

# Body Contouring Surgery after Massive Weight Loss: Excess Skin, Body Satisfaction, and Qualification for Reimbursement in a Dutch Post-Bariatric Surgery Population

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**Background:** Body contouring surgery improves quality of life, weight loss, and body image after bariatric surgery. It is unclear why only a minority of the post-bariatric surgery population undergoes body contouring surgery. This study assesses overhanging skin, body satisfaction, and qualification for reimbursement of body contouring surgery in a Dutch post-bariatric surgery population. **Methods:** Post-bariatric patients were selected from a prospective database. Electronic questionnaires evaluated demographics, desire for body contouring surgery, excess skin, and satisfaction with their body.

**Results:** A total of 590 patients were included: 368 patients (62.4 percent) desired body contouring surgery, 157 (26.6 percent) did not and 65 (11.0 percent) had undergone body contouring surgery. There were no significant differences between the groups regarding the percentage of patients who met the qualifications for reimbursement. Patients who desired body contouring surgery had more body parts affected by overhanging skin and more often rated the overhanging skin with a Pittsburgh Rating Scale grade 3 compared with patients without a desire to undergo body contouring surgery. The plastic surgeon was never consulted by 39.1 percent of the “desire” population; 44.1 percent of these patients met the weight criteria.

**Conclusions:** Post-bariatric patients who desired body contouring surgery had more excess skin than patients without a desire and were less satisfied with their body. Almost half of these patients never consulted a plastic surgeon, partly because of incorrect assumptions regarding reimbursement. Plastic surgeons (together with bariatric teams) should better inform these patients about body contouring surgery possibilities. (*Plast. Reconstr. Surg.* 143: 1353, 2019.)

In 2014, bariatric surgery was performed in 579,517 patients worldwide.<sup>1</sup> Bariatric surgery causes massive weight loss, leading to

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overhanging skin in up to 96 percent of the patients.<sup>2-5</sup> This overhanging skin can result in several problems, ranging from skin conditions to physical discomfort, but also serious psychological issues.<sup>2,5-8</sup> Body contouring surgery is the only treatment to restore the body's contour. After body contouring surgery, patients have improved quality of life, body image, and weight loss maintenance.<sup>8-15</sup> Despite these positive effects, body contouring surgery is not a standard part of the post-bariatric surgery treatment regimen, and only a minority of the population undergoes body contouring surgery.<sup>5,8,16</sup> Patients frequently state that they cannot be treated because they will not be reimbursed by the insurance company; however, this was barely studied.<sup>3,8</sup>

To qualify for reimbursement in The Netherlands, patients must meet the following criteria: bariatric procedure over 18 months previously, stable weight for more than 12 months, and body mass index below 35 kg/m<sup>2</sup>. In addition, patients should have a serious impairment of bodily function in daily life or a grade 3 excess skin according to the Pittsburgh Rating Scale, which is graded by the plastic surgeon.<sup>17,18</sup> Insurance companies then verify, and sometimes adjust, this grading and finally decide whether a patient will be reimbursed.

It appears that a significant number of the post-bariatric surgery individuals who desire body contouring surgery do not undergo the procedure, partly because of the current reimbursement system in The Netherlands. However, exact numbers of patients who desire body contouring surgery and who undergo body contouring surgery are unknown. In addition, there might be other reasons why patients do not undergo body contouring surgery, such as the extent of complaints and dissatisfaction with their body.

The goal of this study was to gain more insight into the differences between patients who have undergone body contouring surgery, patients who desire body contouring surgery, and patients who do not desire body contouring surgery. This study looks at demographics, overhanging skin, body satisfaction, and qualification for reimbursement. In addition, we investigate the perceived reasons why patients have not undergone body contouring surgery.

## PATIENTS AND METHODS

### Standard Treatment

Patients were all in treatment at the Nederlandse Obesitas Kliniek (NOK, Dutch Obesity Clinic). This is the largest outpatient clinic for bariatric patients in The Netherlands, offering

multidisciplinary preoperative and postoperative group counseling in combination with bariatric surgery. This study was part of a larger research project on body contouring surgery in the post-bariatric surgery population.<sup>19</sup> All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. The study was approved by the Ethical Research Committee of the Faculty of Psychology and Neuroscience, Maastricht University (ECP\_06\_11\_2014).

### Patients

Patients were selected from a prospective database if they had undergone a primary bariatric procedure between October of 2011 and October of 2012. When body weight measures before and/or 1 year after bariatric surgery were not available, patients were excluded. Patients who could be included were invited to participate through an electronic mail request by means of the Qualtrics platform (Qualtrics, Provo, Utah). Before they could start the questionnaires, patients gave electronic informed consent. A total of 1334 patients were eligible for inclusion; 1024 patients were successfully contacted and asked to participate. The response rate was 689 of 1024 (67 percent), and 590 patients (58 percent of the contacted population) agreed to participate and were included.

### Questionnaires

#### General Information

Patients were asked to report their current body weight, educational level, employment, and income. Educational level was subdivided into "low" (no schooling, secondary school, or intermediate vocational education), "medium" (secondary vocational education or high school) and "high" (higher professional education or university degree). Employment was subdivided into "working," "unemployed," "retired," or "student." An annual income of €34,085 was considered a median income in The Netherlands at the time of the study.

#### Body Contouring Surgery and Skin Surplus

Our self-developed questionnaire inquired about whether patients had undergone body contouring surgery or whether there was a desire for body contouring surgery. Patients were asked to indicate their reasons for not undergoing

body contouring surgery. Patients estimated the amount of overhanging skin by comparing their body to photographs of the Pittsburgh Rating Scale, ranging from 0 (appearance in the normal range) to 3 (most severe deformity).<sup>17</sup> Photographs of arms, breasts (for women), abdomen, and flanks were used. In addition, patients indicated in which of the following body parts they had overhanging skin: arms, inside thighs, outside thighs, abdomen, breasts/chest, buttocks, back, flanks, and other body parts. They were also asked to indicate their top three body parts for which they would like to undergo body contouring surgery.

### Body Satisfaction

A short version of an unpublished questionnaire developed by the authors (A.T.M.J.) was used to assess patients' satisfaction with their body. [See Appendix, Supplemental Digital Content 1, which shows the body appreciation list, a short version of an unpublished questionnaire developed by the authors (A.T.M.J.) used to assess satisfaction with the body, <http://links.lww.com/PRS/D406>.] In this questionnaire, patients can rate their total body and 16 body parts on a scale from 1 (not satisfied with body) to 10 (extremely satisfied with body). Subsequently, patients can rate the importance of all these body parts on a four-point Likert scale. Patients can also indicate how satisfied they are with the proportions of their body. Patients rated their total body and 16 body parts on a scale from 1 (not satisfied with body) to 10 (extremely satisfied with body). Subsequently, patients were asked about the importance of all these body parts on a four-point Likert scale.<sup>20</sup> In a Likert scale, responses are scored along a range, in this case ranging from 1 (not important) to 4 (very important). Patients could also indicate how satisfied they were with the proportions of their body.

### Body Weight

Body weight measurements before bariatric surgery and 12, 24, and 36 months postoperatively were retrieved from the database. Body mass index, percentage excess weight loss, and percentage total weight loss were calculated.<sup>21</sup> Stability of weight was defined as current weight plus or minus 5 percent in the past 12 months, compared with the weight in the existing database. Subsequently, it was assessed whether a patient met the weight qualifications for reimbursement in The Netherlands (i.e., stable weight for  $\geq 12$  months and body mass index  $< 35$  kg/m<sup>2</sup>).

### Statistical Analyses

Descriptive statistics were calculated to summarize baseline characteristics. For further analysis, patients were divided into three groups: the body contouring surgery group, consisting of patients who already had body contouring surgery; the desire group, consisting of patients with a desire for body contouring surgery; and the no-desire group, consisting of patients without a desire for body contouring surgery. Differences between these groups were calculated using analyses of variance for continuous variables and chi-square tests for discrete variables. For analyses of variance, post hoc analyses were performed when there were significant differences. The Pearson correlation was calculated to study the relationship between body satisfaction and Pittsburgh Rating Scale grading. Findings were considered statistically significant for values of  $p < 0.05$ . All analyses were performed using IBM SPSS Version 23 (IBM Corp., Armonk, N.Y.).

## RESULTS

### Study Population

Of the included population, 590 patients were women (81.2 percent). The mean age of the patients was 47.7 years. Education was low in 232 (39.5 percent), medium in 240 (40.7 percent), and high in 116 patients (19.7 percent). Most patients had a part-time or full-time job [ $n = 369$  (62.5 percent)]. Income was €20,070 or lower in 108 patients (18.3 percent), between €20,070 and €34,085 in 132 patients (22.4 percent), between €34,085 and €43,602 in 76 patients (12.9 percent), and €43,602 or higher in 88 patients (14.9 percent). A total of 31.5 percent of the patients did not want to disclose their income.

Most patients had undergone Roux-en-Y gastric bypass [ $n = 511$  (86.7 percent)], and mean follow-up was 32 months (range, 26 to 39 months). Mean current body mass index was 30.7 kg m<sup>-2</sup>; this was 45.4 kg/m<sup>2</sup> before bariatric surgery. Mean total weight loss was 32.1 percent and mean excess weight loss was 74.5 percent.

### Patient Characteristics

The majority of patients desired body contouring surgery [ $n = 368$  (62.4 percent)], whereas 157 (26.6 percent) did not desire body contouring surgery and 65 (11.0 percent) had already undergone body contouring surgery. In the body contouring surgery group, 93.8 percent were women; this was higher than in the desire group

**Table 1. Demographic Characteristics of Patients Who Desired Body Contouring Surgery, Patients Who Had No Desire, and Patients Who Underwent Body Contouring Surgery, Presented as Number (Percentage) or Mean ± Standard Deviation**

	Desire Group	No-Desire Group	BCS Group
No.	268	157	65
Female sex	311 (84.5)	107 (68.2)	61 (93.8)*
Low education	61 (38.9)	150 (41.0)	21 (32.3)
Unemployed	128 (34.9)	41 (26.1)	16 (24.6)*
Income below median	164 (64.6)	51 (48.6)	25 (55.6)*
RYGB	323 (87.8)	133 (84.7)	55 (85.9)
Age, yr	47.2 ± 10.6†	49.8 ± 10.5‡	45.1 ± 11.4
FU, mo	32.3 ± 3.9	32.4 ± 3.7	32.6 ± 3.7
BMI, kg/m <sup>2</sup>			
Baseline	46.2 ± 5.8†	44.1 ± 6.3	43.9 ± 6.1§
Current	31.1 ± 5.6	31.3 ± 5.6‡	27.6 ± 4.5§
Current TWL, %	32.6 ± 9.1†	28.9 ± 9.3‡	36.8 ± 8.0§
Current EWL, %	73.9 ± 22.6	69.9 ± 24.7‡	89.1 ± 20.1§

BCS, body contouring surgery; RYGB, Roux-en-Y gastric bypass; FU, follow-up; BMI, body mass index; TWL, total body weight loss; EWL, excess weight loss.

\*Significant difference among the three groups ( $p < 0.05$ ).  
 †Significant difference compared with the no-desire group ( $p < 0.05$ ).  
 ‡Significant difference compared with the BCS group ( $p < 0.05$ ).  
 §Significant difference compared with the desire group ( $p < 0.05$ ).

(84.5 percent) and the no-desire group (68.2 percent) ( $p < 0.001$ ) (Table 1). Patients without a desire (49.8 years) were significantly older compared to the body contouring surgery group (45.1 years;  $p = 0.008$ ) and the desire group (47.2 years;  $p = 0.029$ ).

In the desire group, the rate of unemployment was higher (34.9 percent) compared with the no-desire group (26.1 percent;  $p = 0.026$ ). There were also significantly more patients with an income below median (64.6 percent) in the desire group compared with the body contouring surgery group (55.6 percent) and the no-desire group (48.6 percent;  $p = 0.017$ ). Unemployment was lowest in the body contouring surgery group (24.6 percent;  $p = 0.026$ ). There were no significant differences in education level.

**Body Weight**

Follow-up was not significantly different among the three groups, nor was type of bariatric procedure (Table 1). Current body mass index was lowest in the body contouring surgery group (27.6 kg/m<sup>2</sup>) versus the desire group (31.1 kg/m<sup>2</sup>) ( $p < 0.001$ ) and the no-desire group (31.3 kg/m<sup>2</sup>) ( $p < 0.001$ ).

**Weight Qualification**

In the body contouring surgery group, 95.3 percent had a body mass index less than 35 kg/m<sup>2</sup>,

**Table 2. Body Weight Qualification, Satisfaction with Body, and Skin Surplus Grading of Patients in the Three Groups, Presented as Number (Percentage) or Mean ± Standard Deviation**

	Desire Group	No-Desire Group	BCS Group
No.	368	157	65
BMI <35 kg/m <sup>2</sup>	282 (77.3)	116 (74.4)	61 (95.3)*
Stable weight†	216 (58.7)	97 (61.8)	34 (52.3)
Qualification‡	161 (44.1)	71 (45.5)	32 (50.0)
Satisfaction with body	7.0 ± 1.7	7.3 ± 1.2	7.3 ± 1.4
Body parts affected	3.1 ± 1.6§	1.7 ± 1.2¶	2.5 ± 1.4¶
Pittsburgh Rating Scale arm	1.7 ± 0.8§	1.2 ± 0.8¶	1.7 ± 0.8
Pittsburgh Rating Scale abdomen	2.0 ± 0.5§	1.6 ± 0.6	1.6 ± 1.0¶
Pittsburgh Rating Scale flank	1.4 ± 0.9§	0.9 ± 0.9	1.1 ± 1.0
Pittsburgh Rating Scale breasts	1.5 ± 0.7§	1.0 ± 0.9	1.2 ± 0.9¶

BCS, body contouring surgery; BMI, body mass index;  
 \*Significant difference among the three groups ( $p < 0.05$ ).  
 †Current weight ±5% in the past 12 mo.  
 ‡BMI <35 kg/m<sup>2</sup> and a stable weight.  
 §Significant difference compared with the no-desire group ( $p < 0.05$ ).  
 ¶Significant difference compared with the BCS group ( $p < 0.05$ ).  
 ¶Significant difference compared with the desire group ( $p < 0.05$ ).

compared with 77.3 percent in the desire group and 74.4 percent in the no-desire group ( $p = 0.002$ ) (Table 2). The proportion of patients with a stable weight did not differ between the groups. In the desire group, 44.1 percent met the weight qualifications; there was no significant difference compared to the body contouring surgery group and the no-desire group.

**Skin Surplus**

The mean number of body parts affected by overhanging skin was 2.7 (Table 2). In the desire group, 3.1 body parts were affected, compared with 1.7 in the no-desire group ( $p < 0.001$ ). Most affected were abdomen (72.5 percent), inside of thighs (50.0 percent), upper arms (46.1 percent), and breasts/chest (43.4 percent). The abdomen was also the most desired body part for body contouring surgery [ $n = 250$  (58.8 percent)].

The mean Pittsburgh Rating Scale grade for abdomen was highest in all patients (Table 2). The desire group had a significantly higher Pittsburgh Rating Scale grade for the abdomen (2.0 ± 0.5) compared with the body contouring surgery group (1.6 ± 1.0;  $p < 0.001$ ) and the no-desire group (1.6 ± 0.6;  $p < 0.001$ ). Ratings for flank (1.4 ± 0.9) and breasts (1.5 ± 0.7) in the desire group were significantly higher than in the no-desire group: 0.9 ± 0.9 ( $p < 0.001$ ) and 1.0 ± 0.9 ( $p < 0.001$ ), respectively.

For the arms, the desire group gave the same rating as the body contouring surgery group ( $1.7 \pm 0.8$ ); these scores were significantly higher than in the no-desire group ( $1.2 \pm 0.8$ ;  $p < 0.001$  in both).

### Body Satisfaction

Mean rating for satisfaction with the total body was  $7.0 \pm 1.7$  in the desire group; there was no significant difference compared to the no-desire group ( $7.3 \pm 1.2$ ;  $p = 0.135$ ) or the body contouring surgery group ( $7.3 \pm 1.4$ ;  $p = 0.321$ ). The body contouring surgery group retrospectively rated their body before body contouring surgery as  $3.9 \pm 2.0$ , which was significantly lower ( $p < 0.001$ ) than the current score.

The desire group rated their abdomen as  $2.7 \pm 1.7$ , which was significantly lower than the no-desire group ( $4.7 \pm 1.7$ ;  $p < 0.001$ ). They also gave a lower rating for the hips ( $4.2 \pm 2.0$  versus  $5.8 \pm 1.7$ ;  $p < 0.001$ ), waist ( $4.0 \pm 2.0$  versus  $5.5 \pm 1.6$ ;  $p < 0.001$ ), buttocks ( $4.4 \pm 2.0$  versus  $5.9 \pm 1.7$ ;  $p < 0.001$ ), and thighs ( $3.7 \pm 2.1$  versus  $5.7 \pm 1.7$ ;  $p < 0.001$ ).

The abdomen was the body part that was most often rated as very important, by 36.3 percent of the patients. The breasts/chest was rated as very important in 29.2 percent of the patients and the waist in 24.2 percent of the patients. In the desire group, 115 (35.6 percent) were very unsatisfied with the proportions of their body; in the body contouring surgery group, this number was only six (10.9 percent), and in the no-desire group, this was seven (5.5 percent).

### Correlations

The Pittsburgh Rating Scale grade for the abdomen correlated negatively with the rating of the abdomen ( $r = -0.486$ ;  $p < 0.001$ ); thus, higher Pittsburgh Rating Scale grading was related to lower satisfaction with the abdomen. The Pittsburgh Rating Scale grade for the flank also correlated negatively with the rating for hips ( $r = -0.406$ ;  $p < 0.001$ ) and waist ( $r = -0.435$ ;  $p < 0.001$ ). Correlation of Pittsburgh Rating Scale grade for breasts with rating of breasts/chest was  $r = -0.035$  ( $p = 0.476$ ), and that for the arms was  $r = -0.087$  ( $p = 0.057$ ).

### Reasons for Not Undergoing Body Contouring Surgery

In the desire group, the most commonly stated reason for not undergoing body contouring surgery was nonreimbursement by the insurance company; these patients stated that they had consulted a plastic surgeon, and the insurance

**Table 3. Reasons for Not Undergoing Body Contouring Surgery in the Desire Group ( $n = 368$ ) and Number of Patients within That Group Who Met the Weight Qualification**

Reason	Desire Group (%)	Qualification (%)*
No insurance coverage	105 (28.5)	40 (39)
Did not ask for referral	101 (27.7)	48 (48)
I do not qualify	43 (11.7)	22 (51)
I cannot afford it	36 (9.8)	22 (61)
Need/want to lose more weight	35 (9.5)	3 (9)
Afraid of complications/ operation	32 (8.7)	15 (47)
Medical reasons and pregnancy	20 (5.4)	9 (45)
Plastic surgeon decided against BCS	11 (3.0)	5 (46)
Need more information	9 (2.4)	4 (44)
Still in doubt	8 (2.2)	3 (38)
General practitioner does not want to refer	2 (0.5)	2 (100)

BCS, body contouring surgery.

\*Qualification is defined as a body mass index  $<35$  kg/m<sup>2</sup> and a stable weight.

company did not reimburse body contouring surgery [ $n = 105$  (28.5 percent)] (Table 3). In the group of patients who stated this, 40 (39 percent) met the weight qualifications. The second most common reason was that patients did not ask for a referral [ $n = 101$  (27.7 percent)]; 48 of these patients (48 percent) met the weight qualifications. The third most common reason was that patients thought they did not qualify, but never checked with a physician [ $n = 43$  (11.7 percent)]. A total of 22 of these patients (51 percent) met the weight criteria. There was also a group that assumed they could not afford a procedure [ $n = 36$  (9.8 percent)]; 61 percent of these patients met the qualifications.

In the desire group, 144 patients (39.1 percent) had never consulted a plastic surgeon. Of these patients, 122 (84.7 percent) had a body mass index less than 35 kg/m<sup>2</sup> and 88 (61.1 percent) had a stable weight. A total of 71 patients (49.3 percent) met the weight criteria.

In the no-desire group, the most common reason for not undergoing body contouring surgery was “no complaints” and/or minimal skin surplus [ $n = 72$  (45.9 percent)]. In addition, 51 patients (32.5 percent) stated that they had no skin surplus at all. Nineteen patients (13.2 percent) did not want to undergo body contouring surgery because of medical issues.

## DISCUSSION

This study of a post-bariatric surgery population with approximately 2.5 years' follow-up shows

that there were no differences in the percentage of patients meeting the Dutch criteria for reimbursement, when comparing patients who had a desire to undergo body contouring surgery with patients who underwent body contouring surgery. Almost half of the patients who desired body contouring surgery met these criteria and, in principle, qualified for reimbursement. However, a significant number of these patients never consulted a plastic surgeon. Some of these patients assumed that they would not be reimbursed for body contouring surgery and/or were not aware of the current guidelines in The Netherlands.

The included population is comparable to populations in previous research. A large number (62.4 percent) of the post-bariatric surgery patients desired body contouring surgery, whereas only 11 percent of the population actually had undergone body contouring surgery.<sup>4,22</sup> Patients who desired body contouring surgery were younger and more often women.<sup>23</sup> They reported more body parts affected by excess skin than patients without a desire and graded the amount of excess higher. The abdomen was most commonly affected by excess skin, as were the thighs, arms, and breasts/chest.<sup>5,22,24–26</sup>

Satisfaction with the whole body was similar when comparing the three groups. However, patients with a desire were less satisfied with several body parts and unsatisfied with the proportions of their body. It might be that patients are overall satisfied with their body, but especially dissatisfied with specific areas (for which they desire body contouring surgery). Or that patients are more focused on the proportions of their body, which can be very variable when excess skin is present in only one or two body parts.

Patients who had undergone body contouring surgery were more satisfied with their body now than they were before body contouring surgery. Although these data might be biased, because of the retrospective ratings, the difference was very large (3.9 versus 7.3 on a scale from 0 to 10), and this has been shown before.<sup>10,14,27,28</sup>

Patients with a desire also graded their overhanging skin highest for all body parts assessed. A higher Pittsburgh Rating Scale score was related to lower rating of body parts in all patients, meaning that more excess skin is clearly considered less attractive. Because there are no studies assessing the prevalence of excess skin with the Pittsburgh Rating Scale, we cannot compare our results. However, we can conclude that the Pittsburgh Rating Scale (or a similar scale) can be used to assess how a patient perceives their excess skin. Future

research could then also focus on whether the perceived excess skin correlates with the estimation and/or measurement of the plastic surgeon.

It is striking that almost 40 percent of the patients who had a desire for body contouring surgery never consulted a plastic surgeon, although many of these patients *did* meet the weight criteria. Income rates were linked to the use of body contouring surgery in previous studies, and the group with a desire for body contouring surgery had the highest rating of unemployment and the lowest income.<sup>3,8,16</sup> Thus, costs seem to be the main reason for not undergoing body contouring surgery and/or not consulting a plastic surgeon.<sup>3,8</sup> However, looking more closely at the reasons, there are some distinct differences. There is a substantial population of patients (27.7 percent) who did not even ask for a referral, and a total of 20 percent of the population did not consult the plastic surgeon because they anticipated that they would not receive reimbursement. Almost half of the patients in these groups qualified according to the weight loss results. Although we do not know the exact amount of overhanging skin, the results do partly confirm what we see in daily practice: there is a group of patients who might be reimbursed by their insurance company but never attempt to undergo surgery.

Health insurance in The Netherlands is mandatory. Patients are free to choose a private company for their basic health insurance. In addition, patients can choose a more expensive insurance that reimburses more treatments. To qualify for reimbursement of body contouring surgery, there is a nationwide guideline. Patients must meet the following criteria: (1) more than 18 months past bariatric surgery, (2) stable weight for greater than 12 months, (3) body mass index less than 35 kg/m<sup>2</sup>, and (4) skin excess grade 3 according to the Pittsburgh Rating Scale and/or serious impairment of bodily function.<sup>18,29</sup> This information is sent to the insurance company by the plastic surgeon, and the insurance company decides whether a patient will be reimbursed. Because there is great variability in rating with the Pittsburgh Rating Scale, reimbursement decisions are also variable. This results in an unfair situation for patients. There is a possibility for patients to oppose the decision of the insurance company but, understandably, for this the patient will need to have the resources and abilities.

The issue of unfair/unclear reimbursement is not confined to The Netherlands; several publications have described similar problems all over the world.<sup>8,16,30,31</sup> In the United States and in Canada,

body contouring surgery is usually not reimbursed by insurance companies, and no clear guidelines exist.<sup>8,16</sup> In Great Britain, decision-making for reimbursement of body contouring surgery was described as a lottery.<sup>30</sup> The British Association of Plastic, Reconstructive and Aesthetic Surgeons has therefore developed a guideline to define which post-bariatric surgery patients qualify for referral and reimbursement of body contouring surgery.<sup>32</sup> In this guideline, a questionnaire is used to decide whether the patient qualifies for reimbursement using questions regarding weight loss, complaints of excess skin, and patient history. In Mexico, Iglesias et al. set up a classification system using only the amount of overhanging skin.<sup>31</sup>

Considering all above, there seem to be two main problems. The first is the problem we see in daily practice: the current criteria are not interpreted in a uniform way. As a result, some patients receive reimbursement and some patients do not, even though the amount of excess skin is the same. The second is the problem that is masked: only a minority of patients consult the plastic surgeon because they assume that they will not be reimbursed. This is at least partially caused by the fact that patients are unaware of the current guidelines. Patients with poor financial status might be too afraid or unequipped to stand up for themselves and try to receive a reimbursement. Psychological factors such as self-esteem and self-worth could also influence whether a patient will ask for a referral and/or react against the insurance companies. A more extensive analysis of these patients should therefore be a part of future research.

Thus, there is a worldwide need for an objective and reproducible guideline to decide which patients should qualify for referral and reimbursement of body contouring surgery. This guideline has to be broadly spread and properly communicated to the bariatric population. Such a guideline will also be helpful for plastic surgeons, as it reduces the amount of consultations with patients who do not qualify for body contouring surgery. It should include not only a questionnaire but also an objective measurement of the amount of excess skin. Different countries can then decide their own qualification norms for reimbursement, depending on the system in the country and available funding for body contouring surgery.

For now, in our clinic, we have started informing patients about the current qualifications for body contouring surgery reimbursement before bariatric surgery. At the follow-up after bariatric

surgery, excess skin is a standard part of assessment, urging people to visit a plastic surgeon when they qualify according to current guidelines. Patients respond very positive to the fact that so much attention is paid to these complaints.

A limitation is that we did not use a validated questionnaire and patients were not examined. Therefore, we do not know the exact extent of overhanging skin and cannot conclude which patients should be reimbursed according to the current Dutch guidelines. Our goal was to show how post-bariatric surgery patients perceive their overhanging skin and which patients meet the weight criteria. The study was set up based on the complaints of post-bariatric surgery patients we encounter in the clinic. We specifically chose to set up a questionnaire with open questions to assess how the patients really feel and think about body contouring surgery, reimbursement, and their body. The results seem to show that most patients do meet the weight qualifications that are set by insurance companies, and because the NOK treats a significant proportion of patients who undergo bariatric surgery in our country, the current sample seems to be a good representation of the post-bariatric surgery population.

This study shows that there is a significant number of post-bariatric surgery patients who have a desire for body contouring surgery and meet the weight criteria for reimbursement. However, the majority of these patients never consulted the plastic surgeon, making the problem of excess skin invisible for treating doctors, such as plastic surgeons and bariatric surgeons, but also for government and insurance companies. More importantly, patients will not undergo a treatment that decreases complaints and improves well-being and weight loss maintenance. Therefore, post-bariatric surgery patients should be better informed by (cooperating) plastic and bariatric surgeons about body contouring surgery; information should consist of that regarding excess skin and body contouring surgery reimbursement before bariatric surgery and assessment of complaints at follow-up. In addition, plastic surgeons and bariatric teams should properly communicate guidelines regarding reimbursement to patients and develop objective criteria to decide which patients qualify for reimbursement for body contouring surgery.

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