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Review Article

Psychosocial Functioning following Bariatric Surgery

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Morbid obesity is associated with an increased risk of morbidity and mortality as well as psychosocial problems and poor quality of life. The ultimate goal of bariatric surgery is not only reduced weight and reduction of co-morbidities, but also improved psychosocial functioning and quality of life. However, not all patients are successful. A systematic literature search of recent articles identified relevant variables reflecting postoperative psychosocial functioning. Most studies showed that bariatric surgery does not only lead to substantial weight reduction, but also to improvement or cure of physical as well as psychological co-morbidities. Although most studies are optimistic and report broad psychosocial improvement, a significant minority of patients do not benefit psychologically from surgery. Although there are mixed results, the overall improvements in psychosocial functioning provide additional justification for surgical treatment of morbid obesity.

Key words: Morbid obesity, bariatric surgery, psychosocial functioning, personality, psychopathology, body image, eating behavior, quality of life, social integration

Introduction

The prevalence of obesity is increasing globally.[1] The epidemic is rampant in the United States,[2] but obesity is also common in Europe, especially in Southern and Eastern European countries.[3]

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Morbid obesity is not only associated with medical and physical co-morbidities, but also with psychological and social problems, and poor quality of life.[4,5] Psychological consequences of morbid obesity are, among others, depression, somatization, negative body attitude, and low self-esteem.[6] Within the social domain, obese individuals have to deal with prejudice, discrimination, social isolation, dissatisfying relationships, and occupational problems.[7] As a matter of fact, psychopathology appears to be a co-morbidity of morbid obesity.[8,9] The severity of psychosocial distress appears to be even worse in morbidly obese patients seeking surgical treatment.[8]

Surgical treatment is the only intervention resulting in long-term weight reduction for morbid obesity,[10] and the number of procedures performed has increased dramatically in recent years.[11]

In addition to substantial weight reduction and improvement or cure of co-morbidities,[12] bariatric surgery leads to a reduction of psychopathology and disturbed eating behavior, and to better quality of life.[13,14] According to some studies, a normalization of psychosocial functioning can be obtained;[6] especially in the first two postoperative years, when most patients show substantial weight loss.[15] However, after that, weight may stabilize or even increase, and psychological improvement and improvements in eating behavior and quality of life may diminish.[16,17]

Enhanced psychosocial functioning and improved quality of life are important goals of bariatric surgery and motivate patients to adhere to health behaviors that maintain the surgically established weight loss.

Therefore, success following bariatric surgery should not only include weight loss and improvement or cure of co-morbid conditions, but also improvement in eating behavior, psychosocial variables, and quality of life.[18] Failures of bariatric surgery are frequently attributed to psychological factors and/or eating disorders, rather than to technical factors.[19] This asks for a comprehensive and multidisciplinary treatment paradigm for morbid obesity; surgical treatment methods and supportive non-surgical treatment components are viewed as essential interdependent facets of a bariatric treatment program.[20]

Psychosocial changes have not been studied as diligently as physical changes.[16] To promote realistic expectations and adequate postoperative adaptation, a better understanding of patients' psychosocial functioning following bariatric surgery is needed. This will facilitate not only the identification of psychological variables related to success after bariatric surgery, but also our understanding of factors that may lead to successful outcome, as well as the development of postoperative interventions to enhance adequate adjustment and success.

Methods

The present literature review was designed to understand the psychosocial functioning of patients following bariatric surgery: what specific improvements can be achieved, is the psychosocial functioning different from norm groups, and which postoperative improvements contribute to success?

These questions were investigated by a systematic review of the current literature. Mostly recent articles were identified by a search of computerized databases, such as PubMed, Psychinfo, ScienceDirect, and Medline. Further articles, missed by the initial search, were identified from the inspection of the reference lists of relevant articles.

In evaluating postoperative psychosocial functioning, studies involving all types of bariatric operations were considered. All types appear to be effective in the treatment of morbid obesity, but they differ in amount of weight loss and range of complications. Further, the reviewed studies varied in their methodology: various assessment methods, norm groups, follow-up periods and overall research designs.

Published Results

Personality

Because personality factors substantially influence health behavior,[21] personality aspects may be relevant for postoperative changes in eating behavior and adjustment to the operation in general.[22] Postoperatively, studies have shown improvements in personality features, such as patients showing less neuroticism and more discipline,[23] reduction in defensiveness and immature identity,[24] and an increase in self-esteem.[14,25] However, some patients still showed more personality pathology than comparison groups,[26] such as avoidant, borderline, and passive aggressive personality features, especially in patients showing poor weight loss.[27] On the other hand, although some studies suggest substantial decreases in psychopathology, personality pathology was largely unchanged,[28] and no significant changes were found in self-esteem.[29]

As with other outcome variables, improvement in self-esteem may be related to the amount of weight loss and the growing satisfaction of patients,[27,30] but sometimes improvements follow surgery immediately, even when patients are still severely obese.

Psychopathology

As to overall psychopathology, most studies report a general tendency for psychopathology to decrease and normalize following bariatric surgery.[10,14] These psychological and interpersonal improvements may be directly related to weight loss.[10,27] However, psychological improvements are also reported in patients who remained obese or as soon as a few weeks after surgery, when there was no substantial weight loss.[25] It is suggested that patients taking an active role in changing their lives, together with their hope and optimism, lead to psychological improvements, even while they are still overweight.[31,26]

On the other hand, some studies suggest that postoperative improvements lag behind the psychological functioning of norm groups, perhaps because most patients remain obese.[4,26] In addition, there are studies showing a decline of improvements over the years,[32] sometimes to pre-surgery levels,[13,33] even despite maintenance of reduced body weight. Further, there are some studies showing no substantial postoperative change in psychopathology.[9] Finally, there

are studies reporting moderate to severe psychological problems after surgery, even after adequate weight loss, such as hypersensitivity to criticism and difficulties in the expression of aggressive feelings.[34]

The same pattern as described above holds for depressive symptoms. Various studies report a postoperative decrease in depression to norm values, even after long follow-up periods.[14,30] However, other studies suggest that improvement in depressive symptoms lag behind the affective state of reference groups,[4] or wane with time.[33] And, again, some studies failed to find any differences between pre- and postoperative depressive symptoms.[9] Finally, some studies report patients dealing with depression and anxiety after surgery, and even patients attempting and committing suicide.[32,34] Postoperative depressive symptomatology appeared to be especially apparent in patients with greater weight loss.[24]

Although most studies are optimistic and report broad psychological improvements, a significant minority of patients do not benefit psychologically from surgery. Some studies even report that up to 40% of their patient group postoperatively had to deal with psychiatric disorders and that 25% reported seeing a mental health professional.[35] Postoperative psychological problems may reflect an increase of preexisting distress, or there may be an emergence or reemergence of symptoms.[36] Short-term improvement in psychological functioning, for instance in the first postoperative year, may decline in later years and return to a preoperative state.[37]

Various explanations are suggested for these, sometimes disappointing, findings. First, patients may find their weight stabilizing or they may begin to regain some weight. Secondly, it may be that initial improvements are in part due to positive comments and frequent clinic visits in the first period after surgery.[35,38] In addition, patients may be disappointed that their lives do not dramatically improve once they have lost weight, and that many of their pre-surgical problems persist, realizing that some underlying emotional problems were not related to weight.[37] Further, when the obesity problem is resolved, other problems may surface or patients have to deal with life problems that are faced by everyone;[35] moreover, patients may no longer be able to blame their obesity for their negative life-events. Finally, patients may have difficulties in adapting psychologically to the consequences of bariatric surgery, limitations as well as new possibilities, such as their changing shape and size,[39] and the positive attention they get.[9] In conclusion, bariatric surgery and the weight loss it induces do not appear to be panaceas for psychosocial problems.[40]

Body Image

Weight loss following bariatric surgery leads to marked improvements in body image and attractiveness, and in less shame,[34,41] especially in the first 6 months after surgery.[42] For some aspects, patients' scores came close to those of reference groups.[43] Also, patients' partners reported greater attractiveness of their spouses.[44] Because preoperatively the morbidly obese have a poor body image,[41] postoperative changes in body image appear to be one of the underlying factors for psychosocial improvement.[45]

However, although patients report improvement in their body image shortly after surgery, with time, some of them still feel overweight or are discontent with the increasing skin-folds.[41] In accordance with these last findings regarding skin surplus are studies reporting that patients who were satisfied with their appearance postoperatively had less weight loss than dissatisfied patients.[44] On the other hand, other studies suggest that patients who had lost more weight were more satisfied with their bodies.[46]

Eating Behavior

Postoperative dietary behavior is an important mediator of weight loss and post-surgical symptoms and, therefore, is critical in influencing outcome.[47]

Bariatric surgery, especially the restrictive part of it, decreases hunger and reduces the physical capacity for food. As a result, dietary changes are necessary and compliance with dietary advice is required, especially concerning amount and speed of food intake. Because these dietary changes are not completely facilitated, or forced, by the internal changes that result from the operation, patients have to put effort into adjusting their eating behavior. In fact, surgical treatment of obesity is not an alternative to dieting but a method to enforce dieting.[48]

Preoperatively, a substantial percentage of patients suffer from eating disturbances, such as binge eating, and report episodes of uncontrolled overeating.[49,50] Following surgery, especially in the first year, eating patterns normalize and binge eating decreases sig-

nificantly.[15,50] Patients report an increase in restrained eating and a decrease in external and emotional eating behavior.[31,15] In general, studies report a decrease in disinhibition and better, flexible, control over their eating behavior.[51] As a consequence, surgery may be viewed as a "therapeutic intervention" that removes binge eating symptoms.[14]

However, some patients fail to match their behavior to the clinical prescription,[52] and disturbed eating patterns can persist or re-emerge after surgery.[53] Patients may report recurrent disinhibition, loss of control over their eating, emotional overeating, eating calorie-dense soft or liquid foods, and bingeing.[52,54] Patients gradually find out which diet forms (solid, soft or liquid) and which types of food they tolerate, and may start experimenting. Although most patients report a decrease of disinhibition, after bariatric surgery it is still possible to eat compulsively, albeit that patterns may change somewhat due to the surgical procedure.[55] Because patients are not able to eat large quantities of solid food after surgery,[56] some shift their patterns from bingeing to "grazing" or consume large amounts of soft or liquid calorie-dense food.[53] In this way, they undo the effects of bariatric surgery, and this results in a greater intake of food and eventual weight gain.[52,55]

In general, about one-third of patients do not adhere to post-surgery treatment regimens.[29] It is suggested that these patients constitute a distinctive subgroup with a less favorable long-term outcome, including less weight loss or greater weight regain, and postoperative complications.[57] In addition, patients with postoperative binge eating problems have poor results in psychological and social functioning.[58] These patients appear to be psychologically unable to adjust to the internal changes, such as their small pouch and its consequences, and have difficulties in distinguishing between physical and emotional hunger.[55] As a result, they lose touch with normal body signals and may continue to eat beyond fullness.[55]

On the other hand, in other studies no relation has been found between postoperative disturbed eating and weight loss; weight loss and weight regain were about the same in patients with and without binge eating, provided there was adequate psychological support.[19] Further, there are conflicting results regarding the influence of type of diet (solid, soft or liquid) on weight loss. Whereas some studies suggest that the habituation to high-caloric soft food is the primary reason for excessive calorie intake and insufficient weight loss,[59] others suggest that type of diet is not associated with weight loss,[60] but rather the ingestion of sweets.[56]

For many patients, vomiting is a problem following restrictive surgery; it is the most frequent complication after restrictive operations and can reach a prevalence of about 70%.[56] On the contrary, other studies found that most of their patients never vomited, or did so only sporadically.[61] Contrary to vomiting in bulimia nervosa, after bariatric surgery patients may not vomit to control their weight, but rather (whether reflexive or self-induced) in response to intolerable foods,[62] and/or in response to non-compliance to a dietary regime, such as overeating or eating too fast.[63] As to the course of vomiting, there are conflicting results, too. Some studies report a decrease,[61] and suggest that vomiting can be resolved gradually by dietary arrangement.[47] Others, however, report vomiting in 43% of patients as late as 15 years postoperatively,[34] or report an increase after long follow-up periods.[63]

Interestingly, in the adaptation of eating patterns, vomiting plays an important role and it is suggested to be the main cause of both postoperative complications and poor weight loss.[61] The intolerance to solid food, according to some studies in more than 70% of their patients,[56] may lead frequent vomiters to eat high-caloric soft food, or patients may see vomiting as a way of avoiding consequences of their compulsive eating.[55] The result may be poor weight loss or weight regain. In the same perspective, the more difficult or aversive it is for patients to vomit, the better they are able to lose weight and to control their weight.[61] On the other hand, some studies found a higher frequency of vomiting among those patients who claimed satisfaction with surgery and suggest that frequent vomiters lose more weight.[38] Apparently the group of frequent vomiters is not homogenuous.[61]

In addition to vomiting, dumping syndrome is another undesirable postoperative event and can be triggered by a variety of causes, but most often it occurs as a result of the consumption of foods high in sugar. Dumping should inhibit patients from eating too much cakes, cookies, ice-cream, etc.;[62] however, whereas some studies suggest that after gastric bypass dumping occurs in 50% to 70% of patients,[64] others suggest that it may occur in less or only temporarily.[32]

Social Functioning

Following surgery, patients show better social functioning,[49] have better health-related social quality of life,[45] are more active socially,[33] have extended and improved social networks, including marriage,[44] show better sexual functioning,[38] get more social support,[44] and experience less stigmatization and discrimination.[65] In addition, more patients are employed,[63] their days of sick leave decrease,[4] and their careers improve.[49]

At this moment, it is unknown to what degree the increase in social activities and occupational opportunities is attributable to a decrease in stigmatization and discrimination; many other factors, such as improvements in self-esteem, psychological state, greater autonomy, and reduction of physical limitations may contribute as well.[16]

However, not all patients experience these improvements, and there may be negative outcomes as well.[16] Some studies report worsening of sexual problems,[66] with some patients divorcing, while others had begun dating and some had married.[67] Patients may have difficulty adjusting to the demands of increased social acceptance or dramatic changes in social circles.[32] They may find that changes in their lifestyle, such as increasing social contacts and changes in eating behavior, become incompatible with pre-surgical relationships.[16] Friends may react with envy or feel threatened by the patients' rapid weight loss, or social activities that revolve around food may become awkward. Finally, patients may feel resentment at their sudden social acceptance following weight loss.[16]

Health-Related Quality of Life

Because morbid obesity has a negative impact on health-related quality of life,[4] the ultimate goal of bariatric surgery is improved health-related quality of life through adequate weight loss and cure or amelioration of co-morbidities. As a consequence, divergent dimensions of quality of life have been widely accepted as important health outcomes after surgical intervention.[28,68]

In general, quality of life substantially improves following bariatric surgery,[50] especially within the first 2 postoperative years,[69] but also after long follow-up duration,[38] and even within 6 months[63] or as soon as 2-3 weeks after surgery.[70] Again, studies show mixed results.

While most studies suggest that health-related quality of life normalizes following bariatric surgery,[70,71] according to others, improvements lag behind quality of life of reference groups.[50] This may not be surprising, given that most patients are still obese.[58] Other studies suggest that improvements deteriorate after some years,[58,70] which may be caused by stabilizing or regaining weight, and/or the occurrence of disturbed eating patterns.[72] Still other studies found little or even negative effects in quality of life, mostly in the long term and even when there was adequate weight loss and other improvements.[38,45] Therefore, some authors strongly suggest a careful evaluation of long-term quality of life.[32]

Improvement in quality of life appears to be strongly related to weight loss;[28] however, this finding, too, is not supported by very early improvements, even after a few weeks when there can be no substantial weight loss.[70] In addition, some studies only found low correlations between short-term postoperative weight and quality of life.[45]

Also, quality of life seems to be closely related to the patient's level of satisfaction with the results of the operation, which in turn is closely related to patients' expectations.[40] Most patients report satisfaction with the surgery, with some studies reporting >90% satisfaction rates.[4,44] However, after some time a slight decline may occur, which can be explained by the slow-down of weight reduction or the occurrence of first complications.[31] It is important to note that some patients, up to 20%, are dissatisfied, partly due to psychosocial problems, surgical complications, and the surgery not meeting their expectations.[38,46]

Satisfaction, too, appears to be related to weight loss; patients who lost more weight were most satisfied.[38] However, almost all patients say that they would undergo the operation again;[56] they appear to achieve most of their goals, even though not all of them obtain their desired weight loss.[73]

Discussion

Following bariatric surgery, improvements are found in personality features, psychopathology, depressive symptoms, body image, eating behavior, social functioning, and health-related quality of life;

most improvements are seen in the first 1 or 2 years after surgery. However, studies show great variation in outcome, some studies suggesting that postoperative improvements may lag behind the psychosocial functioning of norm groups or may show a decline over the years. In addition, some studies have shown no significant changes or even worsening of psychosocial functioning. These patients may have difficulties in adjusting to the consequences of the surgery. Psychosocial improvements may be directly related to weight loss, but in some studies no relation has been found between postoperative psychosocial changes and weight loss. Furthermore, improvements may occur despite patients being still obese, or poor psychosocial results may be reported despite adequate weight loss.

In the light of these mixed results as well as findings that long-term effects of bariatric surgery are to a large extent mediated by psychosocial adjustment and compliance to adequate eating behaviors, frequent short-term and long-term psychological evaluation and support are recommended.[32,40] The identification and treatment of postoperative problems, such as disturbed eating, can be critical to promote successful outcome after bariatric surgery.[15] A problem, however, may be that patients' participation in psychological follow-up is much lower than that in postoperative follow-up visits for other specialists of the same bariatric team. There is evidence that patients who do not agree to follow-up respond more poorly than those who do agree to follow-up.[74,75]

The literature does not show a clear picture, in part due to methodological differences and limitations such as in definition and assessment of psychosocial functioning and quality of life.[76] Just like the necessity to reach consensus regarding the best operations for weight loss, concepts on psychosocial changes and change in quality of life, as well as consensus about assessment procedures, are badly needed. Although there are mixed results, the overall improvements in psychosocial functioning provide justification for the surgical treatment of morbid obesity.

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