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Research title

Weight reduction comparison between sleeve gastrectomy and mini-gastric bypass surgery

A THESIS
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Dedication

To my beloved parents, who were there for me
With their support and encouragement,
I dedicate this work to all their loving tears and beautiful smiles.

To all my respectable teachers,
Who enlightened me with their knowledge and understanding

To all my fellow students, friends, and colleagues
For their unconditional Support and love.

To all patients out there, hoping this little work will do something to help them more in their sufferings.

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Abstract

Background: obesity is a multifactorial metabolic disorder with the incidence of obese among adults even reaches up to 34.9. The most effective therapy to treat obese and related co-morbidities is bariatric surgery, in which Roux-en-Y gastric bypass (RYGBP) and sleeve gastrectomy (SG) are two most popular procedures.

Aim of the study: To compare between sleeve gastrectomy and gastric bypass surgery in term of weight reduction.

Patients and methods: A cross-sectional analytic study involving 30 patients with extreme obesity including patients diagnosed by physician to had sleeve gastrectomy or gastric bypass operation taken from IFSO Global registry 2019.

Results: During the study period, 30 patients underwent bariatric surgery, they were 8 males (26.7%) and 22 females (73.3%) with male: female ratio of 1:2.75, underwent bariatric surgery with sleeve gastrectomy being more common than gastric bypass, as comparison between them 38% weight reduction of total body BMI, with 75% BMI reduction of excess body BMI in gastric bypass surgery, while 29.1% BMI reduction of total body BMI & 60.6% BMI reduction of excess body BMI in sleeve gastrectomy

Conclusion: Weight reduction surgeries with sleeve gastrectomy being more common, while gastric bypass achieving more weight reduction in comparison to sleeve gastrectomy, especially in super-obese patients.

Key words: Obesity, Bariatric surgery, sleeve gastrectomy, gastric bypass

Chapter One

Introduction

Introduction

More and more people suffer from morbid obesity because of the increased living standard and decreased physical exercise in the past several decades.

As obesity is a multifactorial metabolic disorder which essentially manifests itself as a surplus of unexpended energy stored as fat, genetic predisposition, eating disorders, psychological issues, poor diet, lack of exercise and comorbid conditions predisposing to obesity.

According to a recent report based on USA population, the incidence of obese among adults even reaches up to 34.9%. [1] Between 1980 and 2008, the mean global body mass index (BMI) was increasing by 0.4–0.5 kg/m^2 per decade for both men and women. [2] Obesity and related comorbidities reduce life expectancy [3] and add economic burden, [4] which highlights the significance of bariatrics.

The most effective therapy to treat obese and related comorbidities is bariatric surgery, in which Roux-en-Y gastric bypass (RYGBP) and sleeve gastrectomy (SG) are two most popular procedures [5,6].

Introduced by D.W. Hess et al in 1988 as part of the biliopancreatic diversion, [7,8] sleeve gastrectomy is one of the most popular procedures (37%) in the world. [9]

Sleeve gastrectomy is a surgical weight-loss procedure in which the stomach is reduced to about 15% of its original size, by surgical removal of a large portion of the stomach along the greater curvature. The result is a sleeve or tube-like structure. The procedure permanently reduces the size of the stomach, although there could be some dilatation of the stomach later on in life. The procedure is generally performed laparoscopically and is irreversible.

sleeve gastrectomy is a technically less complex procedure with short learning curve and effective weight loss, [8] but it suffers from two outstanding disadvantages including high risk of weight regain and gastroesophageal reflux disease (GERD). [10,11]

The mini gastric bypass procedure was first developed by Robert Rutledge from the US in 1997, as a modification of the standard Billroth II procedure. A mini gastric bypass creates a long narrow tube of the stomach along its right border (the lesser curvature). A loop of the small gut is brought up and hooked to this tube at about 180 cm from the start of the intestine

Numerous studies show that the loop reconstruction (Billroth II gastrojejunostomy) works more safely when placed low on the stomach but can be a disaster when placed adjacent to the esophagus.

Today thousands of "loops" are used for surgical procedures to treat gastric problems such as ulcers, stomach cancer, and injury to the stomach. The mini gastric bypass uses the low set loop reconstruction and thus has rare chances of bile reflux.

The MGB has been suggested as an alternative to the Roux en-Y procedure due to the simplicity of its construction and is becoming more and more popular because of low risk of complications and good sustained weight loss. It has been estimated that 15.4% of weight loss surgery in Asia is now performed via the MGB technique. [12]

Mini-gastric bypass (MGB), also known as single anastomosis gastric bypass or omega gastric bypass, is a newly emerged procedure originated from Rutledge. [13] Due to safe and simple process as well as effective outcomes, Mini-gastric bypass has quickly become one of the most popular procedures in many countries. [14,15]

Despite of popular status, the extension of Mini-gastric bypass is still limited by some concerns such as gastric and esophageal bile reflux, marginal ulcer, poor follow-up, and remnant gastric cancer. [16]

During the past decade, many observational studies have proved the considerable short-term and long-term outcomes of Mini-gastric bypass, [17,18] but comparative studies between Mini-gastric bypass and sleeve gastrectomy are still scarce.

For this reason, we conducted a comparison to help the surgeon make a better selection between Mini-gastric bypass and sleeve gastrectomy.

Aim

To compare between sleeve gastrectomy and mini- gastric bypass surgery in term of weight reduction.

Chapter Two

Patients and method

Patients and methods

Design:
Through the period extending from October 2018 to April 2019. IFSO Global registry 2019 based cross sectional study.

Method:
A total of (30) patients were reviewed with extreme obesity including patients diagnosed by physician to had sleeve gastrectomy or gastric bypass operation we collected information about the patient's (age, gender, weight before surgery, and weight after surgery)

Exclusion criteria:
- Patients refuse submit for the research
- Patients lost to follow-up

Statistical analysis
These findings were analyzed and tabulated using Microsoft Excel software (2016 version) and SPSS software version 23 (SPSS Inc., USA). Represented in the form of tables and charts.

Chapter Three

Results

Results

During the study period, 30 patients underwent bariatric surgery, they were 8 males (26.7%) and 22 females (73.3%) with male: female ratio of 1:2.75 as shown in fig.1. Their ages range 16-57 years with mean age of 37 years as shown in fig.2.

Table (1) Gender distribution

Gender	Frequency	Percent
Male	8	26.7
Female	22	73.3
Total	30	100.0

Table (2) Age groups distribution

Age groups	Frequency	Percent
10-19	1	3.3
20-29	7	23.3
30-39	13	43.3
40-49	4	13.3
50-59	5	16.7
Total	30	100.0

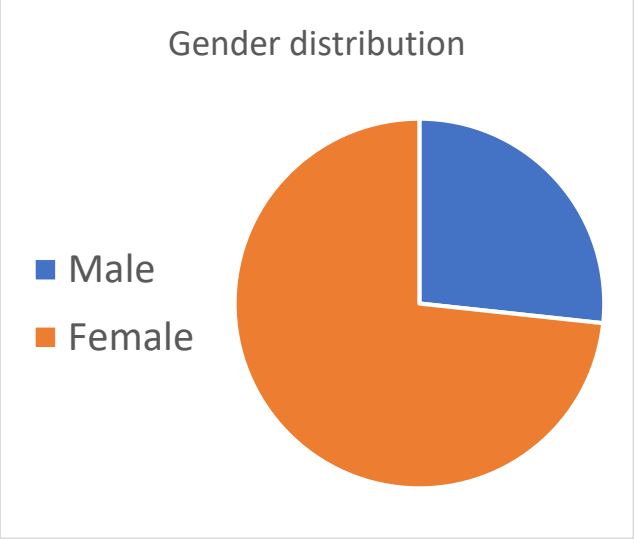

Figure (1) Gender distribution

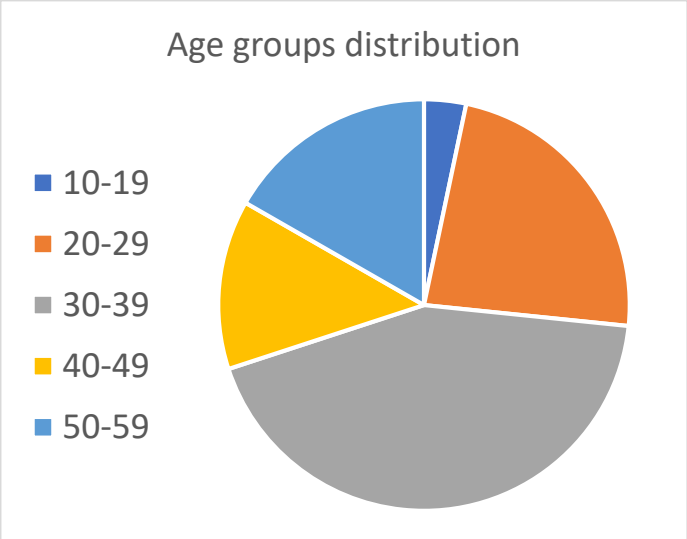

Figure (2) Age groups distribution

Of 30 patients involved in this study, 14 (46.7%) underwent Gastric bypass surgery, while 16 (53.3%) underwent sleeve gastrectomy, as shown in figure 3.

Table (3) Distribution of surgical interventions

Type of Surgery	Frequency	Percent
OAGB / MGB	14	46.7
Sleeve gastrectomy	16	53.3
Total	30	100.0

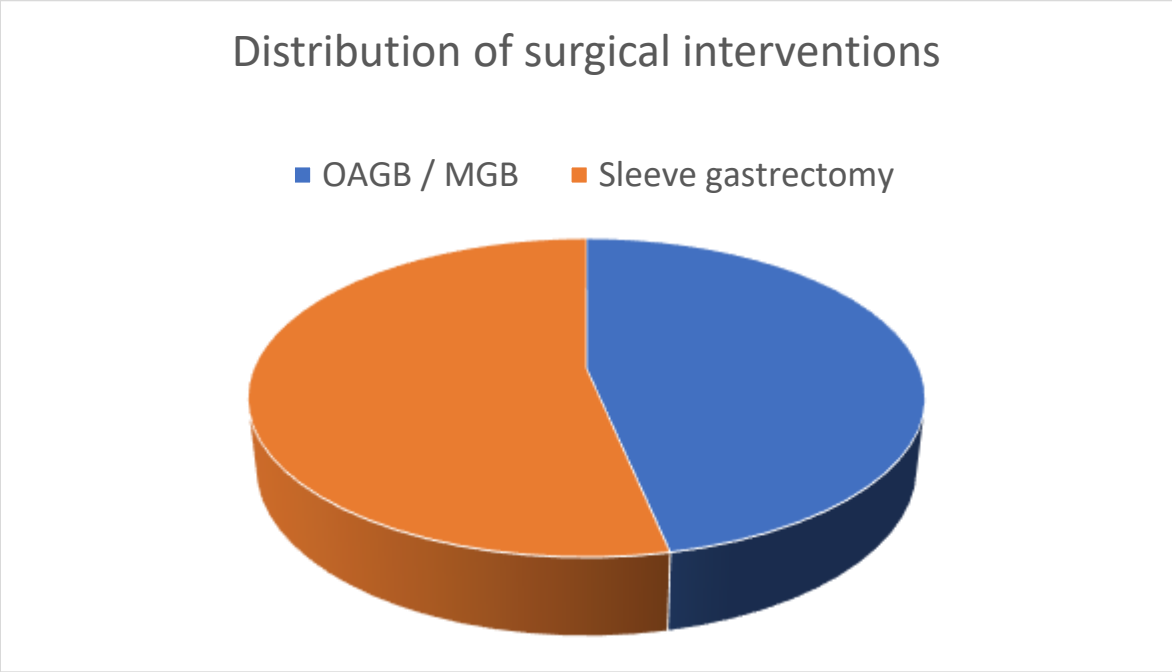

Figure (3) Distribution of surgical interventions

In this study, weight reduction comparison between gastric bypass and sleeve gastrectomy in term of BMI statistics, as shown in table (4, 5), we found that there

was 38% weight reduction of total body BMI, with 75% BMI reduction of excess body BMI in gastric bypass surgery, while 29.1% BMI reduction of total body BMI & 60.6% BMI reduction of excess body BMI in sleeve gastrectomy, as shown in fig. 4

Table (4) gastric bypass surgery – weight reduction statistics

	BMI **(Mean)**	BMI Excess **(Mean)**
At Surgery	50.4	25.4
After Surgery	31.3	6.3
Loss Percentage	38% weight reduction of total body BMI	75% weight reduction of excess body BMI

Table (5) Sleeve gastrectomy – weight reduction statistics

	BMI **(Mean)**	BMI Excess **(Mean)**
At Surgery	48.1	23.1
After Surgery	34.1	9.1
Loss Percentage	29.1% weight reduction of total body BMI	60.6% weight reduction of excess body BMI

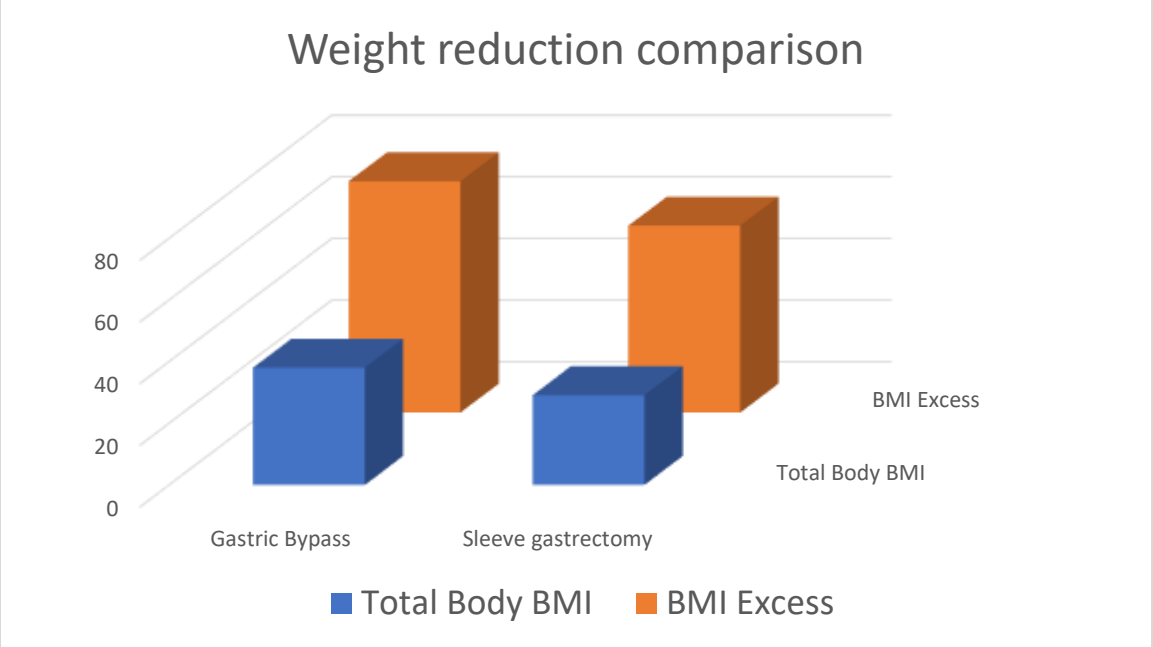

Figure (4) - weight reduction comparison between gastric bypass and sleeve gastrectomy

Chapter Four

Discussion

Discussion

LSG has been a popular weight loss surgical option due to its technical ease and patient preference [19, 20]. It was initially proposed as a part of a staged procedure in high-risk patients including super obese patients to reduce the risk of complications and mortality [21]. It has been seen that operating in super obese patients is technically difficult due to the large liver size and decreased working space. LSG is easier to perform in these patients as compared to laparoscopic Roux en Y gastric bypass (LRYGB) [22]. However, the question remains regarding the long-term durability of weight loss following sleeve gastrectomy [23-25]. OAGB has also been found to be a technically easier procedure in super obese patients [26]. Studies have shown similar or even better weight loss following OAGB as compared to LRYGB [27–29]. OAGB is comparable to RYGB in regards to weight loss with a less complex procedure as seen in a systemic review [30].

30 patients underwent bariatric surgery, more commonly females (73.3%) with male: female ratio of 1:2.75 with mean age of 37 years as found during this study, which was similar to these reported by Vitish et al [31]

In this study, 16 patients (53.3%) underwent LSG, while 14 patients (46.7%) underwent OAGB, leads to LSG being more common than OAGB. These findings correlate approximately with Park et al. [32]

In patients who underwent LSG, the mean TWL% at 1 year was 29%, while it was 38% in patients undergoing OAGB. The EWL% at 1 year was also better in the OAGB group, our results were also similar to those reported by Vitish et al [31]

Chapter Five

Conclusion

Conclusion

Weight reduction surgeries with sleeve gastrectomy being more common, while gastric bypass achieving more weight reduction in comparison to sleeve gastrectomy, especially in super-obese patients.

Recommendation

Recommendation

- Extending the study period to include more patients and expand the study
- Further studies regarding the preference of choice in these two methods

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