

Patients' Experience of Surplus Skin After Laparoscopic Gastric Bypass

Christina Biörserud · Torsten Olbers ·
Monika Fagevik Olsén

Received: 26 November 2008 / Accepted: 27 April 2009 / Published online: 20 May 2009
© Springer Science + Business Media, LLC 2009

Abstract

Background Previous studies have described that many obese patients who undergo bariatric surgery develop surplus skin. However, there is a lack of knowledge about where on the body the problems are located and to what extent surplus skin affects the person. The aim of this study was to examine whether and where patients develop surplus skin after laparoscopic gastric bypass and if there is any relation between surplus skin and the patient's sex, age, weight loss, or activity level.

Materials and Methods A questionnaire was constructed which included questions about surplus skin. The questionnaire was sent to 148 patients who had been operated with laparoscopic gastric bypass. One hundred and twelve (76%) responded of whom 77 were women and 35 men.

Results At follow-up, 94 persons (84%) reported problems with surplus skin. The surplus skin was situated most commonly on the abdomen, the upper arms, and the inside of the thighs, but also on the back, the cheek and over the

knees. Significantly, more women than men reported complications with surplus skin ($p=0.018$), distributed over more body parts, specifically on the upper arms, medial thigh, and lateral back ($p<0.05$). The surplus skin caused problems with fungal infections and itching, physical unpleasantness and complicated physical activity. There was no correlation between degree of problems with surplus skin and age, weight loss, or activity rate.

Discussion Weight loss after gastric bypass reduces the medical risks of obesity but the psychosocial problems remain in many patients due to problems with surplus skin.

Keywords Obesity · Gastric bypass · Surplus skin

Introduction

Surgical treatment for obesity can be considered when all other treatments fail. Surgery leads to a greater and more sustained weight loss than any other treatment [1]. The “gold standard” for obesity surgery is gastric bypass. This procedure has been demonstrated to result in a greater weight loss than restrictive surgical options [2]. The loss of total fat, truncal body fat, and visceral fat has been demonstrated to be greater after gastric bypass than vertical banded gastroplastic 1 year after surgery [3].

It is well known that the great weight loss after bariatric surgery is associated postoperatively with surplus skin [4, 5]. Kintzl et al. [6] reported that 70% of the patients included in their trial described problems with surplus skin. Surplus skin has previously been reported to be located predominantly on the abdomen, thighs, upper arms, and breasts, equal for both men and women [7]. In a previous trial, no correlation was found between satisfaction with appearance, gender, or age, and surplus skin [6]. The results

C. Biörserud (✉) · T. Olbers · M. Fagevik Olsén
Department of Surgery, Sahlgrenska University Hospital,
Gothenburg SE 413 45, Sweden
e-mail: christina.biorserud@vgregion.se

C. Biörserud · T. Olbers · M. Fagevik Olsén
Institute for Clinical Sciences, Sahlgrenska Academy,
Sahlgrenska University Hospital, Göteborg University,
Gothenburg, Sweden

M. Fagevik Olsén
Department of Physiotherapy, Sahlgrenska University Hospital,
Gothenburg SE 413 45, Sweden

M. Fagevik Olsén
Institute of Neuroscience and Physiology, Sahlgrenska Academy,
Göteborg University,
Gothenburg, Sweden

also indicated that patients who lost more weight are less satisfied with their appearance than those who lost less weight. The surplus skin is not only an aesthetic problem but also causes problems with personal hygiene, itching, rashes, and finding suitable clothes [7–9]. In addition, surplus skin complicates physical activity and is associated with back and neck pain [5, 10].

A review [7] reported that patients who lose a great deal of weight after bariatric surgery often become negatively surprised over surplus skin. At present, there are no diet or exercise cures to decrease surplus skin [8]. About 25% of those who succeeded in decreasing sufficiently in weight wanted to undergo additional plastic surgery to remove the extra skin [7]. Plastic surgery treats both the functional and aesthetic problems of extra skin and gives in many cases a happier patient with greater self-esteem [10]. Plastic surgery is preferably performed some 1.5–3 years after bariatric surgery when a stable and sufficient weight loss is established. It is important that the patient is well informed about the possibilities and limitations of plastic surgery before they undergo bariatric surgery in order to limit the high and often unrealistic expectations of plastic surgery [6].

Previous studies have shown that many patients experience problems with surplus skin after bariatric surgery. However, these trials have explored the extent of surplus skin using questionnaires with prepared statements [4–6]. There is still a lack of knowledge about the timing of the development and the anatomical location of surplus skin and whether it is related to variables such as gender and activity level.

The main aim of this trial was therefore to explore whether patients develop surplus skin after gastric bypass, where on the body there is surplus skin, and to what extent it exists. The aim was also to evaluate differences in surplus skin between men and women, how it affected daily life, and whether the amount of surplus skin was correlated to age, weight loss, and/or physical activity level.

Materials and Methods

A questionnaire was designed to investigate whether the patients experienced problems with surplus skin after bariatric surgery. The questionnaire was thereafter evaluated by the study team, eight persons who worked on the bariatric surgery ward and two lay persons who had no connection to the medical services. Minor adjustments were made and the questionnaire was sent in January 2006 to those who had undergone laparoscopic gastric bypass at Sahlgrenska University Hospital in Gothenburg, Sweden, during the period 2002–2004. The patients were asked to fill in the form and return it within 1 week. One reminder was sent.

The first questions gathered demographic data. The patients who did not experience problems with surplus skin left the questions that dealt with this unanswered. Those who reported difficulties with surplus skin were asked to mark the areas affected on a frontal and dorsal sketch of a female or male body. The sketch allowed us to avoid leading questions. Any inconvenience of surplus skin was graded using a visual analogue scale (VAS), consisting of a 100-mm horizontal line, ranging from no inconvenience at all (0 mm) to the worst conceivable inconvenience (100 mm).

The questionnaire also aimed at finding out whether the patients were pleased with their bariatric surgery despite problems with surplus skin, whether they had thought about surplus skin before the surgery and whether their thoughts agreed with reality. They were also asked whether they had any other problems post surgery and if they were on the waiting list for plastic surgery (yes/no). A further two open questions dealt with what type of problems the surplus skin caused and whether it involved any restriction in daily life. Finally, two questions explored the patient's activity level.

Statistics

SPSS ver. 15.0 was used for the statistical analyses. Mann–Whitney's test was used to analyze differences between men and women. Differences in proportions were analyzed using the chi-squared test. Spearman's correlation coefficient was used for analysis of correlations between the variables. Statistically significant differences were defined as a *p* value <0.05.

Results

One hundred and twelve patients answered the questionnaire (76%). The characteristics of the participants are given in Table 1. The mean time after surgery was 28±9 months. The respondents reported that they walked,

Table 1 Descriptive data in the 112 participants. Number of persons or mean±SD

	<i>n</i> =112
Sex, male/female	35/77
Mean age, year	45±11.7
Time since surgery, month	28±9
Weight before surgery, kg	135±25
Present weight, kg	88±20
Length, m	1.71±0.09
BMI before surgery, kg/m ²	46.4±7.3
Present BMI, kg/m ²	30.0±5.7

bicycled, and/or did heavy housework for more than 30 min/day, median 4 days/week (0–7). The median for more intense physical exercise, more than 45 min, was 1 day/week (0–7).

Ninety-four persons (84%) reported problems with surplus skin after the gastric bypass. The localization of the surplus skin is illustrated in Fig. 1. Significantly more women than men reported inconvenience with surplus skin ($p=0.018$). Table 2 presents the localization of surplus skin on the different parts of the body reported by men and women. Women experienced surplus skin in more body parts ($p<0.001$) and to a greater degree than men on the upper arms, medial thigh, and lateral back ($p<0.05$).

The median of the level of unpleasantness experienced caused by the surplus skin was 70.5 (13–100). Women reported 74 mm (13–100) and the corresponding figure for men was 67 mm (30–100; n.s.).

There was no correlation between unpleasantness experienced and:

- age ($r_s -0.211, p=0.026$)
- time since operation ($r_s -0.116, p=0.221$)
- present weight ($r_s -0.078, p=0.416$)
- weight before surgery ($r_s 0.139, p=0.145$)
- weight loss in kg ($r_s 0.333, p=0.000$)
- present BMI ($r_s 0.277, p=0.003$)
- BMI before surgery ($r_s -0.066, p=0.496$)
- level of physical activity ($r_s 0.057, p=0.553$)
- level of physical training ($r_s 0.188, p=0.049$).

There was no significant difference concerning unpleasantness experienced caused by surplus skin on different parts of the body or the whole body in persons performing basic physical activity at least 30 min/day in comparison to those who were less active. Neither could we find any significant difference between those who exercised one to two times per week as compared to those who were less active. However, those who exercised more than three times per week reported a significantly lower

degree of inconvenience measured by VAS than those who exercised less ($p=0.014$). It was not possible to define any specific body localization that was affected positively, however.

An open question revealed that 43 persons (46%) experienced that surplus skin gave them problems with fungal infections, eczema, and lesions below the abdomen, the breasts, and/or in the groin. Some persons described that this caused itching, bad odor, perspiration, and problems in personal hygiene.

Thirty persons (32%) described that they, because of the surplus skin, still had difficulty finding suitable clothes. They had to buy clothes that were several sizes too large; for example the trousers had to be large around the waist because of the surplus skin while the legs had become thinner. Many women described how they had to “roll” their breasts into the bra in order to get a good shape. Twenty-eight persons (30%) described the surplus skin as ugly, unattractive, and a major cosmetic problem.

Twenty-nine persons (31%) reported that the surplus skin caused great psychological problems. One person felt completely unattractive due to the surplus skin. Others felt disgusted, ashamed and/or embarrassed, which caused a complex. One person described the skin making him feel like he was sleeping in crumpled sheets when he was lying down.

Seven persons reported that surplus skin caused discomfort during exercise. For example, many described how their stomach hangs down over their thighs and wobbles when running. The surplus skin was also reported to be heavy and as causing pain in the shoulders and back of the neck.

What Do They Avoid Doing?

The open questions revealed that 64 persons (68%) avoided bathing in public at beaches and/or swimming

Fig. 1 Localization of surplus skin after bariatric surgery

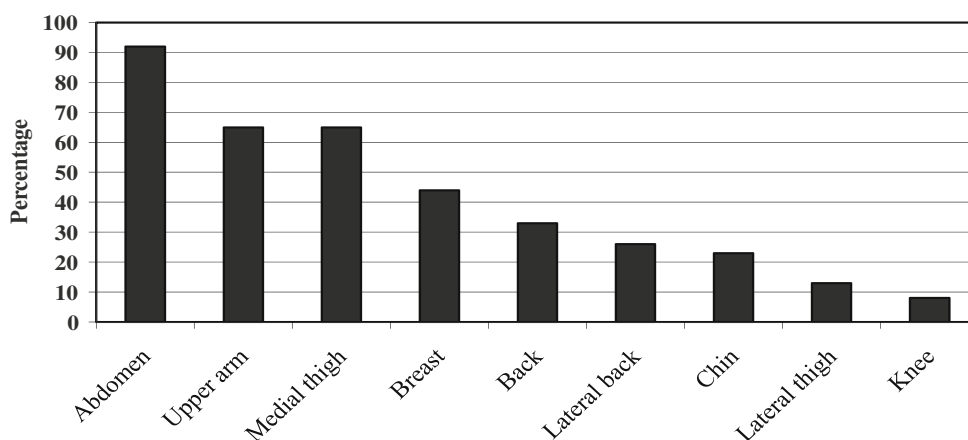


Table 2 Distribution of surplus skin on different parts of the body among men and women *N* (%)

	Men <i>N</i> =35	Women <i>N</i> =77	<i>p</i> value on differences between men and women
Upper arms	9 (26)	56 (73)	0.000
Medial thigh	8 (23)	57 (74)	0.000
Breast	8 (23)	36 (47)	0.106
Abdomen	25 (71)	67 (87)	1.000
Back	9 (26)	24 (31)	1.000
Lateral back	3 (9)	23 (30)	0.041
Lateral thigh	1 (3)	12 (16)	0.176
Chin	7 (20)	16 (21)	0.789
Knee	0 (0)	8 (10)	0.103
Sum	25	69	0.000

pools. They did not sunbathe in public areas and avoided wearing a bikini or swimsuit and exposing a bare upper body. They also avoided places and activities where they had to be naked in front of others, for example in the sauna. Some even reported that they avoided being naked in front of their own family or partner.

Twenty-nine persons (31%) avoided using certain clothing, for example short sleeved/low cut sweaters, vest, shorts, and tight clothing. Some thought it was unpleasant when other people watched them and some felt restrained by the surplus skin. Nine persons did not dare to begin a new relationship because of the problems associated with surplus skin and being embarrassed over their appearance.

Miscellaneous

Two of the 94 persons who reported problems with surplus skin regretted going through with obesity surgery. Seventy persons (62%) reported that they had thought of surplus skin before the bariatric surgery and 49 of them thought that their expectations agreed with reality. Some patients had more surplus skin than they thought was possible while some had less than they had anticipated and were positively surprised. One hundred ten out of 112 persons (98%) were satisfied with laparoscopic gastric bypass.

Of those who reported problems with surplus skin, 37 persons (39%) were on the waiting list for plastic surgery. They were significantly younger ($p < 0.01$) and had experienced significantly greater weight loss (kg; $p < 0.04$) as well as percentage weight loss ($p < 0.001$) than those who were not on the waiting list. There was, however, no significant difference in time since bariatric surgery.

Discussion

The aim of this study was to examine whether patients develop surplus skin after laparoscopic gastric bypass and whether there was any relation between surplus skin and the patient's age, weight loss or activity rate. Of those who answered the questionnaire, 84% stated unpleasantness with surplus skin, which makes this a particularly important issue with great relevance for the clinical outcome of obesity surgery. It confirms previous results that surplus skin is common after bariatric surgery. The median for unpleasantness caused by surplus skin was estimated, 70.5 on a 100-mm scale. Three persons estimated their problems to be maximal according to the VAS. However, the study also indicates that 110 of 112 persons (98%) were satisfied with laparoscopic gastric bypass surgery, and many of them clearly clarified this in their comments.

The surplus skin was most frequently located on the abdomen, the upper arms, the medial thighs, and the breasts in both men and women, which has been reported previously [6, 7]. Since gastric bypass results in a great weight loss, with a loss of body fat around and in the abdomen, it is not surprising that patients develop problems with surplus skin in this area. However, this study also indicates that many persons have problems with surplus skin on the back, lateral back, chin, lateral thigh, and skin hanging down over the knees.

Women experienced surplus skin in more body parts ($p < 0.001$) and to a greater extent than men on the upper arms, medial thigh, and lateral back ($p < 0.05$). These results are not surprising as these parts of the body are areas that are commonly associated with the female ideal. These areas of the body are focused upon regardless of whether the culture prefers a thin, slender female ideal or an overweight female ideal.

A remarkably high proportion avoided the same activities after bariatric surgery as they did before. Prior to surgery they typically avoided beaches or swimming pools, training in public areas and wearing certain clothes. After surgery, it was the surplus skin and not the obesity that restrained them. They continued to experience people staring and pointing at them, with several more reporting that surplus skin was more difficult and embarrassing than being obese had been. The problem had shifted from their obesity to their surplus skin. This study did not assess whether this was a realistic experience or a psychologically treatable "oversensitive" reaction in these patients.

This study confirms previous results that show that people cannot be as physically active as they wish to be after bariatric surgery [7]. Several persons stated that they had looked forward to exercising and swimming again after their weight loss but that the surplus skin restricted them from doing these activities. They were partly restricted

because they did not like to be undressed in public and partly by the surplus skin that wobbled when they exercised.

One aim of this study was to investigate whether there was any relation between problems with surplus skin and activity rate. We did not find such a relationship except for those who exercised more than three times per week, who experienced a significantly lower degree of unpleasantness than those who exercised less ($p=0.014$). However, this result must be confirmed in future trials before we can recommend exercise as a method for reducing the risk of developing surplus skin, although it seems unlikely that it would be regarded as controversial advice.

Another aim was to investigate whether there was any relation between surplus skin and age or weight loss. We did not find a relationship, which is in agreement with the study by Kintzl et al. [6], who also found no correlation between satisfaction and age.

The questionnaire had an acceptable reply frequency (76%), and many respondents wrote personal comments at the end of the questionnaire, which enriched the study. Thirty-four persons did not answer the questionnaire; their reasons for not responding remain unknown and we do not know whether their answers would have affected the results of this study.

The results of this trial confirm the findings in previous studies of frequent complaints of surplus skin at classic sites (abdomen, upper arms, thigh), but this study also indicates frequent complaints about skin on the back/flanks, chin, and knees after bariatric surgery with laparoscopic gastric bypass. It would be of great interest to investigate patients who undergo additional plastic surgery. Are they subsequently satisfied with their appearance or do they notice surplus skin on other parts of the body? Other interesting questions are whether the experience of surplus skin varies over time after

bariatric surgery, how the unpleasantness of surplus skin compares with the unpleasantness of obesity, and whether patients develop different amounts of surplus skin according to the type of bariatric operation used.

Thus, despite experiencing great unpleasantness/problems over the development of surplus skin, the respondents in this study were grateful for “a new chance” by being operated with laparoscopic gastric bypass. Many claimed that they felt like “they had gotten their life back!”

References

1. Sjöström L, Lindroos AK, Peltonen M, et al. Swedish Obese Subjects Study Scientific Group. Lifestyle, diabetes, and cardiovascular risk factors 10 years after bariatric surgery. *N Engl J Med*. 2004;351(26):2683–93.
2. Buchwald H, Avidor Y, Braunwald E et al. Bariatric surgery: a systematic review and meta-analysis. *JAMA*. 2004 Oct 13;292(14):1724–37. Review. Erratum in: *JAMA*. 2005, 293(14):1728
3. Olbers T, Björkman S, Lindroos AK, et al. Body composition, dietary intake, and energy expenditure after laparoscopic Roux-en-Y gastric bypass and laparoscopic vertical banded gastroplasty: a randomized clinical trial. *Ann Surg*. 2006;244(5):715–22.
4. WHO <http://www.who.int/en/> Available 2006-11-06
5. Grindel M, Grindel CG. Nursing care of the person having bariatric surgery. *Medsurg Nurs*. 2006;15(3):129–46.
6. Kinzl JF, Traweger C, Trefalt E, et al. Psychosocial consequences of weight loss following gastric banding for morbid obesity. *Obes Surg*. 2003;13(1):105–10.
7. Heddens CJ. Body contouring after massive weight loss. *Plast Surg Nurs*. 2004;24(3):107–15.
8. Ellabban MG, Hart NB. Body contouring by combined abdominoplasty and medial vertical thigh reduction: experience of 14 cases. *Br J Plast Surg*. 2004;57(3):222–27.
9. Taylor J, Shermak M. Body contouring following massive weight loss. *Obes Surg*. 2004;14(8):1080–85.
10. Datta G, Cravero L, Margara A, et al. The plastic surgeon in the treatment of obesity. *Obes Surg*. 2006;16(1):5–11.