Simplified laparoscopic gastric bypass. Initial experience

ABSTRACT

Background: Obesity surgery includes various gastrointestinal procedures. Roux-en-Y gastric bypass is the prototype of mixed procedures and is among the most practiced worldwide. A similar and novel technique has been adopted by Dr. Almino Cardoso Ramos and Dr. Manoel Galvao called “simplified gastric bypass”, which has been accepted due to the greater ease and similar results as the conventional technique. The aim of this study is to describe the results of the simplified gastric bypass for treatment of morbid obesity in our institution.

Methods: We performed a descriptive, retrospective study of all patients undergoing simplified gastric bypass from January 2008 to July 2012 in the obesity clinic of a private hospital in Mexico City.

Results: A total of 90 patients diagnosed with morbid obesity underwent simplified gastric bypass. Complications occurred in 10% of patients, bleeding and internal hernia being the most frequent. Mortality in the study period was 0%. Average weight loss at 12 months was 72.7%.

Conclusion: Simplified gastric bypass surgery is safe with good mid-term results and an adequate weight loss in 71% of cases.

Key words: Gastric bypass, morbid obesity, bariatric surgery.
BACKGROUND

The history of bariatric surgery is relatively short but with a high worldwide impact. In the last 50 years it has grown enormously due to the increase in the number of persons with obesity and the appearance of laparoscopic surgery.1

According to the National Survey of Health and Nutrition 2012, 26 million of Mexican adults are overweight and 22 million are obese.1 In Mexico, overweight and obesity are the two principal risk factors faced by the population and the health system. These conditions are associated with a variety of the main causes of death in the country: diabetes, cardiovascular and cerebrovascular diseases, and breast cancer, among others. It is calculated that the risk factors are directly responsible for ~50 thousand deaths per year.1 Data from the OCDE rank Mexico in second place of the countries with the highest index of obesity in their population (30%), surpassed only by the U.S. with 33.8%.2

Childhood obesity is currently a health problem in Mexico. There are more than 4 million overweight and obese children and practically 1/5 children are overweight.2

There is no doubt that education, diet, and physical activity are cornerstones in the fight against overweight and obesity; however, as has been seen, grade III or morbid obesity (BMI > 40 kg/m²) rarely responds favorably to medical treatment and, therefore, it is believed that obesity surgery is the only effective treatment.3

Bariatric surgery has evolved in recent decades and more so currently with a greater number of obese persons and increase in survival and the appearance of metabolic diseases.4 According to Buchwald and Buchwald,4 in the 1950s the practice of bariatric surgery was initiated and in 1953 Varco reported the jejunoileal bypass.

In 1954 Kremen et al.3 published this procedure for weight loss in dogs. This report aroused the interest of surgeons during that time. In 1967, Mason and Ito6 described the gastric bypass for the first time and many consider these authors as the fathers of bariatric surgery.1 In 1994, Wittgrove and Clark7 were the first to report their results with the laparoscopic Roux-en-Y gastric bypass. Schauer et al.8 abandoned the use of the end-to-end stapler and the linear intraabdominal endostapler was introduced for performing gastrojejunostomy. Finally Higa et al.9 in 1999 reported the use of the endostapler to carry out a gastrojejunostomy with the purpose of avoiding the relatively high incidence of anastomotic leaks.

In 2004 Cardoso Ramos et al.10 published a variation of the Roux-en-Y gastric bypass called “simplified bypass” whose variation is the anatomic placement of the trocars. It had results very similar to the conventional bypass and less surgical time and with weight loss similar to the conventional procedure.10,11 In recent years, laparoscopic gastric bypass occupied first place of bariatric surgeries performed, accounting for 60-70% of the procedures recorded at the International Bariatric Surgery Registry (IBSR). In other works, this procedure is mentioned as the only treatment that achieves a significant long-term weight reduction compared with medical therapy as the “reference pattern.”4 The objective of this study is to publish the cumulative experience from our institution with the simplified gastric bypass.

METHODS

We carried out a retrospective and descriptive study of all patients operated with the simplified gastric bypass technique. This procedure consists of the following: after placing the trocars, design of the gastric reservoir was begun at the level of the second branch of the left gastric artery ~6 cm from the esophagogastric junction.
Subsequently, dissection of the gastrophrenic membrane is done until visualization of the left pillar is achieved, creating a retrogastric tunnel. Cuts are carried out, first cross-sectionally with a linear stapler, maintaining the calibration probe. The second cut is done at a 90° angle towards the angle of His until a reservoir of ~30-40 ml is created in a similar manner with a cutting linear stapler. The lateral border of the reservoir is sutured to control hemostasis.

A division of the greater omentum is done where an antecolic loop of jejunum is brought up to a distance of 50 to 100 cm from the ligament of Treitz to perform the gastrojejunal anastomosis at the level of the posterior face of the gastric reservoir. From this anastomosis 150 cm are measured in the direction of the ileocecal valve, and at this level a side-to-side jejuno-jejunal anastomosis is performed with cutting linear stapler to configure an Omega of Braun. To convert it into a Roux-en-Y a cut of the jejunal loop that goes up towards the stomach at a distance of 5 cm before its anastomosis is done. This conversion from Omega of Braun to a Roux-en-Y with the linear stapler is the reason why this procedure has been labeled as “simplified” because it facilitates the configuration of the loops for the surgeons (alimentary and secretory) compared with the classic technique.

A retrospective analysis was done of 115 patients who were operated on consecutively with the simplified gastric procedure between January 1, 2008 and July 31, 2012 at the Hospital Ángeles del Pedregal and Hospital San Ángel Inn. The surgical group, bariatric clinic, nutritionist, psychologist, internal medicine and, in cases where necessary, psychiatry and endocrinology evaluated all patients prior to the procedure. All patients had preoperative management initiated with dietary orientation by a nutritionist and the Atkins diet was initiated 15 days prior to the surgery with follow-up by dietary and psychology personnel. For the selection of patients it was verified that they met the requirements established in the Norma Oficial Mexicana NOM-008-SSA3-2010 for the complete treatment of overweight and obesity.

Those patients who did not complete follow-up by our team for 12 months were excluded from the study. The results were analyzed using descriptive statistics and SPSS program for Windows v.18.0.

**RESULTS**

There were 90 patients included: 43 males and 47 females with an average age of 37.56 (18-60) years. The median stature was 1.69 m (1.50-1.97); weight and BMI had a median of 118.70 kg (85.6-185), and 41.03 (33.01-55.85), respectively, prior to surgery. Forty-seven patients had the following comorbidities: high blood pressure (21 patients), hypercholesterolemia (18 patients), T2DM (12 patients), hypothyroidism (three patients), heart disease and arthropathy in one patient. Of the 12 patients with type 2 diabetes mellitus, nine did not require medication for glycemic control (Table 1).

The hospital stay was 3 ± 1.5 days with a surgical time of 100 ± 40 min. BMI at the time of surgery was 38.6 kg/m² (30.1-51.02) and at 1 year was 29.94 kg/m² (21.2-48.23). Excess weight loss at 1 year was 72.7%. There were nine complications: four due to intestinal occlusion, four due to hemorrhage, and one portal vein thrombosis (Table 2).

The procedure was done laparoscopically on eight occasions, except for the patient with portal vein thrombosis where conservative management was done. The four cases of occlusion were as a result of adhesions in two cases and internal hernia in two cases. The latter were due to defect in the mesentery of the small intestine. In patients with adhesions, only lysis of adhesions was done. In the cases of internal hernia closure of the mesentery with 2-0 Prolene suture was done.
Hernández-Miguela L et al. Simplified laparoscopic gastric bypass

One of the most well-known series is that published by Higa et al.,9 who report on 1040 patients who had Roux-en-Y gastric bypass done and as risk factors with hepatomegaly and a small cavity. Surgical time was 60 min and weight loss at 1 year was 70% with a morbidity of 14.7%.

Gastric bypass is one of the techniques with many variations. Our group has opted for the simplified technique. Since it was described by Cardoso et al.10 it has been popular because it is safe, reproducible and with results similar to conventional surgery. These investigators analyzed 522 patients with an average body mass index of 45.8 kg/m², average surgical time of 70 min, hospital stay of 3 days and 7.34% complications.

When compared with these classic studies, our series with simplified gastric bypass technique has similar average weight loss results at 1 year of 72.7%, with morbidity of 10% and average surgical time of 100 ± 40 min (Table 3). In Mexico there are large series of simplified gastric bypass to date. A study very similar in methodology and results is that by Prieto et al.11 who reported an annual weight loss of 72%, with control of diabetes in 95% of cases, hypercholesterolemia normalized in 88%, and hypertriglyceridemia in 94%; 150 patients were included with a morbidity of 4%.

In the study by Matthew et al.,12 the classical gastric bypass technique was compared with the simplified gastric bypass technique in 180 vs. 140 patients, respectively. The surgical time was 209 min with the classical technique and 91 to 156 min with the simplified technique, with weight loss of 87% at 1 year. The authors found

Table 1. Characteristics of the study patients.

<table>
<thead>
<tr>
<th>General data</th>
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<tr>
<td>Patients</td>
<td>90</td>
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<tr>
<td>Age (years)</td>
<td>37.56 (18-60)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>118.70 (85.6-185)</td>
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<tr>
<td>Weight loss at 1 year</td>
<td>72.7%</td>
</tr>
<tr>
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<table>
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<tr>
<th>Comorbidity</th>
<th>Number of cases</th>
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<tbody>
<tr>
<td>Arterial hypertension</td>
<td>21</td>
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<tr>
<td>Dyslipidemia</td>
<td>18</td>
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<tr>
<td>T2DM</td>
<td>12</td>
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<tr>
<td>Cardiopathy</td>
<td>1</td>
</tr>
<tr>
<td>Thyroid manifestations</td>
<td>3</td>
</tr>
</tbody>
</table>

General data expressed as median and ranges, loss of excessive weight in percentage, comorbidities as number of cases. BMI, body mass index; T2DM, type 2 diabetes mellitus.

Table 2. Postsurgical complications of the study patients.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Number of cases</th>
</tr>
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<tbody>
<tr>
<td>Hemorrhage</td>
<td>4</td>
</tr>
<tr>
<td>Internal hernia</td>
<td>2</td>
</tr>
<tr>
<td>Portal vein thrombosis</td>
<td>1</td>
</tr>
<tr>
<td>Adhesions</td>
<td>2</td>
</tr>
</tbody>
</table>

Of the four patients with hemorrhage, two had bleeding at the staple line of the small intestine and one in one branch of the short vessels. Only cleaning and hemostasis with electrocoagulation and placement of a drain was done. In the other patients, the hemorrhage was not visible and cleaning of the cavity was done by placing a drain. All patients progressed favorably. There were no deaths during the follow-up period.

DISCUSSION

Based on the reports by Wittgrove and Clark,7 surgeons are increasingly enthusiastic in regard to the laparoscopic procedure for bariatric surgery because it is equally as effective as the open technique and with better results in recovery and with fewer complications. They report a weight loss of 60% at 6 months and 77% on average at 1 year.

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In conclusion, our paper demonstrates that simplified laparoscopic gastric bypass is a surgical procedure with good results on average and with an adequate weight loss in excess of 72.7% of the patients at 12 months. Follow-up time was limited. Further analysis is undoubtedly required to obtain long-term results and conclusions.

**REFERENCES**