

## LAPAROSCOPIC SLEEVE GASTRECTOMY WITH LOOP BIPARTITION MORE PHYSIOLOGICAL TECHNIQUE: ONE YEAR EXPERIENCE

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### ABSTRACT:

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**Background:** Overweight and obesity were estimated to cause 3.4 million deaths, 3.9% of years of life lost, and 3.8% of disability-adjusted life-years (DALYs) worldwide. Bariatric surgery is the most effective modality for long-term weight loss and for resolving the associated comorbidities. However, controversies exist regarding the ideal weight loss metabolic procedure. This allowed continuous search for new techniques.

**Aim of the work:** to evaluate short-term outcomes and associated complications of laparoscopic sleeve gastrectomy with loop bipartition.

**Patients and Methods:** The present study was conducted on fifteen patients who met the National Institute of Health criteria for bariatric surgery. These patients were enrolled in a prospective study at Ain-Shams University Hospitals from December 2015 to May 2017) and they underwent laparoscopic sleeve gastrectomy with loop bipartition. Preoperative work up included full history, full clinical examination, abdominal ultrasonography, biochemical labs. Procedure was performed by laparoscopic approach.

**Results:** excess weight loss percentage at 6 months, 12 months respectively was 67%, 92%. This results were very comparable to mahdy et al. and santoro et al. Sleeve gastrectomy with loop bipartition comorbidities related outcomes were complete remission of 66% in T2DM, 71% in HTN, 100% others comorbidities and another studies for bipartition reached more than 90% in T2DM, 80% in HTN, 85% others comorbidities. In our study we recorded that Sleeve gastrectomy with loop bipartition has strong impact on resolution of comorbidities in comparison with BPD, DS, RYGB.

**Conclusion:** Sleeve gastrectomy with loop bipartition is a new promising procedure that based on a new paradigm of helping GI facing and adapting to the modern diet without adding new morbidities with precise adjusting of the neurohormonal aspects. Preliminary results points to potent simple safe procedure in treating obesity and metabolic syndrome.

**Key words:** Laparoscopic sleeve gastrectomy, loop bipartition, physiological technique

### INTRODUCTION:

Overweight and obesity were estimated to cause 3.4 million deaths, 3.9% of years of life

lost, and 3.8% of disability-adjusted life-years (DALYs) worldwide<sup>(1)</sup>.

Bariatric surgery is the most effective modality for long-term weight loss and for

resolving the associated comorbidities. However, controversies exist regarding the ideal weight loss metabolic procedure. This allowed continuous search for new techniques<sup>(2)</sup>.

The American College of Surgeons Bariatric Surgery Center Network has put laparoscopic sleeve gastrectomy (LSG) in the intermediate position between laparoscopic gastric banding and laparoscopic gastric bypass in term of reduction of BMI, complication rates and resolution of obesity related illness<sup>(3)</sup>.

Several randomized trials also demonstrated that LSG has a similar efficacy of weight reduction comparing to Roux-en-Y gastric bypass (RYGB) at short- to mid-term outcomes<sup>(4)</sup>.

Decrease of large parts of the ghrelin-producing stomach mass may account for its superiority to other gastric restrictive procedures in terms of weight loss and loss of sensation of hunger. Ghrelin is an orexigenic hormone whose plasmatic concentration regulates hunger and food intake<sup>(5)</sup>.

The acceptance of LSG is especially high in Asia because of the concern of remnant gastric cancer<sup>(6)</sup>.

LSG has now consisted more than 50% of the bariatric surgery in Asia and more than 70% in Japan where gastric cancer is the leading cancer death<sup>(7)</sup>.

However, the main long-term drawback of LSG is the development of gastro-esophageal reflux disease (GERD) in around 15% of the patients<sup>(8)</sup>.

This remains to be an important issue of LSG<sup>(9)</sup>.

The culprit of developing DM and obesity are associated with the imbalance of foregut and hindgut alimentation (hyperalimentation of foregut and hypoalimentation of hindgut) due to over ingestion of high-calorie, high-glycaemic index diet in modern society<sup>(10)</sup>.

All current metabolic procedures such as gastric bypass, duodenal switch (DS) and ileum interposition address and reverse this imbalance and their principles are based on the foregut or hindgut theory or the combination of both<sup>(11)</sup>.

Santoro et al. has recently reported his long-term data regarding sleeve gastrectomy with transit bipartition (SG + TB), which is a similar operation to DS but without complete exclusion of duodenum in order to minimize nutritional complications<sup>(12)</sup>.

Mui et al. modified the operation by performing a loop rather than Roux-en-Y bipartition reconstruction in Santoro's operation<sup>(11)</sup>.

Absence of prostheses or excluded segments, full endoscopic access, easy feasibility, completely reversible and associated with a metabolic corrective intervention in the context of adverse dietetic environments; all bring benefits to patients<sup>(13)</sup>.

There is a theoretical benefit by adding this step to sleeve gastrectomy to decrease the stomach tube pressure. This may potentially minimize the staple line leakage rate and development of GERD in SG<sup>(11)</sup>.

This anastomosis (gastroileal anastomosis) should be the most robust and safest as compared to other procedures with minimal tension. Moreover, gastrografen imaging showed that the preferential contrast passage through the anastomosis obviates the need for duodenal transection and without division of duodenum, it completely eliminates the possibility of duodenal stump leakage, which can be troublesome in single anastomosis duodenoileal bypass (SADI), duodenojejunal bypass (DJB) or duodenal switch (DS)<sup>(11)</sup>.

Sleeve gastrectomy with loop bipartition may be proven to be a very effective, safe and simple operation with numerous theoretical advantages over the current procedures for the treatment of obesity and diabetes<sup>(11)</sup>.

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### **AIM OF THE WORK:**

The aim of this prospective study is to evaluate short-term outcomes and associated complications of laparoscopic sleeve gastrectomy with loop bipartition.

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### **PATIENTS AND METHODS:**

Our study was conducted on fifteen patients who met the National Institute of Health criteria for bariatric surgery. These patients were enrolled in a prospective study at Ain-Shams University Hospitals from December 2015 to May 2017) and they underwent laparoscopic sleeve gastrectomy with loop bipartition. A comprehensive assessment program was carefully structured so that a disciplined routine is followed in each patient. All patients were preoperatively evaluated with provision of extensive information.

The study included patients aged 20-45 years with BMI 35–40 kg/m<sup>2</sup> accompanied by comorbidities or above 40 kg/m<sup>2</sup> and failure of nonoperative treatment for one year. While patients with previous bariatric or gastric surgery, BMI > 50 kg/m<sup>2</sup>, active gastric ulcer disease, family history of upper GI malignancy or familial malignancies syndromes, non stabilized psychotic disorders, severe depression and personality disorders unless specifically advised by a psychiatrist experienced in obesity and alcohol abuse and/or drug dependencies were excluded from the study.

The documented preoperative, operative and postoperative follow up data for all patients were collected and reviewed and the outcome of surgery was evaluated.

Patients were subjected to preoperative assessment which included age and gender; full clinical assessment: full medical history and full clinical examination including BMI; full laboratory investigations:

Patient was described as diabetic if fasting blood sugar was 126 mg/dl or above or two hours postprandial blood sugar was 200 mg/dl or above or random blood sugar was 200 mg/dl or above, pulmonary function test, radiological imaging: Plain X-Ray chest and abdominal ultrasonography.

Each patient was routinely thoroughly evaluated by a multidisciplinary team (nutritionist, endocrinologist, psychologist, and surgeon) using a standardized protocol. All cases will be operated by consultant surgeon and according to the standardized technique described by Mui et al.<sup>(14)</sup>.

Surgeries were done by the same surgical team throughout the study. As part of their preparation, sleeve gastrectomy with loop bipartition was described to the candidates for surgery and the surgical procedure was reviewed with them in details with the possibility of conversion to open surgery and all the possible intraoperative, early and late postoperative complications.

Patients fulfilling the criteria of being surgery candidates signed a written consent for the operation as well as a consent for agreement to participate in this study. All the patients were subjected to sleeve gastrectomy with loop bipartition.

### **Procedure:**

Preoperative medications: two grams of 3<sup>rd</sup> generation cephalosporin antibiotic, H<sub>2</sub>-blocker, anti-emetic, deep vein thrombosis prophylaxis started 12h before surgery with low molecular weight heparin subcutaneous injections.

### **Operative technique:**

The patient was in French position. The first part of the operation is performed on the operating table under forced anti-Trendelenburg position and the surgeon positioned between the legs of the patient.

The procedure started using Excel 12-mm optical trocar (Ethicon, USA) to enter the abdomen under direct vision about 20 cm

below the xiphoid process and 3 cm to the left side of the midline. Pneumoperitoneum was achieved with carbon dioxide at 15 mmHg. Four additional ports were placed under direct vision, the same sites as in sleeve gastrectomy.

The technique commences with the devascularization of the greater curvature of the stomach with the harmonic scalpel (Ultracision, Ethicon Endo-Surgery, Inc., Johnson & Johnson). The dissection then continued toward the gastroesophageal junction. The left cru was then completely freed of any attachments to avoid leaving a posterior pouch when constructing the sleeve in this region. Posterior attachments between the stomach and pancreas were then divided.

The stomach is then tabularized over a 36 French calibration tube, with a linear stapler (Echelon 60, Ethicon Endo-Surgery, Inc., Johnson & Johnson) charged with a green cartridge, commencing 6 cm proximal to the pylorus.

Then, the table is changed to the horizontal position and the surgeon moves to the left-hand side of the patient to perform the second part of the operation. The ileocecal junction is identified and 250 cm is measured upwards. The selected loop is ascended a without division of the greater omentum, and a stapled isoperistaltic side-to-side to the anterior wall of the antrum of the stomach just 6 cm away from the pylorus with a linear stapler charged with a green cartridge, the diameter of ileal antrum anastomosis is not exceeding 3 cm in diameter to be not dependent.

The staple defect is closed with a single layer running 3/0 absorbable suture. The transected stomach was then removed

#### **Preoperative data included:**

Age, gender, initial weight, initial body mass index (BMI), excess body weight, obesity comorbidities and treatment medications used (chest problems, diabetes, arterial hypertension and cardiac ischemia, hyperlipidemia, obstructive sleep apnea syndrome (OSAS), gallstones, urinary stress incontinence, joint pain, depression, infertility and heartburn).

#### **Operative data included:**

Operating time, intraoperative complications (bleeding, splenic injury, esophageal injury, liver tears and specimen retrieval problems) and stapler malfunction.

#### **Postoperative data included:**

Excess weight loss%, BMI, hospital stay, early postoperative complications during the first month (e.g. fever, collection, bleeding, vomiting, leak and port site problems. complications more than 1 month after surgery as vomiting, reflux, stricture, intestinal obstruction, hypoalbuminemia, anemia were collected.

#### **Statistical analysis:**

Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA). Quantitative data were expressed as mean $\pm$  standard deviation (SD). Qualitative data were expressed as frequency and percentage.

**The following tests were done:** Chi-square ( $\chi^2$ ) test of significance was used in order to compare proportions between qualitative parameters. Paired sample t-test of significance was used when comparing between related sample. The confidence interval was set to 95% and the margin of error accepted was set to 5%. P-value  $\leq 0.05$  was considered significant.

**RESULTS:**

Table (1): Distribution of cases of laparoscopic sleeve gastrectomy with loop bipartition according to their demographic data regarding Gender, Age (Years), Weight (Kg), Height (Cm), BMI (Kg/m<sup>2</sup>) and Excess weight (Kg) (n=15).

Demographic data	Total (n=15)
<b>Gender</b>	
Female	10 (66.7%)
Male	5 (33.3%)
<b>Age (Years)</b>	
Range	24-42
Mean±SD	[32.80±5.78]
<b>Weight (Kg)</b>	
Range	93-162
Mean±SD	[124.80±20.10]
<b>Height (Cm)</b>	
Range	155-182
Mean±SD	[167.93±7.98]
<b>BMI (Kg/m<sup>2</sup>)</b>	
Range	38-48.9
Mean±SD	[43.92±3.52]
<b>Excess weight (Kg)</b>	
Range	33-79
Mean±SD	[54.20±13.89]

As shown in table (1) ranged BMI 38-48.9, as well as excess weight 33-79 and mean 54.2±13.89 of demographic data.

Table (2): Distribution of cases of laparoscopic sleeve gastrectomy with loop bipartition according to their co-morbidities regarding Fasting blood sugar (mg/dl), HTN, Obstructive sleep apnea, Hyperlipidemia, Reflux and Pain and Joint (n=15).

Comorbidities	Total (n=15)
<b>Hb A1c%</b>	
Range	5.8-10
Mean±SD	8.23±1.41
<b>Fasting blood sugar (mg/dl)</b>	
Range	115-230
Mean±SD	[171.93±38.22]
<b>HTN</b>	
No	8 (53.3%)
Yes	7 (46.7%)
<b>DM</b>	
No	3 (20%)
Yes	12 (80%)
<b>Obstructive sleep apnea</b>	
No	12 (80.0%)
Yes	3 (20.0%)
<b>Hyperlipidemia</b>	
No	9 (60.0%)
Yes	6 (40.0%)
<b>Reflux</b>	
No	13 (86.7%)
Yes	2 (13.3%)
<b>Joint Pain</b>	
No	10 (66.7%)
Yes	5 (33.3%)

As shown in table (2) that the ranged fasting blood sugar 115-230 with mean  $171.93 \pm 38.22$ , HTN 7 (46.7%).

Table (3): Distribution of cases of laparoscopic sleeve gastrectomy with loop bipartition according to their operative data regarding operative time and intraoperative complications (n=15).

Operative data	Total (n=15)
Operative time / min	
Range	90-140
Mean±SD	[108.00±16.67]
Intraoperative complication	
None	13 (86.7%)
Bleeding	1 (6.7%)
Bowel injury	1 (6.7%)

As shown in table (3) that the ranged operative time (min) 90-140 with mean  $108.00 \pm 16.67$ , while intraoperative complications bleeding (6.7%) and bowel injury (6.7%) of operative data.

Table (4): Comparison between pre-operative and after 12 months according to HbA1C% (n=15).

Hb A1c%	Pre operative	After 12 months	Mean Diff.	t-test	p-value
Range	5.8-10	4.8-7	2.51	6.291	<0.001**
Mean±SD	8.23±1.41	5.72±0.69			

This table shows highly statistically significant increase mean was pre-operative and after 12 months according to HbA1C%.

Table (5): Distribution of cases of laparoscopic sleeve gastrectomy with loop bipartition according to their hospital stay (days) (n=15).

Hospital stay (days)	Statistics
Range	1-5
Mean±SD	[1.93±1.28]
Median (IQR)*	1 (2)

As shown in table (5) that the ranged hospital stay ranged 1-5 with mean 1.93 and median 1 (2)

Table (6): The extent of the difference over the periods through EWL% in the study group.

EWL%	Range	Mean±SD	Median Diff.	t-test	p-value
After 3 months	25-50	37.13±7.25			
After 6 months	45-83	66.93±11.74	29.9	9.332	<0.001**
After 12 months	80-100	92.13±6.03	55.0	14.391	<0.001**

This table shows highly statistically significant difference over the periods through EWL% in the study group.

Table (7): Comparison between pre-operative and after 12 months according to HTN (n=15).

HTN	Total (n=15)
Pre-op HTN	7 (46.7%)
Improved after 12 months	2 (13.3%)
Resolved after 12 months	5 (33.3%)
<b>Chi-square test</b>	<b>4.917</b>
<b>p-value</b>	<b>0.027*</b>

This table shows statistically significant difference between pre-operative and after 12 months according to HTN.

Table (8): Distribution of cases of laparoscopic sleeve gastrectomy with loop bipartition according to their postoperative complications “early & late” regarding vomiting, marginal ulcer and nutritional hepatitis (n=15).

Post-operative complication (early, late)	Total (n=15)	Chi-square test	p-value
<b>Leakage</b>			
Yes	0(0%)	-----	-----
No	15(100%)		
<b>Vomiting</b>			
Yes	2(13.3%)	0.532	0.465
No	13(86.7%)		
<b>Marginal ulcer</b>			
Yes	1 (6.7%)	0.035	0.852
No	14(93.3%)		
<b>Hepatitis</b>			
Yes	1 (6.7%)	0.035	0.852
No	14(93.3%)		

This table shows no statistically significant relation between leakage, vomiting, marginal ulcer and hepatitis according to cases of laparoscopic sleeve gastrectomy with loop bipartition.

Table (9): Distribution of cases of laparoscopic sleeve gastrectomy with loop bipartition according to their postoperative outcome Diabetes mellitus, HTN, Hyperlipidemia, Sleep apnea, Reflux and Joint pain (n=15).

Postoperative outcomes	Number Of patients	Chi-square test	p-value
<b>Diabetes mellitus</b>			
Yes	12 (80.0%)	8.344	0.004*
Resolved improved	8 (53.3%) 4 (26.7%)		
<b>HTN</b>			
Yes	7 (46.7%)	3.833	0.049*
Resolved improved	5 (33.3%) 2 (13.3%)		
<b>Hyperlipidemia</b>			
Yes	6 (40.0%)	5.208	0.023*
Resolved	6 (40.0%)		
<b>Sleep apnea</b>			
Yes	3 (20.0%)	1.481	0.224
Resolved	3 (20.0%)		
<b>Reflux</b>			
Yes	2 (13.3%)	0.532	0.467
Resolved	2 (13.3%)		
<b>Joint pain</b>			
Yes	5 (33.3%)	3.833	0.049*
Resolved	5 (33.3%)		

This table shows statistically significant relation between diabetes mellitus and HTN to cases of laparoscopic sleeve gastrectomy with loop bipartition.

**DISCUSSION:**

Our study was conducted on fifteen patients. 10 females (66.7%) and 5 male patients (33.3%), the mean age was

32.80±5.78 (range, 24-42), the mean weight (Kg) was 124.80±20.10 (range, 93-162), the mean height (cm) was 167.93±7.98 (range, 155-182), the mean BMI (Kg/m<sup>2</sup>) was 43.92±3.52 (range, 38-48.9), the mean

excess weight (kg) was  $54.20 \pm 13.89$  (range, 33-79).

Twelve patients were diabetics with mean fasting blood sugar level (mg/dl)  $171.93 \pm 38.22$  (range, 115-230) and mean Hb A<sub>1</sub>C  $8.23 \pm 1.41$  (range, 5.8-10). At 1 year post operative all patient (100%) developed response with complete remission of diabetes in 8 patients (66.6%) and improvement in 4 patients (33.3%). There was significant decrease in Hb A<sub>1</sub>C to ( $5.72 \pm 0.69$ ; p value  $< 0.001$ ).

These results were comparable to other studies on these technique specially mahdy et al and salama et al, where mahdy et al reported complete remission in (83.9%) and partial improvement in (15.4%) of diabetic patients, salama et al reported improvement in all diabetic patients.<sup>(15)</sup>

Seven patients (46.75%) were hypertensive, 5 patient (71.4%) developed complete remission and 2 patient (28.6%) showed improvement. There was significant difference between pre and post operative blood pressure with (p value **0.027**). Our results were comparable to mahdy et al and emile et al as they recorded 83%, 67% improvement in all hypertensive patients respectively.<sup>(16)</sup>

Three patients (20%) were diagnosed clinically to have obstructive sleep apnea, symptoms were varying from excessive daytime sleepiness, loud snoring, observed episodes of stopped breathing during sleep to abrupt awakenings accompanied by gasping and choking, all of them experienced symptoms resolution after 1 year follow up post operative.

Two patients (13.3%) were complaining of GERD symptoms and they were receiving proton pump inhibitors medications. Upper GI endoscopy and gastrograffin studies were done to exclude hiatus hernia or eosophageal dysplasia. Post operative complete remission clinically and medication had stopped. Where as no patient complained of de novo

GERD postoperatively. This observation may be explained by the impact of adding an anastomosis between the distal gastric sleeve and the ileum which may reduce the intragastric pressure, thus contributing to the amelioration of the symptoms of GERD.

Six patients (40.0%) had hyperlipidemia preoperative. At 12 months postoperative there were significant improvement in laboratory results, interestingly there were marked decrease in LDL, triglycerides level and increase in HDL levels.

Five patients (33.3%) were complaining of joints pain mainly knee joint and some sort of disability in movements, all of them were clinically improved after exhibiting considerable weight loss post operative.

Regarding mean operative time (minutes) was  $108.00 \pm 16.67$  (range 90-140), it is very similar to results recorded by salama et al and emile et al but significantly more than those recorded by Kermansaravi et al.<sup>(16,17)</sup>

The mean hospital stay time (days) was  $1.93 \pm 1.28$  (range 1-5) with 8 patients (55.3%) discharged after one day. These is very comparable to salama et al and Kermansaravi et al.<sup>(17,18)</sup>

we had reported intraoperative complications of two patients (13%), one patient due to small bowel injury primary repair was done without any more consequences and the other patient had bleeding due to short gastric vessel injury that controlled successfully but he needed blood transfusion of one unit packed RBCS postoperative.

Postoperative four patients (26%) developed complications, two complained of vomiting early postoperative that was controlled with antiemetics, One diagnosed after doing upper GI endoscope to have marginal ulcer 2 months postoperative and the patient improved after intense medical therapy. The last patient 4 months postoperative complained of abdominal discomfort, marked

fatigue, weakness, nausea. The patient was investigated and there was mild liver enzymes elevation, hypoalbuminemia, hepatomegaly. He was diagnosed as NASH then he received medical and nutritional support and after follow up the condition markedly improved, he did not need any further intervention.

Complication incidence rate either intraoperative or postoperative were average in comparison to salama et al, mahdy et al, emile et al and kermansaravi et al.<sup>(16-18)</sup>

One of the reasons we attribute to the relative high incidence of complications is the small volume of the study sample versus other bariatric surgeries.

Regarding the main postoperative outcome we reported mean excess weight loss percentage (EWL%) at 3,6,12 months respectively (37.13±7.25, 66.93±11.74, 92.13±6.03).

Mahdy et al. reported 75% and 90% EWL six and 12 months after SASI bypass, respectively. A recent multi-centric study for mahdy et al also revealed an approximately 64% EWL 1 year after SASI.<sup>(19)</sup>

Another study emile et al resulted in EWL% of 46.2 and 72.6 at 6 and 12 months after SASI bypass, respectively.<sup>(16)</sup>

Also, Madyan et al. showed 44.3 and 65.2 EWL% in twenty super obese patients after 6 and 12 months, respectively.<sup>(20)</sup>

These results show that SASI is a highly effective procedure for weight loss, at least in the short term. Notably, all these studies had 12-month follow-ups, which could be due to the recent introduction of this investigational procedure.

The systematic review and meta-analysis done by Buchwald et al. included 621 studies for a total of 135,246 patients and compared bariatric surgical procedures for weight. This review indicates that BPD/DS is with a EWL of 73% at 2 years follow up, followed by RYGB (63%), vertical banded gastroplasty (56%), and

AGB (49%). it seems that SG + loop bipartition is superior to other bariatric procedures regarding this aspect but we lacking of mid to long term follow up<sup>(21)</sup>.

In our study we found that most of the patients, after the procedure, do not have an altered frequency of stools evacuation or signals of malabsorption. They present an early sensation of satiety and in some cases, especially with fatty meals, some degree of food averseness. All of them refer an evident change in their relation to food, especially in taste, which we attribute to enterohormonal changes<sup>(19)</sup>.

As we know that distal gut hormones are satietogenic and they reduce gastric emptying, SG + loop bipartition significantly reduces meal size and overeating and leads to changing taste preferences<sup>(15)</sup>.

Sleeve gastrectomy is considered high pressure tube. But gastroileal anastomosis is a gastric drainage, so this condition improved, we noted that no postoperative leakage incidence were reported concerning bipartition<sup>(20)</sup>.

In our study we recorded that Sleeve gastrectomy with loop bipartition has strong impact on resolution of comorbidities in comparison with BPD, DS, RYGB<sup>(22)</sup>.

Regarding technical aspects loop bipartition is potentially safe and feasible to be reversible in case of excessive weight loss or unresponsive malnutrition. It also permissive to convert it to other bariatric procedures but these do not reported yet.

### **Conclusion:**

In conclusion, Sleeve gastrectomy with loop bipartition is a new promising procedure that based on a new paradigm of helping GI facing and adapting to the modern diet without adding new morbidities with precise adjusting of the neurohormonal aspects. Preliminary results points to potent simple safe procedure in treating obesity and metabolic syndrome. More studies are needed for assessing long term

results and knowing more about the biochemical changes of bipartition. According to our study it could be the ideal metabolic procedure in the future.

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دراسة لتقييم جراحة تكميم المعدة بالمنظار الجراحي مع تحويل مسار جزئي لعلاج السمنة المرضية

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**المقدمة:** تشير التقديرات إلى أن زيادة الوزن والسمنة تسبب ٣,٤ مليون حالة وفاة ، و ٣.٩٪ من سنوات العمر المفقودة ، و ٣.٨٪ من سنوات العمر المعدلة حسب الإعاقة في جميع أنحاء العالم. وتعتبر جراحة علاج البدانة هي الطريقة الأكثر فعالية لفقدان الوزن على المدى الطويل ولعلاج الأمراض المصاحبة المصاحبة. ومع ذلك ، توجد خلافات بشأن إجراء التمثيل الغذائي المثالي لفقدان الوزن. سمح هذا بالبحث المستمر عن تقنيات جديدة.

**الهدف من الدراسة:** تقييم النتائج قصيرة المدى والمضاعفات المصاحبة لاستئصال المعدة التكميلي بالمنظار مع تحويل مسار جزئي لعلاج السمنة المرضية.

**المرضى وطرق البحث:** أجريت الدراسة الحالية على خمسة عشر مريضاً بعد استيفائهم معايير المعهد الوطني للصحة لجراحة السمنة. وقد تم تسجيل هؤلاء المرضى في دراسة مستقبلية بمستشفيات جامعة عين شمس من ديسمبر ٢٠١٥ إلى مايو ٢٠١٧) وخضعوا لعملية تكميم المعدة بالمنظار مع تحويل مسار جزئي. شملت الإجراءات قبل الجراحة تسجيل التاريخ المرضى المفصل والفحص الطبى الشامل والتصوير بالموجات فوق الصوتية للبطن والاختبارات المعملية. وتم تنفيذ العمليات بالمنظار الجراحي.

**النتائج:** كانت نسبة فقدان الوزن الزائد عند ٦ أشهر و ١٢ شهراً على التوالي ٦٧٪ و ٩٢٪. كانت النتائج المتعلقة بالجراحة مرتبطة بالأمراض المصاحبة للشفاء بنسبة ٦٦٪ في مرضى السكر من النوع الثانى، و ٧١٪ في حالات ارتفاع ضغط الدم ، و ١٠٠٪ أمراض مصاحبة أخرى؛ فى حين وصلت النتائج فى الدراسات الأخرى ذات الصلة إلى أكثر من ٩٠٪ فى مرض السكر من النوع الثانى ، و ٨٠٪ فى حالات ارتفاع ضغط الدم ، و ٨٥٪ أمراض مصاحبة أخرى. وفى الدراسة الحالية، تم تسجيل أن تكميم المعدة مع تحويل المسار الجزئى له تأثير قوى على حل الأمراض المصاحبة مقارنةً بجراحات السمنة الأخرى.

**الخلاصة:** تكميم المعدة مع تحويل المسار الجزئى هو إجراء جديد واعد يعتمد على نموذج جديد لمساعدة الجهاز الهضمي على مواجهة النظام الغذائي الحديث والتكيف معه دون إضافة حالات مرضية جديدة مع تعديل دقيق للجوانب الهرمونية العصبية. تشير النتائج الأولية إلى إجراء آمن بسيط وفعال في علاج السمنة ومتلازمة التمثيل الغذائي.