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Efficacy of laparoscopic gastric bypass *vs* laparoscopic sleeve gastrectomy in treating obesity combined with type-2 diabetes

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ABSTRACT

Objective: This prospective study compared the efficacy and safety of laparoscopic gastric bypass and laparoscopic sleeve gastrectomy in treating overweight and obese patients with BMI>28 kg/m^2 and type-2 diabetes.
Methods: Patients were randomized into a gastric bypass group (n = 77) or a gastrectomy group (n = 80). The surgery time, intraoperative blood loss, recovery time, and hospitalization time were collected. BMI, waistline, hipline, C-peptide level, insulin resistance index (HOMA-IR), and their blood and lipid profile were also measured.
Results: Surgery time and blood loss were significantly higher in the gastrectomy group, when compared to the gastric bypass group ($P < 0.05$). In both groups, the levels of BMI, waist circumference and hip circumference (but not their ratio) gradually and significantly decreased after surgery compared with baseline ($P < 0.05$), and no significant difference was found between these two groups. The C-peptide level, HOMA-IR, fasting blood glucose, 2-hour postprandial blood glucose and glycosylated haemoglobin gradually and significantly decreased after surgery compared with the values before treatment ($P < 0.05$). The levels of total cholesterol, triglyceride, LDL, and monocyte chemoattractant protein-1 were also lower after surgery in both groups, while HDL and glucagon-like peptide-1 were significantly higher after surgery compared with the values before treatment ($P < 0.05$). However, no significant difference was found between these two groups of patients.
Conclusion: Both laparoscopic gastric bypass and laparoscopic sleeve gastrectomy improved the BMI and diabetic conditions of overweight/obese diabetics, while laparoscopic sleeve gastrectomy had a shorter surgical time and less blood loss.

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Laparoscopic gastric bypass; laparoscopic sleeve gastrectomy; morbid obesity; type-2 diabetes

Introduction

Obesity is a major public health problem. According to the report of the World Health Organization (WHO), more than 600 million people suffer from obesity worldwide, and almost 1.9 billion adults are influenced by overweight [1,2]. Furthermore, obesity-associated diseases, including cardiovascular diseases, type-2 diabetes and cancers, have led to approximately 3.4 million deaths every year [3–5]. Obesity also influences children and teenagers, which has been reported as one of the fastest growing health problem in this age group [6–8].

Morbid obesity (MO) is defined as patients with a body mass index (BMI) of ≥40 or ≥35 kg/m^2 with significant other diseases such as diabetes [9,10]. Morbid obesity may cause a series of diseases, such as type-2 diabetes, hypertension, cardiovascular diseases and cancers, and people with morbid obesity have a shorter life expectancy, and a higher all-cause mortality rate [11–13]. Among these complications, type-2 diabetes is the one most linked to obesity [14]. Treatment of type-2 diabetes mainly relies on hypoglycaemic drugs and diet control [15]. However, for patients who fail the conservative treatment, surgical methods are also considered, especially for patients with morbid obesity [16].

Both laparoscopic gastric bypass and laparoscopic sleeve gastrectomy are surgical methods used for the treatment of obesity. However, to date, clinical evidence of the value of laparoscopic gastric bypass and laparoscopic sleeve gastrectomy for treating obesity with type-2 diabetes is inadequate. The present study aimed to compare the efficacy of laparoscopic gastric bypass and laparoscopic sleeve gastrectomy in treatment of obese diabetics with BMI>28 kg/m^2.

Methods and materials

We conducted a prospective randomized study of 157 cases of obese diabetics with BMI>28 kg/m^2 who

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received laparoscopic gastric bypass or laparoscopic sleeve gastrectomy surgery from January 2016 to January 2019. The inclusion criteria were according to the guidelines of the Chinese Medical Association: (1) patients diagnosed with type-2 diabetes according to the diagnostic criteria of the WHO [17,18], which are associated with excess fat, and expected and predicted to obtain effective treatment effects by reducing weight; (2) a waistline of ≥90 cm for males and ≥85 cm for females; (3) patients with a BMI of ≥32 kg/ m^2 with sustained or increasing weight for 5 years; (4) patients within 16–65 years old; (5) patients with a duration of type-2 diabetes of ≤15 years, and the islet function was partly maintained, with a fasting serum C-peptide level of ≥1/2 of the lower limit of normal value; (6) patients with 32 kg/m^2> BMI≥28 kg/m^2, and patients who received at least one course of conservative treatment, including medication treatment and lifestyle changes, but still had a high blood glucose level; (7) patients with two of the following fasting conditions: high triacylglycerol (<1.70 mmol/L), low high-density lipoprotein cholesterol (HDL, <1.03 mmol/L in males or <1.29 mmol/L in females), and hypertension (systolic or diastolic arterial pressure of <130 mmHg); (8) patients with one of the following complications: abnormal glucose metabolism and insulin resistance, obstructive sleep apnoea syndrome (OSAS), non-alcoholic steatohepatitis (NASH), endocrine dysfunction, hyperuricaemia, male sexual dysfunction, polycystic ovary syndrome, deformed arthritis and renal dysfunction, especially patients with cardiovascular risk factors or chronic complications of type-2 diabetes. Patients who met criteria (1, 2, 3, 4) and (5), or criteria (1, 2, 4, 5, 6), and (7) or (8) were enrolled into the study. The exclusion criteria were: (1) patients with secondary obesity, including increased cortisol, adrenocorticotropic hormone, sex hormone, thyroid dysfunction induced obesity, etc.; (2) patients with severe renal, liver, or cardiovascular diseases; (3) patients with alcohol or drug dependence, or a mental disorder.

All patients were consecutively enrolled during the whole study period. The formula $\frac{[(t\alpha+t\beta)s]^2}{\delta}$ was used to calculate the sample size. A decreasing fasting blood glucose of at least 3 mmol/L at 3 months after the surgery was considered as effective. The mean blood glucose level was 6.0 [2.0 at 3 months after the surgery, according to the experience of the investigators. Thus, δ = 3, s = 2, α = 0.05 and β = 0.10. In addition, the minimal sample size was 14. All patients were randomized into two groups: (1) laparoscopic gastric bypass group, n = 84 patients; (2) laparoscopic sleeve gastrectomy group, *n* = 85 cases. A written informed consent was obtained from all patients. The present study was approved by our hospital.

One day prior to the surgery, patients were given a semi-fluid diet with no sugar and low calories. All were prohibited water and food for 8 h before the surgery, and oral antidiabetics and insulin were used to control the fasting blood glucose at 7 mmol/L.

For the laparoscopic gastric bypass group, patients were placed at the supine position after general anaesthesia with tracheal intubation. Then, pneumoperitoneum was established using a 10-mm Veress needle (Johnson & Johnson, USA), and CO_2 gas was introduced at 15 mmHg. After establishing pneumoperitoneum, a 12-cm Trocar tube was introduced, and the 5-holes method was used to introduce the laparoscopies. Two 5-mm puncture devices were placed at positions of 5 cm of the left flat navel and under 5 cm of the left anterior axillary rib, respectively. Then, a 12-mm puncture device was placed under the right central clavicle rib, and a 5-mm puncture device was placed under the xiphoid process. After determining and fixing the His angle, the gastric ligament near the lesser curvature of stomach between the first and second branches of the left gastric vein was incised. After the fundus and posterior wall of the stomach were completely disconnected, the gastric sacculus (15 ~ 25 mL) was formed by incision from the small curvature of stomach lateral to the fundus of the stomach. Then, the jejunum was dismembered at the position of 75–120 cm from the Treitz ligament, and side to side anastomoses of the jejunum and gastric sacculus was performed. Afterwards, the mesenteric hiatus was closed, and the abdominal cavity was flushed. A gastric inflation test was performed to observe the effects. After removing the resected tissues, a double lumen casing drainage tube was placed under the gastrointestinal anastomotic opening, gastric stump, and intestinal end to the side anastomotic opening. Then, the incisions were sutured.

For the laparoscopic sleeve gastrectomy group, after general anaesthesia with tracheal intubation, patients were placed in the supine position. The 4-holes method was used to introduce the laparoscopies. Pneumoperitoneum was established using a 10-mm Veress needle (Johnson & Johnson, USA), and CO_2 gas introduced at 15 mmHg. A 5-mm puncture device was placed at 5 cm from the left flat navel, a 12-mm puncture device was placed under the right central clavicle rib, and a 5-mm puncture device was placed under the xiphoid process. The gastrocolic ligament was incised at the position of 4 cm from the pylorus near the inferior margin of the great curvature of the stomach. The omentum majus was incised along the left of the great curvature of the stomach to the cardia, and the fundus of the stomach was completely disconnected. Then, the fundus of the stomach was turned to the inside, and the blood vessels behind the stomach were disconnected with an ultrasonic knife. The great curvature of the stomach and fundus of the stomach were completely disconnected. After placing a 32–36 Fr balloon gastric tube, at a distance of 4–8 cm from the upper part of the pylorus, the great curvature of the stomach was incised, the fundus of the stomach was completely removed, and the complete cardia was preserved. Then, methylene blue physiological saline was injected into the balloon gastric tube to observe whether there was any leakage. After removing the resected tissues, the abdominal cavity was flushed, a double lumen cannula was placed along the incision of the great curvature of the stomach, and the incisions were sutured. All procedures were conducted by the same team.

Both groups of patients were sent to the routine intensive care unit (ICU) for monitoring. Active bleeding in the abdominal cavity was particularly monitored, and surgery was conducted when the medical treatment was not effective. The gastric tube was removed, and there was no obvious blood fluid in the gastric tube drainage. Upper gastrointestinal radiography was performed at 3 days after the surgery, and these parents could appropriately drink water or start to take liquid food. These patients were advised by a nutrition expert for the diet within 1 month after the surgery and were instructed to take Centrum at one tablet/day (Wyeth Pharmaceutical Co., Ltd) for 3 months after surgery. After the surgery, oral antidiabetics were prohibited, and an insulin pump was used to control the blood glucose. If the blood glucose level was normal after surgery, the application of hypoglycaemic drugs was stopped.

The surgery time, intraoperative blood loss, recovery time and hospitalization time were collected. The BMI, waistline, hipline, C-peptide level and insulin resistance index (HOMA-IR), fasting blood glucose, 2-h postprandial blood glucose, glycosylated haemoglobin (HbA_1C), total cholesterol, triglyceride, HDL, LDL, monocyte chemoattractant protein-1 (MCP-1) and glucagon-like peptide-1 (GLP-1) of patients were measured before the surgery, and at 1, 3 and 6 months, and 1 year after the surgery. The blood glucose of these patients was monitored using a glucose clamp, and other factors were measured by an automatic biochemical analyser. The medication condition and complications were also recorded. The follow-up lasted for 1 year.

Continuous data were expressed by mean [SD]. Chi-square test was used to compare the counting materials and rates. The comparison between two groups was performed using Student's *t*-test. For comparison between values before and after treatment in one group, paired t test was used. $P < 0.05$ was considered statistically significant. All calculations were performed using SPSS 22.0.

Results

Of the 157 patients competing the study, 77 were in the laparoscopic gastric bypass group (male:female, 41:36) with mean/SD age of 43.4 [12.0] and 80 were in the laparoscopic sleeve gastrectomy group (male:female 43:37) with an age of 44.6 [11.8] ($P = 0.560$ for age and 0.943 for sex).

Table 1. Intraoperative and postoperative indices of the surgery in the two groups of the patients.

Variables	Laparoscopic gastric bypass, $n = 77$	Laparoscopic sleeve gastrectomy, $n = 80$	*P*-value
Surgery time (min)	94.1 [0.8]	135.6 [24.7]	<0.001
Intraoperative blood loss (mL)	90.3 [8.8]	98.3 [9.4]	<0.001
Postoperative recovery time (h)	1.5 [0.5]	1.53 [0.5]	0.584
Hospitalization time (days)	6.1 [1.3]	6.0 [1.4]	0.673

Data are represented as mean [SD].

Table 1 shows surgery time and intraoperative blood loss were respectively shorter and smaller, in the gastric bypass group, but there are no difference in recovery time and hospitalization time were compared between these two groups.

The BMI, waist circumference, hip circumference and their ratio data are shown in Table 2. All were matched at baseline: BMI $P = 0.543$, waist circumference $P = 0.313$, hip circumference ($P = 0.405$) and their ratio ($P = 0.866$). Over the year of follow-up, all indices except the waist to hip ratio, fell sequentially and incrementally in both groups (LTE $P < 0.001$), with no difference between the groups.

Table 3 shows data on C-peptide, HOMA-IR, blood glucose, 2-h post-prandial blood glucose and HbA1c. All five indices were matched at baseline ($P = 0.188$, $P = 0.978$, $P = 0.283$, $P = 0.505$ and $P = 0.527$**,** respectively. Over the year of follow-up, all indices fell sequentially and incrementally in both groups ($P < 0.001$), with no difference between the groups.

Table 4 shows data on lipids, MCP-1 and GLP-1. All six indices were matched at baseline (P = TC 0.934, P = TG 0.921, P = HDL-ch 0.475, P = LDL-ch 0.273, P = MCP-1 0.584 and P = GLP-1 0.064 respectively. Over the year of follow-up, cholesterol, trigylcerides, LDL and MCP-1 all fell whilst HDL and GLP-1 both increased sequentially and incrementally in both groups (LTE $P < 0.001$), with no difference between the groups.

The medication and complication conditions of these patients were compared. In the laparoscopic gastric bypass group, 62 patients did not use any hypoglycaemic drug at 6 months after the surgery, and the blood glucose level was normal. Furthermore, the blood glucose levels of the remaining 15 patients (19.5%) were controlled by oral antidiabetics (such as pioglitazone/metformin or metformin) and diet control. In the laparoscopic sleeve gastrectomy group, 66 patients did not use any hypoglycaemic drug at 6 months after the surgery, and the blood glucose level was normal, while 14 patients (17.5%) used oral antidiabetics (such as pioglitazone/metformin or metformin) to maintain the normal blood glucose. The used of oral antidiabetics showed no significant

Table 2. Changes in BMI, waist and hip circumference and their ratio.

		Baseline	1 month	3 months	6 months	1 year
BMI (kg/m^2)	Bypass	35.7 [4.5][bcde]	34.9 [3.8][acde]	30.8 [2.8][abde]	29.4 [1.8][abce]	27.4 [1.3][abcd]
	Gastrectomy	36.2 [4.8][bcde]	34.1 [3.8][acde]	30.7 [2.9][abde]	28.8 [1.7][abce]	27.4 [1.3][abcd]
Waist (cm)	Bypass	104.2 [10.8][bcde]	95.9 [10.2][ade]	94.8 [10.1][ade]	91.2 [6.5][abce]	84.0 [8.1][abcd]
	Gastrectomy	102.5 [10.9][bcde]	96.0 [10.7][ade]	93.5 [9.7][ade]	90.9 [6.0][abce]	84.7 [8.2][abcd]
Hip (cm)	Bypass	112.7 [10.0][bcde]	105.7 [9.1][ade]	104.7 [8.1][ade]	99.5 [8.8][abce]	92.7 [8.2][abcd]
	Gastrectomy	111.3 [11.0][cde]	109.0 [10.8][cde]	104.0 [8.8][abde]	99.4 [8.0][abce]	92.9 [8.6][abcd]
Waist/hip ratio	Bypass	0.9 [0.1]	0.9 [0.1]	0.9 [0.1]	0.9 [0.1]	0.9 [0.1]
	Gastrectomy	0.9 [0.1]	0.9 [0.1]	0.9 [0.1]	0.9 [0.1]	0.9 [0.1]

Data are represented as mean [SD]. [a]$P < 0.05$ vs value before the surgery, [b]$P < 0.05$ vs value after 1 month of the surgery, [c]$P < 0.05$ vs value after 3 months, [d]$P < 0.05$ vs value after 6 months, [e]$P < 0.05$ vs value after 1 year.

Table 3. Changes in C-peptide level, HOMA-IR, blood glucose, 2-h postprandial blood glucose and HbA1C.

		Baseline	1 month	3 months	6 months	1 year
C-peptide (nmol/L)	Bypass	2.5 [0.9][bcde]	1.9 [0.7][acde]	1.6 [0.6][abde]	1.3 [0.5][abc]	1.2 [0.5][abc]
	Gastrectomy	2.3 [0.9][cde]	2.0 [0.7][cde]	1.6 [0.6][abde]	1.4 [0.5][abce]	1.2 [0.5][abcd]
HOMA-IR	Bypass	12.5 [3.0][bcde]	10.4 [2.5][acde]	8.4 [2.3][abde]	6.8 [2.0][abce]	5.0 [1.7][abcd]
	Gastrectomy	12.5 [3.4][bcde]	10.3 [2.6][acde]	7.2 [2.0][abde]	6.0 [2.1][abce]	4.9 [1.7][abcd]
Blood glucose (mmol/L)	Bypass	11.0 [2.3][bcde]	8.7 [1.3][acde]	7.5 [1.8][abde]	6.0 [1.3[abce]	5.1 [0.6][abcd]
	Gastrectomy	10.5 [2.2][bcde]	8.7 [1.3][acde]	7.8 [1.9][abde]	6.0 [1.2[abce]	5.1 [0.7][abcd]
2-h PPBG (mmol/L)	Bypass	18.2 [4.7][bcde]	15.9 [3.5][acde]	12.8 [2.9][abde]	8.6 [0.8][abce]	7.5 [0.3][abcd]
	Gastrectomy	17.8 [4.0][bcde]	15.8 [3.5][acde]	12.9 [2.7][abde]	8.6 [0.8][abce]	7.6 [0.2][abcd]
HbA1C (%)	Bypass	8.3 [1.3][bcde]	7.4 [1.1][acde]	6.8 [0.8][abde]	5.9 [1.1][abce]	5.2 [0.8][abcd]
	Gastrectomy	8.4 [1.4][bcde]	7.7 [1.1][acde]	6.7 [0.9][abde]	5.8 [1.1][abce]	5.3 [0.7][abcd]

Data are represented as mean [SD]. [a]$P < 0.05$ vs value before the surgery, [b]$P < 0.05$ vs value after 1 month of the surgery, [c]$P < 0.05$ vs value after 3 months, [d]$P < 0.05$ vs value after 6 months, [e]$P < 0.05$ vs value after 1 year. PPBG = postprandial blood glucose.

Table 4. Changes in lipids, MCP-1 and GLP-1.

		Baseline	1 month	3 months	6 months	1 year
Cholesterol (mmol/L)	Bypass	6.5 [1.6][bcde]	5.8 [1.3][acde]	5.2 [1.3][abe]	5.3 [1.0][abe]	4.6 [1.0][abcd]
	Gastrectomy	6.5 [1.5][bcde]	5.8 [1.5][ade]	5.4 [1.3][ae]	5.1 [1.2][abe]	4.6 [0.9][abcd]
Triglycerides (mmol/L)	Bypass	2.4 [0.8][bcde]	1.8 [0.7][acde]	1.6 [0.6][abde]	1.2 [0.4][abc]	1.1 [0.4][abc]
	Gastrectomy	2.3 [0.7][bcde]	1.9 [0.7][acde]	1.5 [0.6][abde]	1.3 [0.4][abce]	1.1 [0.4][abcd]
HDL (mmol/L)	Bypass	1.0 [0.3][bcde]	1.2 [0.3][ae]	1.2 [0.3][a]	1.2 [0.3][a]	1.3 [0.3][ab]
	Gastrectomy	1.1 [0.3][bde]	1.2 [0.3][ae]	1.2 [0.3][e]	1.2 [0.4][ae]	1.4 [0.4][abcd]
LDL (mmol/L)	Bypass	3.8 [0.9][cde]	3.6 [0.8][cde]	3.3 [0.7][abe]	3.2 [0.5][abe]	2.8 [0.3][abcd]
	Gastrectomy	3.6 [0.9][cde]	3.6 [0.8][cde]	3.4 [0.7][abde]	3.1 [0.5][abce]	2.7 [0.4][abcd]
MCP-1 (ng/L)	Bypass	128.3 [25.0][bcde]	118.7 [22.3][acde]	102.6 [15.2][abde]	85.9 [8.6][abce]	77.6 [7.0][abcd]
	Gastrectomy	126.0 [27.1][cde]	120.0 [23.7][cde]	102.9 [15.1][abde]	84.9 [9.6][abce]	75.6 [6.8][abcd]
GLP-1 (pg/mL)	Bypass	7.1 [0.6][cde]	7.1 [0.6][cde]	7.4 [0.6][abde]	8.1 [0.6][abce]	8.4 [0.7][abcd]
	Gastrectomy	6.9 [0.6][cde]	7.1 [0.6][cde]	7.4 [0.6][abde]	8.0 [0.6][abce]	8.3 [0.6][abcd]

Data are represented as mean [SD]. [a]$P < 0.05$ vs value before the surgery, [b]$P < 0.05$ vs value after 1 month of the surgery, [c]$P < 0.05$ vs value after 3 months, [d]$P < 0.05$ vs value after 6 months, [e]$P < 0.05$ vs value after 1 year.

difference between the two groups (19.5% *vs* 17.5%, $P = 0.716$). Stains were only used in patients with dyslipidemia and no difference was found between the two groups at 6 months after the surgery (9/77 11.7% vs 7/80 8.6%, $P = 0.642$). In the laparoscopic gastric bypass group and laparoscopic sleeve gastrectomy group, alopecia was found in 7 (9.1%) and 9 (11.3%) patients in these two groups ($P = 0.607$), respectively.

Discussion

Overweight and obesity are an increasing health issue, especially in developing countries, bringing many complications such as type-2 diabetes. For severely obese patients, surgery may be an option as it can improve a patient's life quality [19]. However, clinical evidence for the efficacy and safety of different surgical strategies for treating obesity remains inadequate. In the present study, we show that both laparoscopic gastric bypass and laparoscopic sleeve gastrectomy impove the obesity and diabetic conditions of patients, with no severe side effects. However, the laparoscopic gastric bypass method has a shorter surgical time and less blood loss.

Surgical methods have been recently recommended for the treatment of morbid obesity for some patients, especially for patients with a BMI of >32 kg/m^2 for more than 5 years and severe complications. Sundbom *et al*. conducted a 5-year study and reported that the Roux-en-Y gastric bypass surgery can remarkably decrease the BMI and improve obesity-related complications of type-2 diabetes, hypertension, dyslipidemia and sleep apnoea, as well as fasting glucose and glycated haemoglobin [20]. Another study revealed that in patients with obesity, surgery may decrease the risk of breast cancer but not the increased the risk of colorectal cancer [21]. In a recent review, the authors suggested that metabolic surgery for type-2 diabetes is recommended as a primary indication for patients with BMI = 40 kg/m^2 [22]. In the present study, it was found that both laparoscopic gastric bypass and laparoscopic sleeve gastrectomy could lead to effective treatment results for obesity patients with BMI>20 kg/m^2 combined with type-2 diabetes.

Both the laparoscopic gastric bypass and laparoscopic sleeve gastrectomy methods have been used in the treatment of morbid obesity. Coffin *et al.* demonstrated that laparoscopic gastric bypass with intragastric balloon before surgery could induce weight loss in obese patients [23]. A recent study revealed that laparoscopic gastric bypass and laparoscopic Roux-en-Y gastric bypass have similar T2D remission and psychosocial improvement [24]. However, in a retrospective study, laparoscopic sleeve gastrectomy was associated with a higher postoperative morbidity rate and increased 1-year excess weight loss, when compared to laparoscopic gastric bypass [25], suggesting that more studies are needed to compare these two methods.

The present study also had some limitations. The sample size of the study was limited and was from a single centre. Besides, the effects of the surgery on more metabolic factors can be also investigated in the future, such as trace elements. All these need to be confirmed through further studies.

In conclusion, this prospective study compared the efficacy of laparoscopic gastric bypass and laparoscopic sleeve gastrectomy in the treatment of obesity patients with BMI>20 kg/m^2 combined with type-2 diabetes. The results revealed that both laparoscopic gastric bypass and laparoscopic sleeve gastrectomy can improve the obesity and diabetic conditions. However, the laparoscopic gastric bypass method had a shorter surgical time and less blood loss.

This work represents an advance in biomedical science because it provides more clinical and laboratory evidence for the application of laparoscopic gastric bypass and laparoscopic sleeve gastrectomy in the treatment of overweight and obese patients.

Summary table

What is known about this subject:

- Overweight and obesity lead to a series of diseases, such as type-2 diabetes, hypertension, cardiovascular diseases and cancers.
- Patients with obesity have a shorter life expectancy and a higher all-cause mortality rate.
- Laparoscopic gastric bypass and laparoscopic sleeve gastrectomy are surgical methods commonly used for the treatment of obesity.

What this paper adds:

- Both laparoscopic gastric bypass and laparoscopic sleeve gastrectomy improved the obesity and diabetic conditions of overweight and obesity in patients with type-2 diabetes.
- Patients treated with laparoscopic gastric bypass method had shorter surgical time and less blood loss.

Disclosure statement

No potential conflict of interest was reported by the authors.

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