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Research Article

**BARIATRIC SURGERY: SLEEVE GASTRECTOMY VS  
GASTRIC BYPASS**Fahad saad almathkar<sup>1</sup>, Roaa Khalid Alghamdi<sup>2</sup>, Yahya Ahmed Yahya Hasan Jedar<sup>3</sup><sup>1</sup>Umm alqura university ,fahadsmack722@gmail.com<sup>2</sup>Ibn sina National college<sup>3</sup>Ibn Sina National college**Abstract:**

**Context:** The use of sleeve gastrectomy has become the first choice in most severe obesity cases instead of Roux-en-Y gastric bypass due to lower rates of complication. Additionally, sleeve gastrectomy does not involve an intestinal by-pass, and achieves about 70% resection of the vertical stomach. Several studies have found that levels of weight loss following sleeve gastrectomy were comparable to bypass procedures.

**Aim of work:**

We will discuss the types of bariatric surgeries, their indication, and complications. We will also try to compare sleeve gastrectomy to gastric bypass.

**Methodology:**

We conducted a systematic comprehensive search in literature review using Medline, Pubmed, and Embase from January 1997 to March 2018. We used the search terms: bariatric surgery, sleeve gastrectomy, gastric bypass, complications of bariatric surgery, success rate of bariatric surgery

**Conclusions:** Bariatric surgeries are considered to be the most effective methods in decreasing weight and treating morbid obesity. However, they require high motivation from the individual as they require significant post-operative lifestyle changes in order to achieve satisfactory outcomes. The method of choice in bariatric surgery is laparoscopic Roux-en-Y gastric bypass, especially in extremely obese individuals, as it is associated with best weight loss. Other options include sleeve gastrectomy, which has great outcomes. However, no data is available on its long-term complications and outcomes. More studies should be done to provide a clearer picture of long term outcomes of both kinds of procedures.

**Keywords:** bariatric surgery, sleeve gastrectomy, gastric bypass

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**INTRODUCTION:**

The use of bariatric surgeries has significantly improved over the last years. For example, the use of sleeve gastrectomy has become the first choice in most severe obesity cases instead of Roux-en-Y gastric bypass. The reasons behind this change that favored sleeve gastrectomy include the less complexity of sleeve gastrectomy when compared to Roux-en-Y gastric bypass. In addition, sleeve gastrectomy does not involve an intestinal bypass, and achieves about 70% resection of the vertical stomach. Moreover, most studies have found that levels of weight loss following sleeve gastrectomy were comparable to bypass procedures, with significantly less rates of complications<sup>1</sup>. However, several issues remain concerning regarding this procedure. These include the long-term complications of sleeve gastrectomy in comparison to Roux-en-Y gastric bypass.

**METHODOLOGY:**

We did a systematic search for advantages and disadvantages of Sleeve Gastrectomy or Gastric Bypass using PubMed search engine (<http://www.ncbi.nlm.nih.gov/>), EMBSE, and Google Scholar search engine (<https://scholar.google.com>) from January 1997 to March 2018. All relevant studies were retrieved and discussed. We only included full articles. The following search terms were used: bariatric surgery, sleeve gastrectomy, gastric bypass, complications of bariatric surgery, success rate of bariatric surgery

**Data Extraction:**

Two reviewers had independently reviewed the studies, abstracted data and disagreement were resolved by consensus. Studies were evaluated for quality and a review protocol was followed throughout.

**Response to Bariatric Surgery**

The response of patients towards bariatric procedures can be different between patients. Most patients who undergo a bariatric surgery will alter their nutritional intake to decrease the intake of beef meat and vegetables. The reason behind this is that these types of food are usually harder to chew and swallow. Moreover, they can be stuck in the new narrow digestive tract leading to gastric outlet obstruction. Following the intake of sweets, some patients can have 'dumping' symptoms. In addition, following bariatric surgery most patients can get drunk on a significantly lower threshold of alcohol than normal individuals. Therefore, most of them decrease their intake of alcohol. Some other changes in diet are usually followed by patients due to changes in their

preferences following the surgery [2].

Weight loss following a bariatric surgery can be affected by several factors including sex, age, ethnicity, level of education, body mass index, marital status, and physical activity. Generally, the highest loss in weight is found in women, young individuals, whites, and active people who will commit to a strict exercise schedule. Individuals who also modify their diet to include recommended supplementation will show favorable outcomes when compared with individuals who do not [3].

Many studies have been conducted to compare outcomes of closed versus open surgical approaches in bariatric surgeries and found no significant differences regarding loss of weight [4]. However, approaches with minimal invasion have been found to be associated with faster recovery time. The maximal loss of weight is usually obtained two years after the surgery, with some patients regaining about 5% or 7% of weight later [5].

**Pros and Cons of Bariatric Surgery**

As we previously mentioned, bariatric surgical procedures can be associated with significant improvements in the quality of life of the patient due to the resulting loss of weight. Moreover, it is associated with significant reductions in the risk of later comorbidities. However, they are still associated with some disadvantages that limit their use in many patients. In this section we will discuss these disadvantages and weigh them against the advantages of bariatric surgical procedures.

When considering resources, not enough surgeons are available to perform bariatric surgeries for the huge number of candidates to the procedures. Most available surgeons do not have sufficient experience to perform these specific surgeries. In addition, the presence of certain factors in patients will make things more complicated and can even make patients not qualify to undergo the surgery. Examples of this include patients who have binge eating disorder, who will not likely still have binge eating episodes even after the surgery, resulting in unsatisfactory outcomes. The presence of psychological problems, like depression, can also affect outcomes of the surgery leading to insufficient weight loss [6,7]. We can say that best outcomes following bariatric surgeries are usually found in patients who actively change their lifestyles, nutritional intake, and activity [8].

Many concerns are currently present on the long-term outcomes of bariatric surgical operations. Reasons of this include the absence of long-term studies on this

kind of surgery, and the relatively young age of candidates making them likely to have long life expectancies following the surgery. Some reports have recorded several adverse events and complications following different bariatric surgery procedures. These complications include cholelithiasis, complications related to the band, strictures of anastomoses, anastomotic leaks, obstruction of the bowels, the need for another surgery, the development of gastrointestinal bleeding, overgrowth of bacteria in the small intestines, other symptoms along the digestive tract, steatorrhea, proteins deficiency, deficiencies in vitamins and other micronutrients, along with many other long-term consequences [9,10]. The development of these long-term consequences, which are mostly nutritional and metabolic, will need a lifelong follow up and supplementation of deficient nutrients [11].

### Laparoscopic Roux-en-Y gastric bypass

The Roux-en-Y gastric bypass approach is considered to be the most common bariatric surgery performed in the US. In Roux-en-Y gastric bypass, the surgeon will create a 30-cc pouch in the proximal site by segmenting the stomach with division (or staple in some cases). This proximal pouch will be set to drain with the Roux-en-Y that is performed through division of the proximal jejunum. This occurs down to the Ligament of Teritz and will bring the distal part, which will create a one-centimeter gastroenterostomy.

One significant limitation of this procedure is the variation of its performance among different surgeons, who use different sizes of pouches, different measurements of the gastrojejunostomies, and different lengths of the Y limbs. However, there is a recent trend to standardize the procedure between surgeons [3].

For many surgeons, the best bariatric surgical approach is laparoscopic Roux-en-Y gastric bypass. The efficacy of this surgery is achieved simply by three steps:

1. Restriction of nutritional intake.
2. The development of a selective malabsorption.
3. The previous two points will result in developing dumping syndrome

Dumping syndrome resulting from the procedure will obligate patients to decrease certain foods including sugars. This procedure has been proven effective in long-term studies that continued for about twenty years [12].

It is estimated that more than 85% of patients who

undergo laparoscopic Roux-en-Y gastric bypass will lose about 65% of their weight. Rates of mortality following this surgery are as low as 0.5%. However, up to 5% of patients can develop serious complications. Long-term complications following laparoscopic Roux-en-Y gastric bypass include the malabsorption of fats and the development of deficiencies of proteins, vitamins, and minerals. However, these complications are usually mild, and easily treated orally. Although laparoscopic Roux-en-Y gastric bypass surgery is considered a surgery with high success rates regarding weight loss, it is still considered a complex surgery that requires advanced surgical skills. Moreover, it is associated with up to 15% failure rate when surgeons are not experienced enough [13].

### Laparoscopic vertical sleeve gastrectomy

The use of laparoscopic vertical sleeve gastrectomy was started as a primary stage of biliopancreatic diversion in extremely obese patients or patients with high risk of developing complications [14]. Some studies then reported that laparoscopic vertical sleeve gastrectomy was associated with significant weight loss with the absence of malabsorption. Therefore, this procedure gained more popularity recently, and has been performed by many surgeons instead of the bypass and other bariatric surgeries. However, no evidence on the long-term outcomes and complications of this surgery is currently present. This is because this surgery is relatively new with not many studies conducted on it. Current data are, however, promising and suggest that it has a safety profile that is similar to laparoscopic Roux-en-Y gastric bypass and other bariatric procedures [15].

The absence of long-term evidence on the consequences of this procedure limits its use especially in older patients. Current guidelines recommend against the use of this surgery until well-controlled trials are conducted on it.

### Choice of Operation

There are many factors that impact the decision of which bariatric surgery to perform. These include the experience of the surgeon, the weight of the patient, patient's comorbidities, and the reliability of the patient along with their ability to comply with lifestyle changes. Generally, the experience of the surgeon can bias the selection of the procedure.

The development of significant proteins, vitamins, and mineral deficiencies is more likely following a Roux-en-Y gastric bypass when compared to sleeve gastrectomy. However, it is still considered to lead to better outcomes regarding weight loss. Therefore,

when dealing with extremely obese patients, Roux-en-Y gastric bypass is still considered preferred than sleeve gastrectomy. Roux-en-Y gastric bypass is also considered a better option in patients who have high sweets intake, as it will force them to decrease this intake due to the resulting dumping syndrome. In patients with a body mass index that is higher than 50 kg/m<sup>2</sup>, biliopancreatic diversion is usually performed [16].

#### Complications

Following different bariatric surgery approaches, mortality rates are considered insignificant. However, both short-term and long-term complications can still occur [17,18]. Complications can vary between different surgeries due to different techniques used in each surgery. Most common complications are those related to deficiencies of proteins, vitamins, and minerals<sup>19</sup>. Internal hernias can occur following the surgeries but are less common [20].

#### CONCLUSION:

Currently, bariatric surgeries are considered to be the most effective methods in decreasing weight and treating morbid obesity. However, they require high motivation from the individual as they require significant post-operative lifestyle changes in order to achieve satisfactory outcomes. Obese patients who could not lose weight and who are at risk of developing long-term complications are considered to most important candidates for bariatric surgery. The method of choice in bariatric surgery is laparoscopic Roux-en-Y gastric bypass, especially in extremely obese individuals, as it is associated with best weight loss. Other options include sleeve gastrectomy, which has great outcomes. However, no data is available on its long-term complications and outcomes.

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