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Research Article

Benefits and Risk of Metabolic Bariatric Surgery

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Abstract

Currently in obesity; an effective, low-risk and inexpensive treatment model has not been developed. our aim in this study is to reveal the beneficial and risky aspects of bariatric and metabolic surgery in the treatment of obesity. For this purpose, publications on obesity and metabolic surgery have been systematically reviewed in the literature, their effectiveness and weaknesses have been revealed. As a result, we think that etiological factors should be investigated from adolescent ages in obesity first and effective treatment methods should be applied accordingly.

Introduction

Obesity is a pandemic disease and one of the most important health problem in the World [1]. Surgical treatment has a very small place in obesity cases, which are millions of worldwide and increase day by day. In our study, the publications related to the studies performed on metabolic and bariatric surgery in the literature were systematically reviewed, indications, complications, surgical methods were evaluated, and suggestions were made on what to do in obese patients according to the results obtained.

Results and Discussion

Metabolic And Bariatric Surgery (MBS) is an expensive treatment method. In a study by Duble and his friends the costs were examined and an average of 14,389 USD (7423-33,541 USD) was found in MBS hospitals [2]. Most patients with MBS have important concomitant diseases such as cardiovascular diseases. For this reason, the indications for MBS should be carefully set and benefit/risk ratio should be carefully evaluated before surgery.

The most important physiological changes that occur after MBS are:

- Glucagon-like peptide (GLP-1) and peptide yy release increases. Accordingly, insulin production increases, glucagon decreases, appetite decreases.
- Ghrelin release increases. Accordingly, appetite decreases [3], MBS accelerate insulin sensitivity and secretion [4,5].

In a study by Franquest et al. patients had PET-CT after BMS and showed that glucose uptake increased in the jejunum, ascending colon and transfers colon [6]. According to the results of a study by Rubino and Cefalu ;in class II obesity with class III obesity (BMI> 40kg / m2), class II obesity (BMI = 35-39.9kg / m2) with Type 2 Diabetes Mellitus (T2DM), and BMI = 30- 34.9kg / m2 cases; had very good results, excellent Glycemic Control (GC) could be achieved and Cardiovascular Risk Factors (CVRF) could be reduced by MBS [7,8]. In a study by Lee et al.it was reported that MBS is a new atreatment method in mild obesity [9].

He also reported that determining the ABCD score before the operation was an important predictive factor in the success of the operation.He stated that knowing that ABCD score (patient's age, BMI, c-peptide level, how long the disease has been present) is an important predictive factor for the success of the operation. Fried reported that the most important indication criterion for MBS is T2 DM, which accompanies obesity [10]. Carwatto and Cordera stated that indications should be expanded more in the light of the developments occurring in the last 20 years in BMS [11,12]. Kizy et al.stated in a study that MBS indications were;BMI> 40, BMI = 35-39.9 and at least 1 comorbidity (hypertension, hyperlipidemia, obstructive sleep apnea, T2DM, nonalcoholic fatty liver disease (NAFLD), obesity-hypoventilation syndrome) cases [3] .

In a study carried out by Sapunar and his friends in Chile, the subgroup where MBS operations were performed most frequently was class I obese T2DM and also they reported that it should be

taken into consideration in factors other than weight while setting indications in these patients [13] .Taneppan et al. reported that BMS were also very effective in adolescents and BMI decreased by 8-28% within 3 years after the operation [14]. Zhang and his friends in a study reported that unlike classical bariatric surgery in MBS ;the main goal was to treat T2DM, reduce glycemia and prevent complications [15]. Schwarzt et al. reported that patients who are eligible for the operation can be identified more easily when Edmonton Obesity Staging System (EOSS) other than BMI is used while indicating MBS [16]. Pareek et al. have created an algorithm for indication in Metabolic Surgery (MS). According to this algorithm, primarily suggested non-invasive treatment methods (medical and lifestyle therapy) in T2DM patients do not have obesity (BMI <30, Asians <27.5). In patients with obesity (BMI> 40); they recommended direct MS without attempting medical treatment and healthy life style.They recommended optimal medical treatment and life style therapy in class II obese patients (BMI = 35-39.9). Nevertheless, if glycemic control was not sufficient, they suggested MS in these cases. In class I obesity (BMI = 30-34.9), they give the option of MS in patients who could not achieve glycemic control despite optimal healthy life style and medical treatment. If T2DM can be controlled with medical treatment and lifestyle therapy,they suggested continuing non-invasive treatment methods [17].

Campos, Silva, Kim, Du and Herrera are reported that they achieved high remission rates in patients undergoing Laparoscopic Roux-En-Y Gastric Bypass (LRYGB) operation [18-22]. According to the results obtained by Benois et al. in a large series of 932 cases, it was reported that anastomosis leakage was observed less than conventional operations in revision operations [23]. In a metaanalysis of Kizy; the most common operations are Vertical Sleeve Gastrectomy (VSG), RYGB, laparoscopic gastric bandage operations. LAGB, Biliopancretic Diversion (BPD) and Duodenal Switch (DS) surgeries were performed less frequently. He said that since complications such as postoperative hernia, postoperative stress and wound infection are less common, laparoscopic operations should be preferred. In terms of the effectiveness of the operations; VSG and RYGB results are similar; rapid weight loss in the first few months, the fall in BMI was between 72.3 - 76.6% in the first year,slowed down after 1 year,complete recovery after 5 years; it was reported that 5% in medical treatment, 23% in VSD, 29% in RYGB [3]. Seyfried et al. reported that intestinal bypass operations are more effective in patients with Tip2DM [24]. In a study by Dezfuli et al. subdiaphragmatic vagotomy and pyloroplasty were performed in obese mice due to melonocortin 4 receptor genetic deletion.Mice in the experimental group showed significant weight loss compared to the control group [25].

Vassallo et al performed laparoscopic pyloroplasty and partial vagotomy in one part of 256 patients, open pyloroplasty and partial vagotomy in some. Patients with a preoperative mean BMI of 45 decreased to an average of 30 within 1 year postoperatively. The resolution of hypertension was 73%, sleep apnea 94%, hyperlipidemia 93%, hyperuricemia 80%. In 53 patients with T2DM, only 4 of them (3 of them were oral and one of insulin) required medical treatment. There was no change in nutritional levels compared to preoperative (iron, folic acid, vitamin B12, calcium, total protein)levels. Only 2 cases had complications (stenosis and partial wound opening) 0.7%. The author reported that plyoroplasty and partial vagotomy were very effective, reliable and low complication rate in BMS [26]. Deitel et al. reported that mini gastric by-pass operations should be preferred because it is an effective method and the complication rates are low [27]. In addition, intragastric botox application as a noninvasive method gives successful results [28]. Since anatomic changes are much in RYGB operations, the risk of complications is slightly higher:small bowel obstruction (3-5%), stenosis (5-20%), internal hernia, dilatation in gastric remnant, anastomosis leak, marginal ulcer (15%), cholelithiasis, dumping syndrome (10%) can be seen. Complication rates in VSG are slightly lower (2-5%). Band erosion and sliding can be seen in LAGB [3].

After MBS operations, complications such as marginal ulceration, intestinal obstruction, reflux, nutritional disorders, and psychological disorders may occur. When complications cannot be controlled with noninvasive methods, the patient may need reoperation [29]. In a systematic analysis by Ma et al; the reoperations performed after MBS are divided into 3 categories: conversion, corrective and reversal operations [30]. He stated that reoperation indications should be set on a personal basis based on the quality of life. Systemic complications depending on general anesthesia and postoperative early complications depending on the type of surgery may occur in MBS. In operations performed under general anesthesia, the postoperative early complication rates increase by 14% every half hour as the operation time increases [31]. In a study by Sanvord et al., the duration of operation in MBS was increased in parallel with BMI (202-235 minutes) [32]. Also, in the postoperative late period, metabolic complications such as nutritional disorders, gallstones, cirrhosis can be seen [33]. Dixon and colleagues reported in a study that MBS can handle only a small part (1.9%) of the global burden of T2DM cases. For this reason, it has been reported that MBS should be integrated into clinical pathways [34]. Obesity is a serious disease with very high morbidity and mortality rate.Therefore, treatment should be started immediately before vital complications occur. Nowadays, success rates in MBS have increased considerably. However MBS should not be preferred primarily, because of serious complications may occur after these operations and due to high cost.

In obese patients, it should first be investigated whether there is a hormonal, genetic or psychological disorder from adolescent age. In case of the presence of such a disease, it should be treated. If environmental factors are the primary etiological factor in

obese patients, Multidimensional Periodic Wellness Programs (MPWP) should be applied. MPWP; is a physiological treatment program with low cost and without complications [35]. If these programs are applied at least 5 times and followed for a period of 5 years, despite the application of these programs, the result is unsuccessful; before serious complications related to obesity such as T2DM, hypertension, cardiovascular diseases occur; low complication rates such as pyloroplasty,MBS methods that are the least disruptive and effective should be applied. While performing MBS, priority should be given to laparoscopic procedures. In open operations, the risk of evantration and evisceration is high since intra-abdominal pressure is high due to obesity.

Conclusion

- In obese patients; genetic, psychological and hormonal factors should be investigated from adolescent age first.If there is such a disease, it should be treated.
- The etiological factor in obesity; environmental factors,
- the patient should be taken to MPWP. In cases where such a program is applied at least 5 times and there is no positive result despite at least 5 years of follow-up, BS should be performed to the patient before a concomitant disease occurs.
- BS method to be chosen should be; physiological, effective and
- with the lowest complication rate.
- Laparoscopic methods should be preferred to open surgeries.
- In cases where comorbid diseases such as T2DM and hypertension occur; the patient should be prepared for surgery very well before the operation, blood sugar and blood pressure should be regulated.

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