dutch Obesity Clinic and defined by requiring medication or other treatment. Other demographic data at baseline such as the level of

education, employment status, marital status, nationality, and smoking status were acquired by using a single self-report questionnaire. A secure web-based application named Castor EDC (Amsterdam, the Netherlands) was used for data collection [24].

Body-Q

The BODY-Q is a PROM developed for people living with obesity undergoing weight loss treatment including bariatric metabolic surgery and BCS [25]. It assesses various scales in the domains of appearance, QoL, and healthcare experiences, with the flexibility for each unidimensional scale to be used independently. Validation studies demonstrated excellent content validity achieved through a comprehensive developmental process, integrating a literature review, patient interviews, cognitive patient interviews, and input from experts. Other psychometric properties include robust internal consistency, reliability, and adequate structural validity [10, 20, 26, 27].

The following selection of scales from the BODY-Q was used: appraisal of excess skin, body image, physical functioning, physical symptoms, psychological functioning, social functioning, and sexual functioning. These unidimensional scales consist of 5–10 questions utilizing a 4-point Likert scale ranging from “I completely disagree” to “I completely agree” for the QoL scales or “Extremely bothered” to “Not at all bothered” for the excess skin scale. For each scale except physical symptoms, the total sum score was converted into a Rasch score ranging from 0 (lowest) to 100 (highest). Higher scores were indicative of better outcome for the specific scale. Patients were invited via e-mail to complete the BODY-Q scales before bariatric metabolic surgery and at 4 months, 1 year, and yearly after bariatric metabolic surgery. Concurrently, additional questions assessed whether the patient had a desire for BCS and if the patient had undergone BCS (including the type of procedure). Nonresponders were sent a reminder up to 2 times with an interval of 1 week.

Statistical Analysis

Data analysis was conducted using IBM SPSS Statistics version 27. Normality of data was tested. Continuous variables were presented as mean ($\pm$ standard deviation) and skewed data as median (interquartile range). Linear regression analyses were performed to assess the difference in QoL scores for patients with and without a desire for BCS at all time points. To correct for the amount and burden of excess skin, the excess skin scores (continuous) were included in the model. Additionally, linear regression analyses were performed to assess the impact of

Table 1. Baseline characteristics

	Total cohort
Patients, <i>N</i>	380
Age at bariatric surgery, years (SD)	46.0 ($\pm$ 10.7)
Gender, female, %	85.0
Weight before surgery, kg (SD)	122.0 ($\pm$ 24.0)
BMI before surgery, kg/m ² (SD)	42.2 ($\pm$ 5.6)
Type of procedure	
Roux-en-Y gastric bypass, <i>n</i>	257 (67.6%)
Sleeve gastrectomy, <i>n</i>	123 (32.4%)
Previous BCS before bariatric surgery	10 (2.4%)
Obesity-associated medical condition	
Diabetes mellitus type 2, <i>n</i>	57 (15.0%)
Hypertension, <i>n</i>	127 (33.4%)
Dyslipidemia, <i>n</i>	56 (14.7%)
Obstructive sleep apnea, <i>n</i>	281 (73.9%)
Osteoarticular disorder, <i>n</i>	79 (20.8%)
Gastroesophageal reflux disease, <i>n</i>	149 (39.2%)
History of psychiatric illness, <i>n</i>	80 (21.1%)
Current smoker (before bariatric surgery), <i>n</i>	51 (13.4%)
Employment status, <i>n</i>	
Employed	81 (21.3%)
Unemployed	275 (72.4%)
Student	7 (1.8%)

SD, standard deviation; *n*, number.

excess skin on QoL independently. A paired Student's *t* test was performed to analyze the change in QoL scores before and after BCS.

Logistic mixed models were used to determine significant predictors for desiring BCS. The following potential predictive variables were analyzed: age, gender, preoperative body mass index (BMI), type of surgery, employment status, educational level, marital status, smoking status, obesity-associated medical conditions, and preoperative QoL scores. First, potential predictors with a *p* value of <0.1 were identified in a univariable model with desiring BCS (longitudinal) as the dependent variable. These predictor variables were analyzed in a multivariable logistic mixed model with desiring BCS (longitudinal) as the dependent variable, using a backward selection procedure and *p* value of <0.05 . Employment status was categorized into 3 groups: unemployed (unable to work, currently looking for a job, or receiving state payments), employed (part-time, full time, or self-employed), and student. Continuous variables that were statistically significant predictors were converted into categorical variables, resulting in evenly distributed groups.

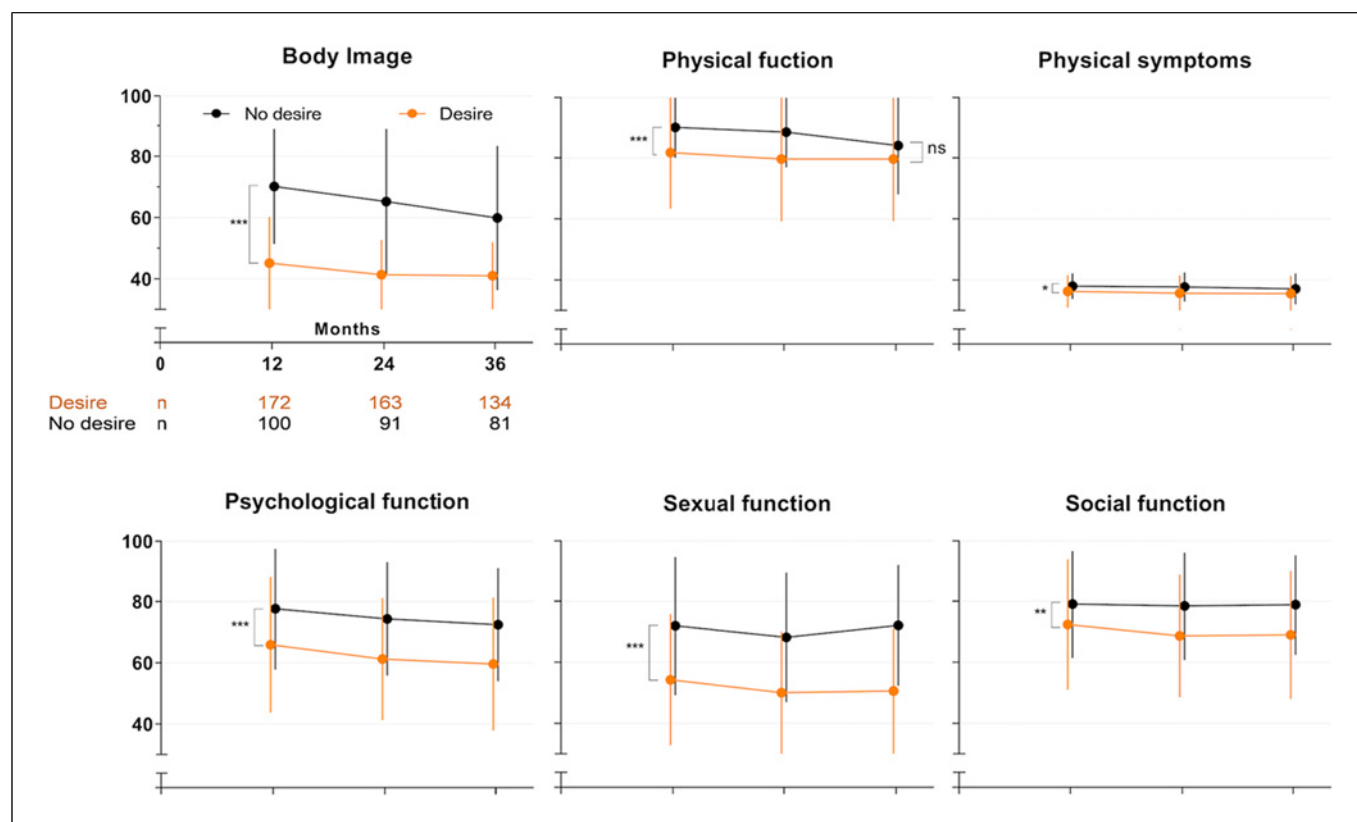


Fig. 1. Quality of life scores for persons with and without a desire for BCS after bariatric metabolic surgery. *** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$; ns, not significant; the sum score was used for physical symptoms, the Rasch score was used for all other domains.

The significant predictors for desiring BCS were also assessed with excess skin scores (longitudinal) as the dependent variable in linear mixed models. Significant predictors for desiring BCS were displayed using odds ratios with 95% confidence intervals. The statistical significance level was set to a p value of 0.05 for all other tests.

Results

QoL Scores in Persons with and without a Desire for BCS

Data from 380 out of 584 patients (65.1%) were included in this study (OLVG: $n = 217$, SAH: $n = 163$). An overview of baseline characteristics is given in (Table 1). Baseline differences between patients who were included and excluded are provided in the supplementary materials (for all online suppl. material, see <https://doi.org/10.1159/000543632>). At 1, 2, and 3 years after bariatric metabolic surgery, 200/325 (61.5%), 200/318 (62.9%), and 158/256 (61.7%) patients had

a desire for BCS, resulting in 284 (69.5%) unique patients with a desire for BCS. The absolute differences in QoL scores for patients with and without a desire for BCS at 1, 2, and 3 years after bariatric metabolic surgery are presented in (Fig. 1). QoL scores were significantly higher in patients without a desire for BCS for all domains at 1, 2, and 3 years after bariatric metabolic surgery, except for physical functioning at 3 years (Table 2). The QoL scores preoperatively and at 6 months, 1 year, 2 years and 3 years postoperative were available for 349 (92%), 317 (83%), 273 (72%), 262 (69%), 215 (57%) patients, respectively. Percentage total weight loss and BMI for patients with and without a desire for BCS are presented in (Table 3). Patients with a desire for BCS had significantly more percentage total weight loss at 2 and 3 years after bariatric metabolic surgery, but no significant difference in BMI was observed.

The mean BODY-Q excess skin scores were 52.2 (± 26.7) at 4 months ($n = 319$), 50.2 (± 25.1) at 1 year ($n = 255$), 43.6 (± 24.6) at 2 years ($n = 230$), and 42.7 (± 23.8) at 3 years ($n = 175$) after bariatric metabolic surgery. Those

Table 2. Difference in quality of life scores for patients with and without a desire for BCS after bariatric metabolic surgery

	1 year after bariatric surgery			2 years after bariatric surgery			3 years after bariatric surgery		
	no desire	desire	<i>p</i> value	no desire	desire	<i>p</i> value	no desire	desire	<i>p</i> value
Body image	70.1 (66.1–74.2)	45.1 (42.0–48.2)	<0.001	65.2 (60.8–69.7)	41.3 (37.8–44.8)	<0.001	59.8 (54.8–64.8)	41.0 (37.1–44.9)	<0.001
Physical function	90.0 (86.3–93.6)	81.7 (78.9–84.4)	<0.001	88.4 (84.3–92.5)	79.6 (76.4–82.7)	<0.001	84.0 (79.5–88.4)	79.6 (76.1–83.1)	0.115
Physical symptoms	37.9 (37.0–38.9)	36.3 (35.6–37.0)	0.005	37.7 (36.6–38.8)	35.7 (34.8–36.5)	<0.001	37.1 (35.8–38.3)	35.5 (34.6–36.5)	0.050
Psychological function	77.6 (73.5–81.8)	65.9 (62.6–69.1)	<0.001	74.3 (70.4–78.2)	61.2 (58.2–64.2)	<0.001	72.5 (67.9–77.0)	59.6 (56.0–63.2)	<0.001
Sexual function	71.9 (66.9–76.9)	54.3 (50.3–58.2)	<0.001	68.1 (62.5–73.8)	50.0 (45.6–54.5)	<0.001	70.0 (66.3–77.8)	50.6 (46.0–55.1)	<0.001
Social function	79.1 (75.1–83.0)	72.3 (69.3–75.4)	0.006	78.4 (74.5–82.3)	68.6 (65.6–71.6)	<0.001	78.9 (74.6–83.1)	68.9 (65.5–72.3)	<0.001

Desire (yes/no): desire for body contouring surgery.

Table 3. Difference in %TWL and BMI for patients with and without a desire for BCS after bariatric metabolic surgery

	1 year after bariatric surgery			2 years after bariatric surgery			3 years after bariatric surgery		
	no desire	desire	<i>p</i> value	no desire	desire	<i>p</i> value	no desire	desire	<i>p</i> value
%TWL	32.9 (7.0)	33.8 (8.2)	0.295	32.2 (8.7)	34.8 (8.9)	0.013	30.7 (9.4)	34.3 (9.2)	0.007
BMI, kg/m ²	28.2 (4.1)	28.9 (4.9)	0.207	28.3 (4.5)	28.3 (4.9)	0.947	28.9 (6.0)	28.3 (4.8)	0.427

Desire (yes/no): desire for body contouring surgery. %TWL, percentage total weight loss; BMI, body mass index.

with a desire for BCS had significantly lower scores at 1 year (40.9 vs. 69.3; $p < 0.001$), 2 years (34.7 vs. 64.6; $p < 0.001$), and 3 years (34.4 vs. 62.5; $p < 0.001$) after bariatric metabolic surgery, indicating that they had more excess skin and were more bothered by their excess skin.

When assessing the QoL scores for patients with and without a desire for BCS corrected for excess skin, the significant difference in QoL scores largely diminished, suggesting that patients desiring BCS exhibit lower QoL due to excess skin (online suppl. materials). Linear regression analyses also showed that lower QoL scores (worse) were associated with higher excess skin scores (more bothered by excess skin) for every QoL domain at every time point.

Variables Predictive of Patients Who Desired BCS

Univariable analyses identified younger age, higher BMI, having any obesity-associated medical condition, body image, physical functioning, physical symptoms,

psychological functioning, sexual functioning, and social functioning as potential predictors ($p < 0.1$) to desire BCS. Statistically significant predictors selected through backward selection in a multivariable model are presented in (Table 4). When correcting for the amount and burden of excess skin, age remained as the only significant predictor for desiring BCS, independent of excess skin. Lower age, higher preoperative BMI, and lower preoperative body image and physical function were also predictive for higher excess skin scores, indicating that these patients were more bothered by their excess skin.

QoL Scores before and after BCS

A total of 18 persons (all female) underwent BCS after bariatric metabolic surgery. Some of them underwent multiple procedures. The following body contouring procedures were performed: breast lift ($n = 11$), abdominoplasty ($n = 7$), leg lift ($n = 2$), and breast

Table 4. Variables predictive for desiring BCS, selected through backward selection in multivariable logistic mixed models

	Unadjusted analyses			Adjusted for excess skin	
	assessments (%)	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value
Age (continuous)	1,140 (100)	0.97 (0.94–0.99)	0.006	0.97 (0.94–1.00)	0.045
18–35 years	225 (19.7)	Ref	Ref	Ref	Ref
36–45 years	270 (23.7)	0.98 (0.43–2.25)	0.968	0.97 (0.37–2.54)	0.957
46–50 years	210 (18.4)	1.24 (0.52–2.96)	0.622	1.12 (0.44–3.28)	0.728
51–55 years	198 (17.4)	0.70 (0.29–1.67)	0.416	0.78 (0.29–2.08)	0.611
56–65 years	237 (20.8)	0.45 (0.19–1.03)	0.058	0.46 (0.18–1.18)	0.104
Preoperative BMI (continuous)	1,140 (100)	1.09 (1.03–1.15)	0.003		
<40 kg/m ²	288 (25.3)	Ref	Ref		
40–45 kg/m ²	528 (46.3)	2.19 (1.59–4.16)	0.017		
>45 kg/m ²	324 (28.4)	3.23 (1.59–6.55)	0.001		
Preoperative body image (continuous)	1,020 (89.4)	0.98 (0.97–0.99)	0.033		
0–5	414 (36.3)	Ref	Ref		
6–30	333 (29.2)	0.71 (0.38–1.30)	0.265		
31–100	273 (23.9)	0.50 (0.25–0.98)	0.042		
Preoperative physical function (continuous)	1,026 (90.0)	0.98 (0.97–0.99)	0.008		
0–40	402 (35.3)	Ref	Ref		
41–55	366 (32.1)	0.63 (0.34–1.17)	0.155		
56–100	258 (22.6)	0.64 (0.32–1.29)	0.255		

CI, confidence interval.

reduction ($n = 1$). Median time from bariatric metabolic surgery to BCS was 1.9 years (range: 0.8–3.1 years). Twelve out of 18 persons (67%) completed the BODY-Q before and after BCS, with a median interval time of 4.5 months (range: 0.9–11.6 months) from BCS to the postoperative questionnaire. The median time from the preoperative questionnaire to BCS was 7.0 months (0.4–10.8 months). Body image significantly improved after BCS (beta 12.4; SD $\pm$ 18.6; $p = 0.041$).

Discussion

This longitudinal study assessed the desire for BCS after bariatric metabolic surgery and showed that 69.5% of all patients desire BCS within the first 3 years. Patients who desired BCS had significantly lower QoL in every domain at 1, 2, and 3 years after bariatric metabolic surgery (but physical function at 3 years), which was largely explained by the amount and burden of excess skin. Patients with a higher preoperative BMI, younger age (<50 years old) and worse body image and physical function before bariatric metabolic surgery were more likely to desire BCS.

When correcting for excess skin, only younger age remained as the significant predictor. Increased weight loss at 2 and 3 years was associated with desiring BCS, while BMI was not. Eighteen patients (4.7%) underwent BCS and demonstrated significant improvements in body image.

The overall percentage of participants with a desire for BCS following bariatric metabolic surgery was 69.5%, which is consistent with the results of Montpellier et al. [18], who reported a desire of 62% for post-bariatric patients in a Dutch sample. In literature, the percentage of patients desiring BCS is marginally higher [5, 11, 15, 20, 28]. This difference may be attributed to different healthcare systems and cultural or social beliefs across various countries [14, 29]. Patients with a desire for BCS after bariatric metabolic surgery demonstrated significantly lower (worse) QoL scores across all domains compared to patients without a desire over a follow-up period of 1–3 years. When correcting for the amount and burden of excess skin, only body image at 1 and 2 years remained significant, indicating that desiring BCS is associated with worse body image independent of the amount and burden of excess skin. Consistent with the results of Klassen et al. [20], our study found lower scores across all QoL BODY-Q domains in patients who were

more bothered by their excess skin. Other studies that examined QoL in patients who desired BCS after bariatric metabolic surgery also reported worse scores on other QoL questionnaires, including the IWQOL-Lite [30], Generalized Anxiety Disorder scale, and Patient Health Questionnaire [12, 15, 30, 31]. Taken together, these findings highlight the profound negative impact of excess skin following bariatric metabolic surgery on QoL. However, a bidirectional relationship cannot be ruled out. A part of this correlation may also be explained by patients with lower QoL scores who may be more inclined to desire BCS as a means of improving their QoL.

Younger patients (<50 years old) were more likely to desire BCS independent of excess skin, and patients with a higher BMI before bariatric metabolic surgery were more likely to be more bothered about their excess skin after bariatric metabolic surgery. These findings are broadly supported by the work of prior studies [32, 33]. In contrast to previous work, we did not find an association of female gender with a desire for BCS, which may be explained by the scarcity of men in our study sample [32]. Still, the few patients ($n = 18$, 4.7%) who underwent BCS in this study were all female. Moreover, patients with worse body image and physical functioning scores before bariatric metabolic surgery were more likely to be more bothered by their excess skin. It may be possible that patients who are already strongly dissatisfied with their body before bariatric metabolic surgery remain dissatisfied after bariatric metabolic surgery and therefore will be more inclined to desire BCS as a means to improve their body image.

In this study, patients who desired BCS at 2 and 3 years after bariatric metabolic surgery lost significantly more weight than patients who did not desire BCS, which can be explained by the higher probability of developing of excess skin with greater weight loss. The modest sample size at 3 years limited our ability to explore the relationship between weight dynamics, including weight regain, and desiring BCS. Further research is warranted to examine how fluctuations in weight over time may impact both the physical manifestations of excess skin and the psychological motivations underlying the pursuit of BCS.

A lower percentage of participants (4.7%) underwent BCS compared to other studies [8, 12], which can be explained by cancellation of elective surgeries (including BCS) during the COVID-19 pandemic. This situation persisted for a considerable duration of the follow-up period of this study. Consistent with the literature, a significant improvement in body image was observed after BCS [12]. However, the small percentage of participants who underwent BCS makes interpretation of these results difficult.

In a systematic review by Jiang et al. [34], bariatric metabolic surgery patients demonstrated an improvement in all QoL domains after BCS on the BODY-Q [14, 35]. Thus, it may be expected that QoL improvement in other domains than body image can be anticipated after BCS.

Despite achieving sufficient weight loss and a remission of comorbidities, several patients who have undergone bariatric often still do not obtain the desired improvements in QoL. This study is unique in exposing the profound negative impact of desiring BCS and suffering from excess skin on all domains of QoL at different time points after bariatric metabolic surgery, from body image, physical functioning and symptoms, to psychological, social, and sexual functioning. Given that QoL improvement is one of the most important drivers for people living with obesity to undergo bariatric surgery, it is imperative to address the need for effective treatments aiming to improve QoL in patients with excess skin and a desire for BCS. The strict reimbursement policies for BCS after bariatric metabolic surgery pose a major challenge for patients and healthcare professionals in the Netherlands [18]. This may likely explain the discrepancy between patients with a desire for BCS and patients who underwent BCS. Therefore, it is equally important to offer timely behavioral and psychological interventions, such as group therapy sessions, cognitive behavioral therapy, or acceptance and commitments therapy, to support these patients effectively.

The main strength of our study was the assessment of QoL using the BODY-Q, which is designed specifically for bariatric metabolic surgery and BCS. This PROM is supported by robust validation evidence and has even been recommended as the most reliable and valid measurement instrument for QoL in bariatric metabolic surgery and BCS [22, 36]. Furthermore, this study was performed multicentered including a relatively large sample size and 3 years of follow-up, adding to the generalizability of the findings. This study has several limitations. The small sample size of 18 participants who underwent BCS after bariatric metabolic surgery may limit generalizability and is partly attributable to COVID-19-related elective surgery cancellations. The three-year follow-up period is relatively short for assessing long-term QoL changes. Self-reported QoL data may be influenced by recall and response biases and relevant factors such as socioeconomic status and psychological comorbidities were not analyzed. Additionally, the study only determined participants' desire for BCS without specifying the body part targeted for surgery. As a single-country study conducted in the Netherlands, cultural and healthcare policy differences may affect the generalizability of the findings. Finally, as an observational study,

causality between BCS desires and QoL improvements cannot be established. Future research should involve larger, more diverse populations, longer follow-up periods, and more detailed QoL assessments using tools like the BODY-Q.

Conclusion

A large proportion of participants (69.5%) expressed a desire for BCS after bariatric metabolic surgery, while only 4.7% underwent BCS. The participants with a desire for BCS demonstrated significantly lower QoL scores across all domains of QoL compared to participants with no desire for BCS, which was largely attributed to the amount and burden of excess skin. These findings highlight the profound negative impact of desiring BCS due to excess skin and emphasize the need for effective treatments such as BCS as an essential aspect of post-bariatric metabolic surgery care.

Statement of Ethics

Approval from the Dutch National Medical Ethics Review Committee (MEC-U) and Institutional Ethics Committees (OLVG hospital and St. Antonius hospital) were acquired before the start

of this study (registration no. NL60699.100.17). Written informed consent was obtained from all participants prior to bariatric metabolic surgery.

Conflict of Interest Statement

The authors declare no competing interest.

Funding Sources

No funding was received.

Author Contributions

Ruben N. van Veen, Steve M.M. de Castro, Aebele B. Mink van der Molen, and Claire E.E. de Vries were responsible for the study design as well as approving the final manuscript. Phillip J. Dijkhorst performed the data analyses. Phillip J. Dijkhorst, Robin A. Debi, and Dennis J.S. Makarawung wrote the manuscript.

Data Availability Statement

The data are not publicly available due to their containing information that could compromise the privacy of research participants but are available from the corresponding author (Phillip J. Dijkhorst) upon reasonable request.

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