Bowel obstruction after Laparoscopic RNY Gastric Bypass

Arnulfo F. Fernández-Zulueta, Yakusik E, García I, Ballesta López C.

Centro Laparoscópico Dr. Ballesta, Teknon Medical Center. Barcelona. Spain

Arnulfo F Fernández-Zulueta. CM Teknon, D- 174. Vilana 12. Barcelona. ✉arnulfo3334@yahoo.com Tel.(34) 634 103 875

Background: Objectives: Identify the incidence and behavior of the intestinal obstruction after gastric bypass surgery by laparoscopy (LRNYGBP) at the Dr. Ballesta Laparoscopic Centre (BLC), Barcelona

Material and Methods: Retrospective study of 1,864 patients operated on by LRNYGBP. Analyzed variables: Causes of occlusion, predominant symptoms and diagnostic tests. The time elapsed between the LRNYGBP and the episode of occlusion, route of approach and morbi-mortality were also evaluated.

Results: 33 patients diagnosed with intestinal obstruction post LRNYGBP were included. The most frequent causes of occlusion were: internal hernias - 15 (0.8 %), and hemobezoar 11 (0.59 %). The interval between LRNYGBP and intestinal obstruction by internal hernia was 607 (90-1125 %). Mortality occurred in 3 patients (9) of them for hernias (66.6) internal-2 and hemobezoar-1 (33.3).

Conclusions: Reduce morbidity and mortality from intestinal obstruction subsequent to LRNYGBP requires a careful closing of all the spaces created to avoid it, as well as of a diagnosis and early treatment of occlusive established episodes.

Key-words: Gastric by-pass; occlusion, internal, hemobezoar hernias.

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Introduction

The laparoscopic RNY gastric bypass (LRNYGBP) is the procedure done and with better results in the treatment of morbid obesity [1]. For several years well-designed studies have shown that the effectiveness of the laparoscopic procedure is similar to the open access. LRNYGBP offers advantages over the open procedure in regard to: lower incidence of infections from the wound, less ruptures, shorter hospital stay and a rapid return to usual activities [2].

However, some complications such as intestinal occlusions in the LRNYGBP have an incidence higher than open surgery [2, 3, 4]. The higher incidence of intestinal occlusions post LRNYGBP is related to the formation of internal hernia, which has been linked to a low formation of adhesions that accompany the laparoscopic procedure [5,6]. Serra [7] described the first internal hernia in the LRNYGBP.

Intestinal obstruction after LRNYGBP may be caused by internal hernias; these are hernias through the holes where the ports were placed, post-surgical adhesions and the rents of the entero-anastomosis. Another very peculiar cause that occurs in the immediate postoperative period, is the obstruction of the intestinal lumen by clots, known as hemobezoar [8]

We carry out this investigation to identify in our patients the incidence and behavior of one of the most feared complications of postoperative surgery of LRNYGBP, bowel obstruction.

Material and Methods

We conducted a retrospective study of 1,864 patients who underwent LRNYGBP in Dr. Ballesta Laparoscopic Centre (BLC) in Barcelona, Spain during the period from January 2002 to February of 2011.

All patients who had a LRNYGBP were included and all those who needed to be re operated for intestinal occlusion, scheduled or urgent form in the BLC or another hospital.

Material y Methods

All patients who had a LRNYGBP and all those who needed to be re operated for intestinal occlusion, scheduled or urgent form, in the BLC or another hospital are included.

The variables analyzed were: causes of occlusion, predominant symptoms, tests done to reach the diagnosis time mediated between the initial operation and the episode of occlusion, route of approach (laparoscopic or open), places were this treatment was done and morbi-mortality.

The different forms of presentation of the occlusion were considered: internal hernias, torsion of jejuno-jejunal anastomosis, adhesions, incarcerada hernia at the ports of entry, intussusceptions and hemobezoar.

The laparoscopic technique at the BLC for the LRNYGBP was an antero-colic ante-gastric, Roux-en-Y manual anastomosis. Our standard has undergone some modifications over time, according to the actual experience and research [9] .

In relation to the closure of the mesentery rents, we started January 2002 closing the meso of the jejunum-jejunum anastomosis using a continuous absorbable poliglactin suture 910 (Vicryl 2/0 R).On April 2011, we decided to use for closure a non-absorbable suture (Ethibond 2/0 R), and also from this same date on, we incorporated the closure of the Petersen space, so all the rents that arise from to the technique are currently closed.

Information for the investigation was obtained from our database, and case histories. Close monitoring of our patients was done at 1, 3 and 6 months per year and each year on a permanent basis.

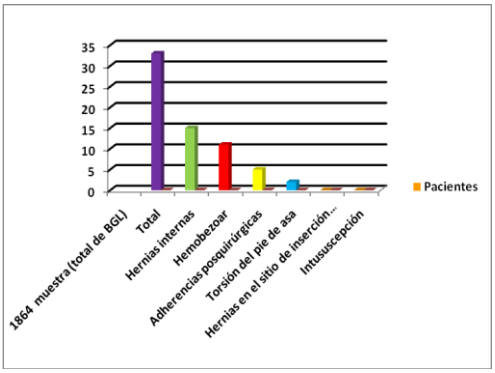
Results

33 patients who were diagnosed with intestinal obstruction were included, which represents 1, 77% of the 1,864 between January 2002 and February of 2011. The causes of intestinal obstruction in this series were: internal hernias-15, representing the total of the analyzed sample (0.80%) followed in frequency by hemobezoar-11 (0.59%), postsurgical adhesions-5 (0.26%) and twisting at the foot of the loop-2 (0, 10%). There were no patients with occlusion by hernias in the insertion site of ports or intussusceptions (table and graph 1)

Table 1. Causes of obstruction by LRNYGBP

1.864 LRNYGBP	Patients	%
Total	33	1,77 %
Internal hernias	15	0,80 %
Hemobezoar	11	0,59 %
Post-surgical adhesions	5	0.26 %
Twisting of the loops	2	0,10 %
Ports hernias	0	0 %
intussusception	0	0 %

Graph 1. Causes of obstruction post- LRNYGBP

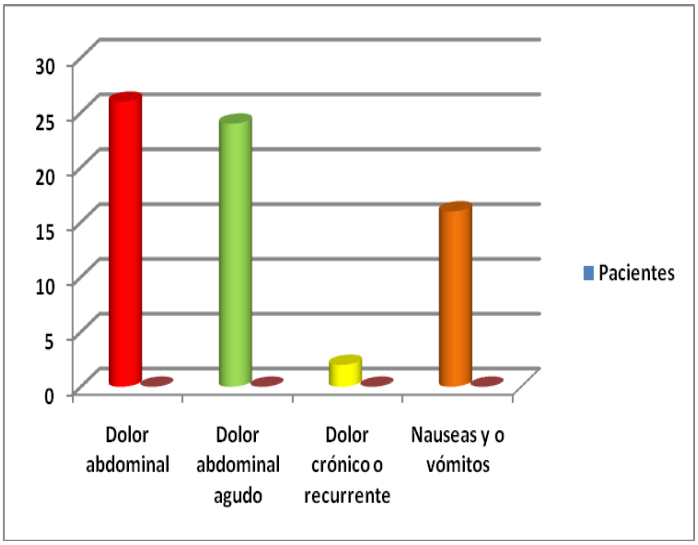


The predominant symptom was abdominal pain, 26 of the 33 patients (78.7 %), in the form of acute abdominal pain in 24 (72.7 %) and in 2 (0.6 %), which manifested itself in the form of a chronic or recurrent pain. Other symptoms, such as nausea or vomiting, were present with abdominal pain in 16 patients (48.4 %). (Table and graph 2)

Table 2. Main symptoms

	Patients	%
Abdominal pain	26	78.7 %
Acute abdominal pain	24	72.7 %
Chronic abdominal pain	2	0.06 %
Nausea and/ or vomiting	16	48.4 %

Graph 2. Main symptoms



The interval between the appearance of intestinal obstruction and LRNYGBP was 607 days for internal hernias, ranging from (90-1125) approximately 20 months. Intestinal occlusion was present the first year in 4 patients (26, 6 %), two of them in the first six months and another between six months and a year. For most of the patients, 10, with internal hernias (66 %) one year had already past since the operation at the time of the occlusive process.

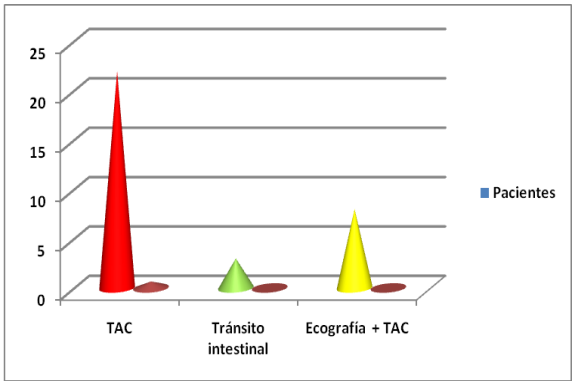
Occlusive caused by hemobezoar acted as a complication in the immediate postoperative period in 11 patients, 9 (81,8 %) occurred in the first 24 hours and 2 (18.1 %) between 24 and 48 hours after the LRNYGBP intervention.

The most widely used diagnostic tests were: CT scan and x-rays of intestinal transit. The first led us to the diagnosis directly in 22 (66 %) of the 33 occlusion patients. Intestinal transit provided the diagnosis in 3 (9 %). On the other hand, in 8 patients (24.2) an ultrasound test and CT were done before making the decision to intervene surgically. This latter group completely corresponded to patients operated outside the BLC. (Table and Graph 3)

Table 3. Diagnostic means

	Patients	%
CT	22	66%
Intestinal transit	3	9.0 %
CT & Ultrasound	8	22.2 %

Graph 3. Diagnostic means



Interventions due to intestinal obstruction were carried out in 19 at the BLC (57.5%) and outside centers 14 (42.4%). The path of approach of the occlusive tables was laparoscopic: 23 (69.6%), of those 3 required conversion to open surgery (0.9%), 2 with a diagnosis of internal hernias and 1 for flanges occlusion. Direct involvement through open surgery, 10 patients (30.3%), influenced by the severity of the found box and the experience of the surgical team that faced it. Of these, only two were operated on by our LBS team.

There were 3 deaths (9 %) in this series of cases operated on for intestinal obstruction, 2 (66.6 %) of them with internal hernias, one with necrosis of intestinal loop and 1 (33.3 %) with hemobezoar and peritonitis after a gastric perforation.

Discussion

The incidence of intestinal obstruction after a LRNYGBP reported in the literature ranges between 1.5 and 5 % (6, 7, 10, 11). The incidence of this complication in our series was 1.77 %.

Internal hernias were the most common, at 0.8%, form of occlusion. When compared with similar reports, we see that our incidence was less than those reported by authors such as Higa [11] who, in a follow-up to 20 months of 2000 patients, reported a 3.2% incidence rate for internal hernias. Other results, such as Rodriguez [13], analyzing 359 patients in two stages, the first 187 patients by closing only the mesentery of the Jejuno-jejunostomy the incidence of internal hernias was 14.4 %. In the second stage, 172 patients were evaluated, by closing all the spaces, and the incidence rate was 1,1 %.

It has recently been published that the closure of the rents created when made in the technique of the DGL omentum section is not consider in LRNYGBP [10] . That paper was discussed and discredited a in letter to the editor by other authors who considered it a weak claim to make after only one year of patient monitoring [14].

At the BLC, the systematic section of omentum is carried out with the aim of reducing the level of tension when suturing the Gastro-entero anastomosis, a factor that can influence the incidence of leakage at this level. The randomized study that led to this conclusion will be published soon.

Aspects such as the orientation of the alimentary loop at the Gastro-entero anastomosis (to the left or the right), have also been considered as they could influence the incidence of internal hernias, as it is possible reduce its presence when it is oriented towards the right [15].

The technical aspect that is considered most valuable in preventing internal hernias incidences remains the closure of two or three new spaces created subsequent to the LRNYGBP. Our group has been progressively implementing this up to the present time, we close the two spaces created by our technique: the Petersen space and the space at the jejunum-jejunum anastomosis [8, 12, 13, 18].

Under our protocol, the approach to treat this complication is recommended to start by a laparoscopic approach, with the exception of patients who have any condition that contraindicates it.

We started the procedure by laparoscopic exploration to determine the affected area; we followed by reducing the intestinal hernia with careful handling of the loops and carry out the assessment of integrity and adequate irrigation. Then we proceed to the closure of the space where the hernia originated. We confirm that no other rents for possible occlusion are present.

The mean range of presentation between the original surgery and the occlusion was 607 days for internal hernias, coinciding with that reported by other authors, who estimate between 1 and 2 years when the loss of weight is greatest and therefore the risk of appearances of the greater mesenteric defects [6, 16]. Others reported this complication in dates closer to the LRNYGBP with a higher incidence in the first six months. The tendency of this complication in the first months is considered common for those who have experienced a lot of weight loss in a short time [17]. This observation is not supported by studies with a high level of scientific evidence [17].

Another factor that can influence this event is the increase in intra-abdominal pressure, especially by causes such as physiological pregnancy [19.20]. In our series, one of the three deceased patients happened to be pregnant, assisted in a hospital, in which there were doubts before the clinical picture of abdominal pain. They were initially attributed to pregnancy-related disorders, but the patient had an internal hernia diagnosed and treated too late.

The second cause of occlusion in our patients, hemobezoar, immediately manifested itself in the postoperative period, in the form of a gastric dilatation, pain in the upper abdomen, and/or irradiation to the left shoulder or inter-scapular area. It is usually accompanied by nausea and/or vomiting. Others symptoms can be typical of bleeding with hemodynamic

disorders, such as dizziness, hypotension, and increased heart rate [21, 22].

Early diagnosis and surgical treatment is the best strategy to treat these patients, using a de-compressive Gastrostomy tube and suction of blood clots in the area of the jejunum-jejunal anastomosis. The proposed approach is preferably done by laparoscopy.

CT scan is the most useful radiological tool in the diagnosis of occlusion and according to literature with a varied sensitivity, from 51.1% to a 100% [11, 17]. The most common radiological signs are dilation of the thin loops and the image of torsion of the mesentery, in the case of internal hernias [22]. In patients with hemobezoar, the signs in the CT are dilation of the biliary loop and the excluded stomach. The presence of clots in the intestinal light can also see often, and this sign leads us to confirm this diagnosis.

Fig. 1. CT. Hemobezoar occlusion

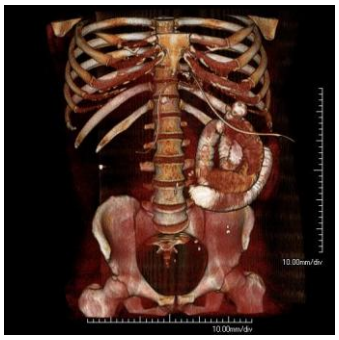


Fig. 1. Dilated biliary loop with clots.

(Teknon Radiology Department)

Subsequent mortality in patients with post-LRNYGBP occlusion is not low, especially due to late diagnoses as in cases of internal hernias, the presence of vascular compromise and necrosis is associated with high morbidity and mortality.

We consider it important in the post LRNYGBP periods for patients to have the ability to start timely studies and necessary scans in cases of recurring abdominal pain, suggestive of occlusion, or in cases of inconclusive diagnostic tests. Put in another words, to do a laparoscopic exploration in patients when patterns of occlusion are present or suspected may also be a valid procedure before complications appears.

Conclusions

Internal hernias are in our series, the most common cause of intestinal obstruction. Abdominal pain is a symptom that is common in these patients. It can be either acute or chronic pain.

Hemobezoar are the second leading cause of occlusion, manifested in the immediate postoperative period with prevalent symptoms such as a gastric dilation. They require a specially precision handling to avoid devastating complications.

Abdominal CT scan is the test of choice in diagnosing intestinal obstruction caused by either internal hernias or hemobezoar.

Morbi-mortality rate reduction from intestinal obstruction is based first and foremost on prevention, making a careful closure of all the spaces created during the LRNYGBP intervention. In addition early diagnosis and surgical treatment is mandatory in the early forms of intestinal obstruction.

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Al: Radiology Departament. Teknon Medical Center. Barcelona. Spain