

LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS FOR MORBID OBESITY – CASE REPORT

Tihomir Grgić¹, Davorin Diklić², Dora Grgić³, Marko Nikolić⁴, Tomislav Kuliš⁵
and Miroslav Bekavac-Bešlin⁶

¹Department of Surgery, Zabok General Hospital, Zabok; ²Department of Surgery, Bjelovar General Hospital, Bjelovar; ³Department of Gastroenterology, University Department of Medicine, Zagreb University Hospital Center; ⁴University Department of Medicine, Sestre milosrdnice University Hospital Center; ⁵Department of Urology, Zagreb University Hospital Center; ⁶University Department of Surgery, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

SUMMARY – Morbid obesity is currently one of the leading problems worldwide. More than 1 of 5 adults in Croatia are considered obese, with a body mass index (BMI) higher than 30 kg/m², with no sex differences. Indications for bariatric surgery are BMI >40 kg/m² or BMI >35 kg/m² with comorbidities. Bariatric procedures are divided into restrictive, malabsorptive, and combined procedures. The Roux-en-Y gastric bypass is a combined bariatric procedure, already being accepted as the standard one in the USA and gaining ground in Europe as well. A 47-year-old woman with BMI of 48.2 kg/m² (105.5 kg) was hospitalized at our department. Her increasing attempts to lose weight using conservative methods showed no success. She also suffered from glucose intolerance, gastritis, chronic obstructive pulmonary disease, hypertension and depression as comorbidities. Based on our experience in bariatric surgery (gastric banding, sleeve gastrectomy, duodenal switch), we decided for the first time in our hospital to perform laparoscopic Roux-en-Y gastric bypass. The patient was released on the fifth postoperative day with BMI of 40.56 kg/m² (100 kg body weight), excess weight loss 12.5%. One month after the procedure, her BMI was 38.54 kg/m², excess weight loss 23.92% (body weight 95 kg).

Key words: *Body mass index; Obesity, morbid; Gastric bypass, Roux-en-Y – methods; Case report*

Introduction

Morbid obesity is nowadays one of the leading health problems worldwide. At least 1.1 billion adults are overweight and 312 million of them are considered obese. In Europe, the prevalence of obesity (body mass index, BMI >30 kg/m²) is within the range of 10%-20% in men and 15%-25% in women¹. In Croatia, the prevalence of obesity (data from 2003) is more than 20%, with no sex differences².

Overweight and obesity are associated with an increased risk of type 2 diabetes, hypertension, cardiovascular disease, dyslipidemia, arthritis, nonalcoholic steatohepatitis, gallbladder disease, sleep apnea syndrome, and several types of cancer¹.

Surgical treatment of morbid obesity is indicated in patients with a BMI >40 kg/m² and BMI >35 kg/m² accompanied by comorbidities³. Surgical procedures in bariatric surgery are restrictive, malabsorptive and combined restrictive-malabsorptive¹ (Table 1).

One of the most popular procedures in the USA is the laparoscopic Roux-en-Y gastric bypass (LRYGBP). The aim of this report is to present our first LRYGBP, based on the experience in other bariatric surgery procedures⁴⁻⁹.

Correspondence to: *Tihomir Grgić, MD*, Department of Surgery, Zabok General Hospital, Bračak 8, 49210 Zabok, Croatia
E-mail: tihomir.grgic@gmail.com

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Case Report

The subject was a 47-year-old woman with BMI of 42.8 kg/m² (body weight 105.5 kg) accompanied with the following comorbidities: glucose intolerance, gastritis, chronic obstructive pulmonary disease, hypertension and depression. Her increasing attempts to reduce body weight using conservative treatment showed no success. Prior to the operation she was examined by an endocrinologist and a psychologist (members of our bariatric surgery team). Her blood tests, liver function tests, renal function tests, chest x-ray and spirometry tests were performed accordingly.

After thorough evaluation we decided to perform the LRYGBP. The procedure started after the patient had been introduced into general anesthesia and endotracheal intubation. The laparoscopic tower was placed on the right side of the patient, the surgeon standing between the legs of the patient and the assistants being on her right and left side. The first trocar (10 mm) for optical instrument was placed on the left from the medial line, 20 cm below the xyphoid. The other two 12-mm trocars were positioned on the left and right side in the upper abdominal quadrants in the middle clavicular line and two 5-mm trocars on the left side to enable liver retraction and on the right for extra assistance (Fig. 1).

We started with dissection of the less curvature at the level of the third vascular arcade and created a

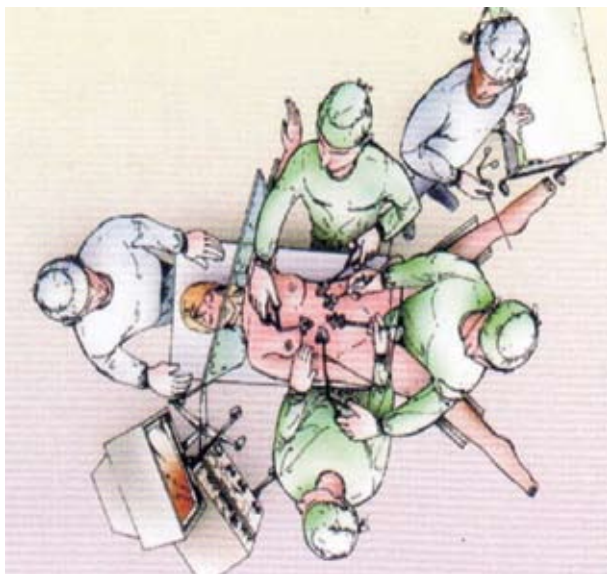


Fig. 1.

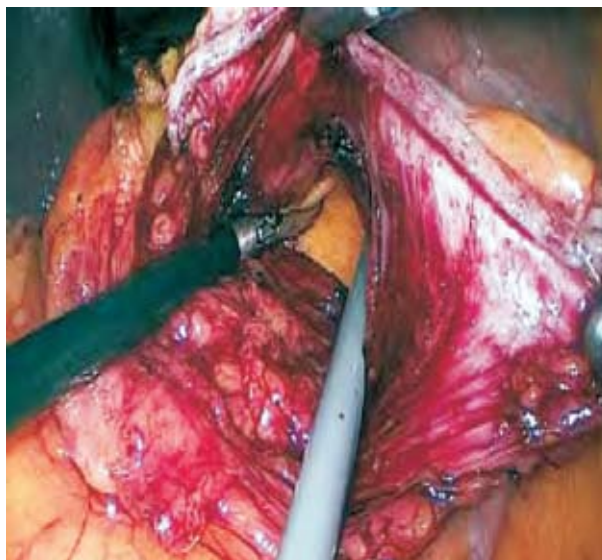


Fig. 2.

window to the posterior stomach (Fig. 2), after dissecting the Hiss angle and left crura (Fig. 3). After this, the stomach was transected at that level by one horizontal firing of the linear stapler (45 mm, blue cartridge) and with 3 vertical firings (45 mm, blue cartridge). The omentum was dissected with the ultrasonic scalpel, then the angle of Treitz was identified, the jejunum was mobilized 50 cm from Treitz, and gastroenterostomy was created with a 45-mm

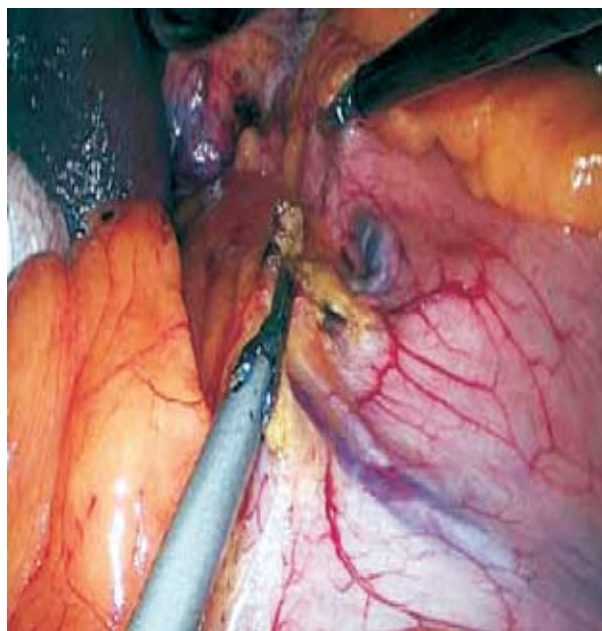


Fig. 3.



Fig. 4.

linear stapler (blue cartridge) (Fig. 4). Both openings for linear stapler (on the stomach and jejunum) were closed with running 2-0 slow resorptive suture.

Finally, we measured 150 cm of the alimentary loop and prepared enteroenterostomy with 45-mm linear stapler (white cartridge) (Fig. 5). Both openings on the jejunum were closed with running 2-0 slow resorptive suture. Then we checked anastomosis with the introduction of a nasogastric tube, immersed operating field in the saline solution and insufflated

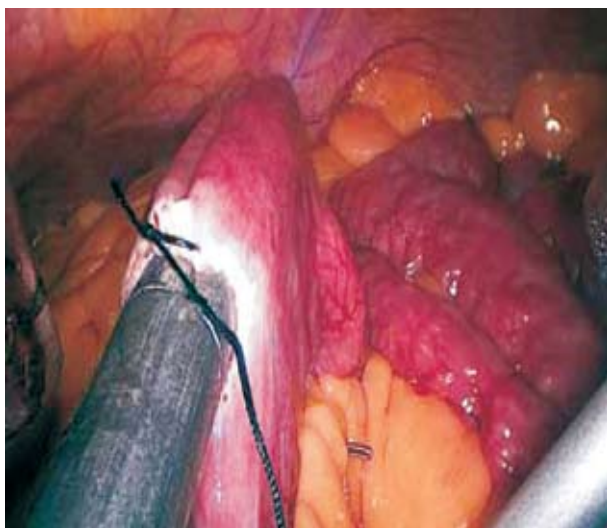


Fig. 5.

air through the nasogastric tube. Anastomosis was checked with methylene blue. The penrose drain was placed in the vicinity of both anastomotic sites.

Sugar free liquid diet was started on the 2nd postoperative day, after the peristalsis had been established. The patient was allowed to leave the hospital on the 5th postoperative day. The patient was recommended to undergo conservative therapy: proton pump inhibitor substitution of iron, vitamin B12 and minerals.

Results

The operative procedure lasted for 170 minutes, and the immediate and late postoperative period showed no complications^{10,11}. On one-month follow up, the patient's body weight was 95 kg, BMI 38.54 and excess weight loss (EWL) 23.92%¹². In the next period (3 and 6 months of the surgery) we expected the comorbidities to disappear¹³⁻¹⁵, and the BMI and EWL to keep decreasing (about 33% in 3 months and 55% in 6 months)^{12,13,16}. In the first 12 months, EWL should be about 60%^{13,15-17}.

In the following period, the patient's nutritional and metabolic status is to be monitored, including HbA_{1c} in diabetics, liver function tests, renal function, vitamin B12, D3, ferritin, calcium, parathyroid hormone, albumin, HB, magnesium, zinc, and on the basis of these tests compensate the deficits by prescribing vitamins and micronutrients^{1,18,19}.

Discussion

LRYGBP is the most commonly performed bariatric procedure in the USA, and the second in Europe, next to adjustable gastric banding (GB)³. The LRYGBP belongs to combined restrictive-malabsorptive procedures with many advantages over GB. The expected EWL after LRYGBP is higher than after GB procedure (70% LRYGBP *vs.* 50% GB). Also, the regression of comorbidities is better after LRYGBP than after GB procedure (70% regression of DM after LRYGBP *vs.* 50% regression after GB)¹⁴. Perioperative complications are more frequent after LRYGBP than after GB (9% *vs.* 5%) because LRYGBP is technically more demanding than GB¹³. The length of Roux limb can be 80-150 cm (long limb)^{15,20}. EWL is faster in patients with long Roux limb but it is similar

Table 1. Bariatric procedures

Restrictive procedures	– Adjustable gastric banding – Vertical banded gastroplasty – Sleeve gastrectomy
Malabsorptive procedures	– Biliopancreatic diversion and duodenal switch – Long limb Roux-en-Y gastric bypass
Combined procedures	– Roux-en-Y gastric bypass – Sleeve gastrectomy with duodenal switch – Sleeve gastrectomy with biliopancreatic diversion and antroileal anastomosis

in both limbs in the first 48 months. Patients with long Roux limb have better diabetes type 2 control and lipid disorder improvement¹⁵. After LRYGBP, patients are expected to stick to the lifelong nutritional and metabolic assessment with an adequate reimbursement of deficits.

Some investigations showed the increasing concentration of apolipoprotein A-IV. Apo A-IV is produced in bypassed intestine and in the liver after LRYGBP²¹. Apo A-IV inhibits gastric emptying and produces the feeling of satiety, but Apo A-IV also has anti-inflammatory and antiatherogenic effects and influences the improvement of cardiovascular diseases after LRYGBP²¹.

The early and late mortality after bariatric surgery is low. Mortality risk depends on the type of surgical procedure, open surgery, operative time, comorbidities, and volume of activity²². The most common cause of death is pulmonary embolism. Other causes of mortality are cardiac failure, intestinal leak, respiratory failure, marginal ulcer, cerebral and intestinal ischemia, and internal hernia²²⁻²⁴.

One of the most serious complications after LRYGBP are anastomotic leaks²⁵. Most of them occurred at the gastrojejunostomy, then at excluded stomach, jejun-jejunostomy, gastric pouch, and uncertain location. Anastomotic leaks can be treated conservatively or operatively^{10,26,27}. In 3%-25% of cases, anastomotic strictures occur at gastrojejunal anastomosis. It can also be treated conservatively (balloon dilatation) or surgically²⁷. A potentially serious complication after LRYGBP is marginal ulcer, and it should be treated conservatively or surgically²⁸.

Conclusion

LRYGBP is an effective and rather safe bariatric procedure. It provides an effective EWL and BMI decrease, as well as control and regression of comorbidities in morbidly obese patients. Only experienced surgeons in advanced laparoscopic and bariatric surgeries should perform this procedure. Because of many advantages of LRYGBP over GB, we should prefer this procedure at our department, and plan to increase the number of these bariatric procedures in the future.

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Sažetak

LAPAROSKOPSKA ŽELUČANA PREMOŠNICA ROUX-EN-Y ZBOG PREKOMJERNE PRETILOSTI – PRIKAZ SLUČAJA

T. Grgić, D. Diklić, D. Grgić, M. Nikolić, T. Kuliš i M. Bekavac-Bešlin

Morbidna pretilost danas je jedan od vodećih problema širom svijeta. U Hrvatskoj se jedna od pet odraslih osoba smatra pretilom, uz indeks tjelesne mase (BMI) veći od 30 kg/m², bez razlike među spolovima. Indikacije za barijatrijsku kirurgiju su BMI >40 kg/m² uz druge istodobne bolesti. Barijatrijski zahvati dijele se na restriktivne, malapsorcijske i kombinirane. Želučana premošnica Roux-en-Y je kombinirani barijatrijski zahvat koji je već postao standardom u SAD, a sve više se primjenjuje i u Europi. Žena u dobi od 47 godina s BMI 48,2 kg/m² (105,5 kg) primljena je na odjel radi liječenja. Svi njezini naponi da smanji tjelesnu težinu konzervativnim metodama pokazali su se neuspješnima. Uz to je bolovala od netolerancije glukoze, gastritisa, kronične opstruktivne plućne bolesti, hipertenzije i depresije. Temeljem iskustva stečenog u barijatrijskoj kirurgiji (podvezivanje želuca, gastrektomija sa skretnicom, duodenalni prekidač) odlučili smo prvi put u našoj bolnici izvesti laparoskopsku želučanu premošnicu Roux-en-Y. Bolesnica je otpuštena iz bolnice petog dana poslije operacije uz BMI 40,56 kg/m² (tjelesna težina 100 kg), uz gubitak prekomjerne težine od 12,5%. Mjesec dana nakon zahvata njezin BMI je bio 38,54 kg/m², gubitak prekomjerne težine 23,92% (tjelesna težina 95 kg).

Ključne riječi: Tjelesni indeks mase; Pretilost, morbidna; Želučana premošnica, Roux-en-Y – metode; Prikaz slučaja

