

Could Surgery Have a Better Long-Term Effect on Psychopathology Than Evidence-Based Psychotherapy? Pros and Cons of Bariatric Surgery in the Treatment of Obesity

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Do We Need Obesity Surgery (Bariatric Surgery)?

Although it would seem to be a simple matter to lose weight by reducing caloric intake and increasing caloric consumption, conservative methods for losing weight and keeping it off are of only limited effectiveness. The main problem with (non-surgical) treatment of obesity is less a matter of short-term weight loss than of stabilization of the reduced body weight. The majority of patients regain weight after completing a treatment program, often back to their baseline weight (the 'yo-yo effect') or even above their baseline weight. A permanent change in eating and exercise habits and concomitant weight loss maintenance seem to be difficult to achieve with current programs. Most obese people already have a long treatment history of many frustrating experiences with weight loss and especially weight loss maintenance. Overview articles [Loveman et al., 2011; Anderson et al., 2001; McGuire et al., 1999] have come to the conclusion that the extent of weight loss is low for most programs and regaining weight is common. In a meta-analysis of 29 publications, Anderson et al. [2001] established an average weight loss of 3 kg 4–5 years after conservative weight reduction programs. There is growing evidence that controlling one's body weight over the long term, when abundant food is available, is only possible to a limited extent, because permanent conscious control of eating behavior is difficult to sustain. The body's adaptations to the weight-reduced state seem to favor regaining weight. In-

creased appetite, change in peripheral appetite-regulating hormones, and changes in neural responses to food-related stimuli after weight reduction are thought to be responsible [Proietto, 2011]. A 5% long-term weight loss is now considered to be a success, which would be totally unsatisfactory for extremely obese people.

In Germany about 20% of the adult population is obese (BMI ≥ 30 kg/m²) and about 1% of the population is morbidly obese (grade 3, BMI ≥ 40 kg/m²) (fig. 1). The 2006 Child and Youth Survey (KiGGS, n = 17,641) [Kurth and Schaffrath Rosario, 2010] showed that 6.1% of 3- to 17-year-olds in Germany are already obese (BMI above the 97th percentile). Obesity is associated with significantly increased morbidity and mortality risk, which rises with increasing BMI. Both physical and mental dimensions of quality of life are reduced in morbidly obese people.

The number of bariatric operations is increasing worldwide. A traditional indication for bariatric surgery is a BMI of 40 kg/m², or greater than 35 kg/m² with obesity-associated comorbidities such as type 2 diabetes mellitus or cardiovascular diseases. Patients must also prove that their attempts at conservative treatment have failed. Although this requirement does not make much sense, in view of the available data on conservative weight reduction programs, it does demonstrate the candidates' ability to adhere to such programs. Germany has had a longitudinal register for bariatric surgery since 2005 [Manger and Stroh, 2011]. Bariatric surgery centers certified

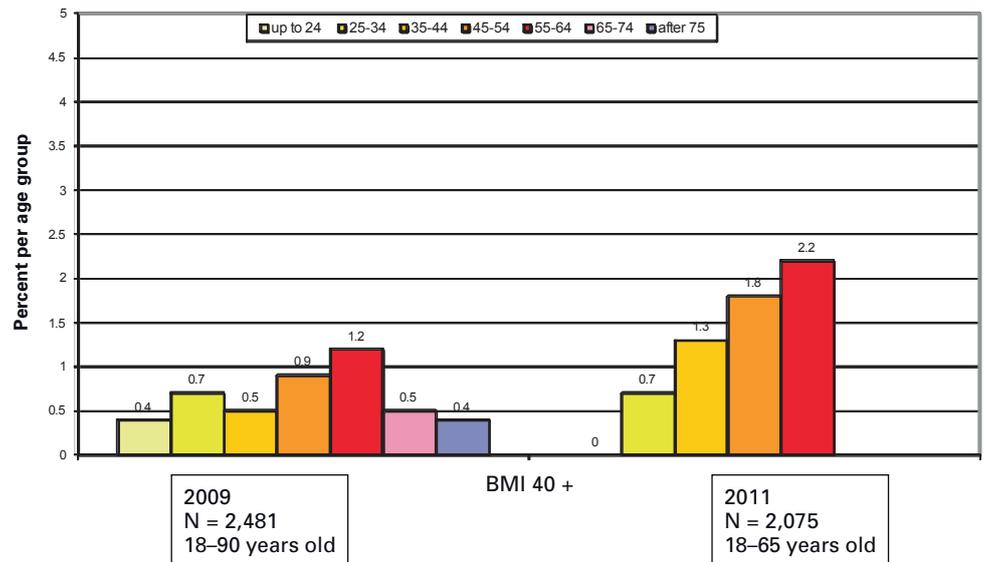


Fig. 1. Prevalence of Grade 3 Obesity in the German Population as a Function of Age in 2 Representative Population Surveys.

by the German Society of General and Visceral Surgery (DGAV) must register their patients there. Currently 25 centers in Germany are recognized by the DGAV as competence centers until 2013/14 (>100 surgeries/year) or even as reference centers (>200 cases/year) [Herbig, 2008]. In 2010, about 4,000 primary surgeries were reported to the register, with gastric bypass being the most commonly performed operation, followed by sleeve gastrectomy, and, more rarely in recent years, the implantation of a gastric band. The procedures have been repeatedly modified over the years. Today a specialized team of surgeons can perform all procedures laparoscopically (minimally invasive surgery). Bariatric surgery is a large organizational effort for specialized centers. It requires special operating tables, instruments, and furniture, and a multidisciplinary team with a specially trained staff. The postoperative mortality rate is below 1%, with a clear negative association between the number of operations performed at a medical center and the perioperative complication rate. Some methods (including gastric bypass) can result in a malabsorption syndrome for certain vitamins and minerals, mainly vitamin B12 and vitamin D as well as calcium, phosphate and iron, which must then be substituted [Potoczna et al., 2006]. Despite rapidly growing scientific evidence, there is no surgical 'gold standard', and there are no standardized or objective parameters available that would allow to choose the best fitting surgical procedure. The lack of prospective comparative studies reflects the dynamic development of obesity surgery, with new techniques being introduced in rapid succession, and data that are only a few years old already becoming out of date.

Is Bariatric Surgery Effective?

The surgical procedures are based on the principles of food restriction, malabsorption, and altered hormonal regulatory

mechanisms. The extent of weight loss is at least 50–60% of the excess weight, based on a BMI of 25 kg/m². Many of those who receive the surgery remain overweight or obese, but definitely at a lower level. The long-term effectiveness is mainly documented by the Swedish Obese Subjects Study (SOS), a 15-year follow-up study [Sjöström, 2008]. The largest weight loss occurs during the first 2 years after surgery; this period has been named the 'honeymoon' phase. Subsequently a weight plateau is achieved, and often a slight weight gain follows, although not a return to the starting weight. Metabolic comorbidities improve quickly and durably; often there is a complete remission of type 2 diabetes mellitus, even before significant weight loss is observed, so we can presume a direct influence of gastrointestinal hormones. This effect has been given the name 'metabolic surgery.' Overall mortality was reduced in the SOS study by 24% in the first 10 years.

Economic analyses such as the HTA report of the German Institute for Medical Documentation and Information (DIMDI) [Bockelbrink et al., 2008] attest to the cost efficiency of all obesity surgery procedures compared to conservative methods or no treatment. It is not possible, however, to determine which bariatric procedure is the most efficient method.

Bariatric surgery, although the most effective method for weight loss, is not a guarantee of success for the individual patient, because adherence, in terms of behavior and long-term follow-up care, is important for the maintenance of weight loss. Eating and drinking habits have to be adapted to the postoperative situation; lifelong supplements of vitamins, trace elements, minerals, and protein are necessary. The guidelines of the Association of the Scientific Medical Societies in Germany (AWMF) [Runkel et al., 2011] recommend that follow-up be continued if possible for the rest of the patient's life. It is also noted that a surgical procedure for weight loss requires a prior interdisciplinary assessment. These two

requirements are certainly not adequately met in clinical reality. Unfortunately a frequent problem is that surgeons cannot find suitable partners. This is sometimes due to lack of interest in bariatric surgery or lack of knowledge, but it is also because of insufficient compensation. Thus satisfactory psychosocial care is really only available at a few centers.

Body Contouring Surgery

Massive weight reduction inevitably leads to excess hanging skin, which can affect the whole body, but especially the abdomen, buttocks, hips, and breasts [Torio-Padron and Stark, 2009]. The number of body contouring operations after bariatric surgery is growing rapidly. Studies have shown that patients who have undergone bariatric surgery report significant dissatisfaction with their body shape after massive weight loss [Steffen et al., 2012]. The plastic surgery procedures are not primarily aimed for the treatment of obesity, but for the correction of deformities of the body silhouette, the restoration of normal body appearance, and the functional reconstruction when the surgery has resulted in restricted personal hygiene or chronic skin inflammation. The subjective satisfaction with the outcome of body contouring surgery seems to be generally good, but health insurances rarely cover the costs. Usually several operations are needed and may result in large wound areas and extensive scarring. Wound healing problems are described in 14.4% of cases as frequent and stressful complications.

Are Operations Done in Childhood and Adolescence?

Data on bariatric surgery in childhood and adolescence are still very limited, and the indication is recommended only with great caution. The AWMF guidelines suggest that surgery could be considered as a last resort, after repeated failures of multimodal conservative treatments for extremely obese adolescents who have substantial metabolic-cardiovascular comorbidity.

Depression and Anxiety

Epidemiological studies show a positive association between mental disorders, especially anxiety, depression, and binge eating disorder (BED), and obesity in the general population [Baumeister and Härter, 2007]. This association is more pronounced in women and increases with increasing overweight. In patients who present for bariatric surgery mental comorbidity can be quite substantial. In a study conducted by this author and colleagues 146 consecutive patients were interviewed prior to bariatric surgery using the Structured Clinical Interview for DSM-IV diagnoses (SCID). The prevalence of

at least one psychiatric lifetime diagnosis was 72.6%, and 55.5% fulfilled the criteria for a current mental disorder at the time of the interview [Mühlhans et al., 2009]. It is therefore likely that the quality of life in severely obese patients is not only limited by the numerous physical complications, but also by mental comorbidity.

The association between depression and obesity was examined in a meta-analysis of prospective studies. The results demonstrate a reciprocal relationship. Depressives have an increased risk of becoming obese (odds ratio 1.58), and vice versa, obese people seem to have an increased risk of becoming depressed (odds ratio 1.55) [Luppino et al., 2010]. This reciprocal association could be explained by biological mechanisms. Thus the inflammatory response, insulin resistance, or HPA-axis dysfunction, which are found in obesity, could foster the development of depression. On the other hand, the use of psychotropic medication by depressed patients can lead to weight gain. Psychosocial factors such as discrimination against obese individuals or the lack of self-care by a depressed person are also factors that might explain the reciprocal relationship between depression and obesity.

Numerous studies have shown that the severity and frequency of depressive and anxiety disorders decline significantly medium-term after bariatric surgery [de Zwaan et al., 2011; Legenbauer et al., 2007]. However, many patients continue to have psychological problems that require treatment after bariatric surgery. Moreover, the prevalence of postoperative mental disorders is still higher than would be expected in the general population. It should also be considered that most studies refer to the first 2 years after surgery and there are only a few studies investigating the long-term course of mental disorders. The period after the 'honeymoon' phase is especially considered a risk phase for the recurrence of mental disorders and symptoms. The operation thus does not solve all problems; it is not a 'quick fix.' It has also been shown that patients who still have psychological problems after the operation or who re-develop mental health problems have a worse long-term weight loss outcome [de Zwaan et al., 2011].

Suicide Rate

Studies on the association between obesity and suicides in the general population have repeatedly shown that obese people have a lower risk of suicide. This seems to contradict the elevated comorbidity with mental disorders. Conversely, after weight reduction through bariatric surgery, the suicide rate increases, despite a decline in psychiatric comorbidity. Tindle et al. [2010] reported a suicide rate after bariatric surgery of 13.7% per 10,000 male and 5.2% per 10,000 female patients, compared to 2.4% per 10,000 men and 0.7% per 10,000 women matched for age and gender in the general population. The absolute number of suicides was low, with 31 cases out of

16,683 operations, but the high rate compared to the general population is a matter of concern. The average time between the surgery and the suicide was 3 years. Adams et al. [2007] reported a 40% reduction in the overall mortality rate 7 years after bariatric surgery; however, they also found a 58% increase in the incidence of traumatic deaths, including suicides, compared to severely obese controls. The nature of the relationship is unclear. These results suggest that after bariatric surgery, the psychological condition of the patient should also be monitored for a long time.

Eating Behavior

Up to 50% of bariatric surgery candidates can be expected to meet criteria for BED [de Zwaan et al., 2010]. Preoperatively diagnosed pathological eating behaviors, such as ‘binge eating’, ‘grazing’, or ‘sweet eating’, have not shown to have a negative influence on postoperative weight loss [Legenbauer et al., 2007].

Some (up to 50%) of patients with BED prior to surgery re-develop binge eating after the operation. It is not yet clear who will re-develop binge eating and who will not; however, the first-time occurrence (de novo) of binge eating after the surgery is unlikely. Postoperatively, patients are no longer able to consume large quantities of food, as is actually required for a diagnosis of (objective) binge eating episodes. But they describe a feeling of loss of control during these (subjective) binge eating episodes; therefore, the term ‘loss of control eating’ is used in the literature for postoperative binge eating. Postoperative binge eating does not only have a negative impact on weight reduction, but is also accompanied by increased general and eating-disorder-specific psychopathology [de Zwaan and Mühlhans, 2009]. Instead of excluding patients with BED from bariatric surgery, the occurrence of binge eating or ‘loss of control eating’ should be identified after surgery and should be adequately treated, in order to positively influence weight loss maintenance and reduce suffering.

After bariatric surgery, it is extremely difficult to distinguish between normal and pathological eating behavior. Patients are forced to develop an eating style that is characterized by restriction of food intake, restriction of food choices, and ritualized behaviors in the method of food intake (e.g., extensive chewing). Not infrequently, patients develop an intense fear of re-gaining weight after reaching a weight plateau. This may result in deliberate restrictive eating that can trigger binge eating again in vulnerable patients. Some patients engage in self-induced vomiting in order to achieve a faster weight loss or to prevent weight regain after having reached a weight plateau [de Zwaan et al., 2010]. In individual cases, the development of classical eating disorders (anorexia nervosa or bulimia nervosa) has been described [de Zwaan and Mühlhans, 2009].

Are Mental Disorders a Contraindication?

The German Society for Psychosomatic Medicine and Medical Psychotherapy (DGPM) was involved in the development of the current S3 guidelines for bariatric surgery (www.awmf.org/leitlinien/), [Runkel et al., 2011]. The findings on the relationship between mental disorders, obesity, and bariatric surgery are well founded, since the available data are constantly expanding.

A mental comorbidity is, according to the findings reported in the literature, by no means an absolute contraindication for a bariatric surgery procedure, and a thoughtless exclusion of patients with mental disorders should be avoided. Active substance dependence, untreated bulimia nervosa, and an ‘unstable psychopathological state’ have been defined as psychological contraindications for bariatric surgery. When these disorders or symptoms can be successfully treated or stabilized, a re-evaluation of the patient should be conducted. Therefore the S3 guidelines suggest that, depending on the particular mental comorbidity or psychosocial problems, bariatric surgery candidates should be assessed by a mental health professional who, ideally, has experience in treating obese individuals. Recommendations about the content of the preoperative psychological evaluation have been developed [de Zwaan et al., 2007].

Recommendation

Conservative weight loss treatment methods are extremely rarely successful in morbidly obese patients and surgical weight loss options must be considered as the only weight loss methods with medium- and long-term success. The extremely high somatic and mental comorbidity and the significantly increased mortality in the morbidly obese necessitate effective methods to reduce weight and rule out an anti-diet approach, as might be recommended for those who are slightly overweight. Bariatric surgery, however, requires a lifelong lifestyle adjustment (e.g., eating habits, supplementation of vitamins and trace elements) and lifelong follow-up care.

The data make clear that severely obese patients prior to bariatric surgery exhibit a high prevalence of psychosocial problems. Preoperative mental disorders as a whole seem, however, to have a lower negative impact on the postoperative course than was originally surmised, both in terms of weight and the mental disorder itself. Moreover, the massive weight loss is associated with improvement in depressive symptoms and a marked and rapid increase in the quality of life. The persistence of mental comorbidity postoperatively (depression, ‘loss of control eating’), however, seems to have a negative effect on weight loss maintenance, so that after surgery, monitoring of mental health appears to be indicated.

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References

- Adams TD, Gress RE, Smith SC, Halverson RC, Siper SC, Rosamond WD, Lamonte MJ, Stroup AM, Hunt SC: Long-term mortality after gastric bypass surgery. *N Engl J Med* 2007;357:753–761.
- Anderson JW, Konz EC, Frederich RC, Wood CL: Long-term weight-loss maintenance: a meta-analysis of US studies. *Am J Clin Nutr* 2001;74:579–584.
- Baumeister H, Härter M: Mental disorders in patients with obesity in comparison with healthy probands. *Int J Obes* 2007;3:1155–1164.
- Bockelbrink A, Stöber Y, Roll S, Vauth C, Willich SN, von der Schulenburg JM: Medizinische und ökonomische Beurteilung der bariatrischen Chirurgie gegenüber konservativen Strategien bei erwachsenen Patienten mit morbidem Adipositas. *GMS Health Technol Assess* 2008;4:Doc06. www.egms.de/en/journals/hta/2008-4/hta000055.shtml.
- de Zwaan M, Mühlhans B: Essverhalten vor und nach adipositaschirurgischer Behandlung. *Aktuel Ernährungsmed* 2009;34:83–87.
- de Zwaan M, Wolf AM, Herpertz S: Psychosomatische Aspekte der Adipositaschirurgie. *Dtsch Arztebl* 2007;104:2577–2583.
- de Zwaan M, Petersen I, Kaerber M, Burgmer R, Nolting B, Legenbauer T, Benecke A, Herpertz S: Obesity and quality of life: a controlled study of normal-weight and obese individuals. *Psychosomatics* 2009;50:474–482.
- de Zwaan M, Hilbert A, Swan-Kremeier L, Simonich H, Lancaster K, Howell LM, Monson T, Crosby RD, Mitchell JE: A comprehensive interview assessment of eating behavior 2 years after gastric bypass surgery for morbid obesity. *Surg Obes Relat Dis* 2010;6:79–87.
- de Zwaan M, Enderle J, Wagner S, Mühlhans B, Ditzel B, Gefeller O, Mitchell JE, Müller A: Anxiety and depression in bariatric surgery patients: a prospective, follow-up study using structured clinical interviews. *J Affect Disord* 2011;133:61–68.
- Herbig B: Zertifizierung – ein wichtiger Schritt für die Entwicklung der Adipositaschirurgie in Deutschland. *Chirurgische Allgemeine* 2008;9:483–490.
- Kurth BM, Schaffrath Rosario A: Übergewicht und Adipositas bei Kindern und Jugendlichen in Deutschland. *Bundesgesundheitsbl* 2010;53:643–652.
- Legenbauer T, Burgmer R, Senf W, Herpertz S: Psychische Komorbidität und Lebensqualität adipöser Menschen, eine prospektive, kontrollierte Studie. *Psychother Psych Med* 2007;57:435–441.
- Loveman E, Frampton G, Shepherd J, Picot J, Cooper K, Bryant J, Welch K, Clegg A: The clinical effectiveness and cost-effectiveness of long-term weight management schemes for adults: a systematic review. *Health Technol Assess* 2011;15:1–182.
- Luppino FS, de Wit LM, Bouvy PF, Stijnen T, Cuijpers P, Penninx BW, Zitman FG: Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. *Arch Gen Psychiatry* 2010;67:220–229.
- Manger T, Stroh C: Chirurgie der morbidem Adipositas: Qualitätssicherung – Stand und Ausblick. *Obes Facts* 2011;4(suppl 1):29–33.
- McGuire MT, Wing RR, Klem ML, Lang W, Hill JO: What predicts weight regain among a group of successful weight losers? *J Consult Clin Psychol* 1999; 67:177–185.
- Mühlhans B, Horbach T, de Zwaan M: Psychiatric disorders in bariatric surgery candidates: a review of the literature and results of a German prebariatric surgery sample. *Gen Hosp Psychiatry* 2009;31:414–421.
- Potoczna N, Steffen R, Horber FF: Chirurgische Verfahren bei krankhafter Adipositas. *Internist* 2006; 47:150–158.
- Proietto J: Why is treating obesity so difficult? Justification for the role of bariatric surgery. *Med J Aust* 2011;195:144–146.
- Runkel N, Colombo-Benkmann M, Hüttl TP, et al.: Bariatric surgery. *Dtsch Arztebl Int* 2011;108:341–346.
- S3-Leitlinie: Chirurgie der Adipositas. www.awmf.org/leitlinien/.
- Sjöström L: Bariatric surgery and reduction in morbidity and mortality: experiences from the SOS study. *Int J Obes* 2008;32(suppl 7):93–97.
- Steffen KJ, Sarwer DB, Thompson JK, Mueller A, Baker AW, Mitchell JE: Predictors of satisfaction with excess skin and desire for body contouring after bariatric surgery. *Surg Obes Relat Dis* 2012;8:92–97.
- Tindle HA, Omalu B, Courcoulas A, Marcus M, Hammers J, Kuller LH: Risk of suicide after long-term follow-up from bariatric surgery. *Am J Med* 2010; 123:1036–1042.
- Torio-Padron N, Stark GB: Körperperformende plastisch-chirurgische Eingriffe nach massiver Gewichtsreduktion. *Zentralbl Chir* 2009;134:57–65.