Gastric plication. Review of 900 cases

A Bariatric Surgery reality

Carlos Sales

Barranquilla, Colombia carlossalesp@hotmail.com

Summary. Introduction: Obesity is a growing public health problem in our population, patients affected with this condition are increasing and also the rate in the younger population. There are several alternatives for surgery or bariatric surgery with variations in their results and possible complications.

Materials and Methods: 900 patients have undergone laparoscopic gastric plication (LGP), a laparoscopic bariatric procedure, and we evaluate the results of one year post-op. Between August 2006 and August 2010 were performed 900 LGP surgeries, 562 women and 338 men, aged between 14 and 73 years, body mass index (BMI) between 30 and 60.

Results: Percentage of Excess Weight Loss (%EWL) was 70.30%

Discussion: Our experience with PGL and the result probes that it is a restrictive surgery easily perform, ambulatory, with encouraging results, lower risk and lower morbidity and mortality.

Keywords: Laparoscopic gastric plication; restrictive surgery, greater curvature suture.

Introduction

Morbid obesity (MO) is an increasing worldwide health problem and medical treatment with diet, medication, exercise, psychologists, beauticians and others, have shown no clinically significant sustainable results over the years. They have provided only temporary results. Rapid recovery of weight loss has been the standard when using such techniques to control and lower weight [1].

However, there is great scientific evidence of the direct benefits of bariatric surgery as the primary treatment for obesity and improvement of its associated comorbidities [2].

There is discussion about which patients are suitable for this surgical option and the adequatesurgery for each of them. The restrictive alternatives reduce food intake and the malabsorptive ones reduce the absorption of fats, proteins and other substances, which does not occur in a restrictive procedure [7-9].

Among the restrictive procedures, adjustable gastric banding (AGB) and laparoscopic gastric sleeve (LGS) have proven to be useful therapeutic options for some patients, but significant complications such as erosion, sliding of the gastric band or gastric leaks can occur [3,4,5-12].

Gastric fistulas at the esophageal gastric junction (EGJ) are a real challenge in LGS due to its difficult management. This morbi-mortality is higher than in a gastric bypass since it management is more complex, often requiring re-intervention and prolong dealings with nutrition and intensive care units care, sometimes leading to the death of the patient, in addition to a high medical cost (8-10).

The aim of this study is to present the LGP as a therapeutic alternative, a new restrictive bariatric surgery technique with lower risks and complications as mentioned above, which does not require the use of implants or surgical staples and is performed with low cost traditional suturing, easily applicable to any institution.
LGP is a minimally invasive procedure that can be done as an outpatient, in which the stomach is not divided, minimizing the risk of leaks and bleeding and with a marked difference in their morbidity [16-18].

**Indications**

The indications for this surgery are the same as any restrictive alternative, where patients eat a liberal diet frequently with sugars but without a high intake of sugary drinks like soda. If patients have a strong hereditary obesity then we suggest adding some type of metabolic surgeries.

We have used it on adolescent bariatric surgery (ABS) patients starting at age 14, which shows that it is a useful alternative for the management of patients at early ages where there is a reluctance to make more drastic and irreversible surgery, with an increased risk of complications. We also have included patients up to 73 years of age where no major surgeries are performed and because the increased mortality and morbidity and we have always performed as an outpatient.

The low sugar dietary guidelines and its importance need to be emphasized to the patient explaining that since there is no alteration in the absorptive nutritional capacity, psychological and aesthetic medicine counseling is needed for all patients to improve adherence to treatment for better results.

Reversal, if needed, if complications or food intolerance arise is also simpler without risking the patient’s life.

**Surgical Procedure**

The patient is a supine position, legs bound together, and secured to the OR table to prevent slippage and lower limb bandages.

Under general anesthesia, pneumo-peritoneum is done with the Veress needle, and five 5 mm ports are placed which helps a quick recovery with less pain. We use a 5 mm, 30 degrees camera and a gastric 38F tube passed the stomach emptied and then the tube is removed. Plication is done without intra-gastric tube, allowing adequate plication and a better recovery.

The ports are placed accordingly: the first at midline supraumbilical for pneumo-peritoneum and the surgeon’s right hand, the second for the camera in the right mid-clavicle line, the third for assistance in the right axillary line, the fourth subxiphoid for liver retraction and the fifth on the left mid-clavicle line and is used for the left hand of the surgeon (Fig. 1).

With an emptied stomach, dissection of the entire greater curvature is carried out with the harmonic scalpel from the pylorus to the His’ angle, removing the fat pad and displaying the left crus of the diaphragm allowing a wide mobility to perform stomach plication without tension (Fig. 2).

The GP starts at the angle of His with invagination of the fundus using 1/0 silk interrupted stitches, and completing it down to two centimeters of the pylorus, sometimes using two different suture lines to make adequate accommodation and narrowing: The final image is similar to a gastric sleeve, with the difference that not any part of the stomach is removed and that the invagination into the gastric lumen creates fullness or bloating (Fig. 3 and 4).

Leak tests are unnecessary nor any drainages. Surgery is done under outpatient care. Intravenous heparin is given during 3 days plus oral Omeprazole for 90 days. Clear liquid diet for 7 days and then soft diet.
Materials and Methods

900 surgeries LGP were done between August 2006 and August 2010, 562 (62.4%) females and 338 (37.6%) males, aged between 14 and 73 years and BMI ranged between 30 and 60. All patients underwent complete evaluation of medical history, labs, abdominal eco scan, upper endoscopy, surgical and anesthetic pre assessment. All patients had the procedure properly explained and an informed consents was signed.

<table>
<thead>
<tr>
<th>BMI</th>
<th>Patients</th>
<th>%EWL</th>
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<tbody>
<tr>
<td>30 - 34.9</td>
<td>217</td>
<td>79.12</td>
</tr>
<tr>
<td>35 - 39.9</td>
<td>302</td>
<td>73.90</td>
</tr>
<tr>
<td>40 - 49.9</td>
<td>288</td>
<td>68.39</td>
</tr>
<tr>
<td>50 – 60</td>
<td>93</td>
<td>59.80</td>
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<tr>
<td>Total</td>
<td>900</td>
<td>70.30</td>
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Results

All patients were done ambulatory with a length of stay less than 12 hours, there were no cases of mortality.

They were evaluated at one year by the clinical records, post surgical care and the clinical benefit obtained, its complications and controls were performed by personal visits and telephone interviews.

%EWL averaged 70.30%. Patients were divided into groups according to their BMI to assess results as independent groups.

We found that the %EWL is higher in the patient group with lower BMI indices which inclines to a high percentage curve in patients with higher initial BMI the % EW L is lower.

Two patients had complications. One had an intra-abdominal abscess or minimal fistula, undetectable by radiology (CT with oral contrast) that it was easily solved with laparoscopic lavage and drainage plus antibiotic treatment. In the second one, the leak was evident radiologically and it was drained by ultrasound-guided puncture and antibiotic therapy. Both patients had a good recovery. The leak rate is 0.22% for the procedure.

No other major complications occurred in this group of 900 patients and the clinical and endoscopic permanence of the greater curvature plication and retention of gastric restriction one year after the procedure [Figure 5, 6]

Discussion

Restrictive surgeries or mechanical gastric reduction are alternatives in the management of obesity, among them the most used today are the AGB and LGS [14-15].

The AGB has been widely used in recent years with technical ease, reversibility, adaptability, low immediate mortality, low morbidity. The %EWL is close to 50%, but unsatisfactory weight loss occurs in over 20% of patients [11-13].

The AGB has the disadvantage of requiring a long-term foreign body implant that can be dislodged with subsequent migration and the ability to cause gastric erosion in 11% of patients. It has a high failure rate and re-operations needed to remove the band and further surgery in 25% of cases. The re-operations had a greater degree of complexity which increases surgical risks [6-13].

LGS is a definitive bariatric procedure, creating a tubular stomach with consequent restriction of food volume. The mid-term results have proved adequate, but may have complications such as esophagitis, stricture, gastric fistulas. Leaks rates range between 1-3% of cases may be difficult to manage, with a high mortality in some cases.

A bariatric procedure such as the LGP that restricts the stomach proper without a very low leak rate, without a need of foreign body implants, its low cost is ideal and a good result is the LGP.

The LGP is similar to LGS, in that it creates a greater curvature plication with a narrow gastric lumen tube without gastric resection or use of staple. The gastric leak risk is much lower.

Patients describe adverse effects such as nausea, salivation, vomiting, heartburn and cramping, which can be resolved within a period of 2-3 days with medical management and these side-effects are related to the degree of edema and posterior plication stasis venous and post surgical trauma.
The post-surgical management includes a venous catheter for 3 days, with medication: Ondansetron 8 mg. iv every 12 hrs; Omeprazole 40 mg. iv every 12 hrs; hyoscine bromide 1 Amp. iv every 6 hrs; Ranitidine 50 mg. iv every 6 hrs, similar handling the patient with Intragastric balloon.

All patients were attended by a multidisciplinary team. Mean %EWL in our patients was 70.30%, which is an encouraging result.

Patients with BMI 30-35 had better results than those with BMI>50 where the %EWL was 59.8%, and we dare recommend that patients with initial BMI>50 have a mixed derivative surgeries for better results.

An additional advantage of the LGP are patients with hiatal hernia and gastro-esophageal reflux (GER), where the diaphragm crus can be calibrated and the rent closed, with an expected improvement in reflux, that can be done easily with a very low risk of fistulas, compared to gastric sleeve where leaks can communicate with the mediastinum and increase morbidities.

We had two cases of infra-abdominal abscess in the angle of His and left subphrenic space, one of them managed by laparoscopic drainage, medical management and quick resolution of the problem, and the second with drainage guided by CT scan and medical management. Both radiological and methylene blue tests failed to demonstrate the fistula and we believe that the leak was so small that spontaneous closure occurred. This may show that leaks are minimal compared with the gastric sleeve case where leaks are wider and more difficult to manage.

13 children between 14-15 years old in the ABS group were assessed to have obesity by a multidisciplinary team, and underwent surgery with good results. This shows that a more conservative approach may help patients improve change of habits by gastric restriction.

In conclusion the LGP is a promising bariatric procedure, easy to perform, with a lower cost, and lower complication rates, applicable to any institution in our country.

References


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