CIRUGÍA ESPAÑOLA

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Original article

Gastrojejunal Anastomotic Stenosis After Laparoscopic Gastric Bypass. Experience in 300 Cases in 8 Years☆

María Luisa García-García,[a,] Juan Gervasio Martín-Lorenzo,[a] Ramón Lirón-Ruiz,[a] José Antonio Torralba-Martínez,[a] Álvaro Campillo-Soto,[a] Joana Miguel-Perelló,[a] Enrique Pérez-Cuadrado,[b] José Luis Aguayo-Albasini[a,c]*

[a] *Servicio de Cirugía General, Hospital General Universitario J. M. Morales Meseguer, Murcia, Spain*
[b] *Sección de Gastroenterología y Endoscopia, Hospital General Universitario J. M. Morales Meseguer, Murcia, Spain*
[c] *Departamento de Cirugía, Campus de Excelencia Internacional Mare Nostrum, Universidad de Murcia, Murcia, Spain*

ARTICLE INFO

Article history:
Received 24 February 2014
Accepted 10 June 2014
Available online 28 October 2014

Keywords:
Morbid obesity
Gastrointestinal bleeding
Bariatric surgery
Laparoscopic gastric bypass
Postoperative complications

ABSTRACT

Objective: Gastrojejunal stricture (GYS), is not only a common complication after laparoscopic gastric bypass, but its frequency is also about 15% according to bibliography. Our aim is to present our experience after 280 laparoscopic gastric bypass.

Patients and method: From January 2004 to December 2012, 280 patients underwent a laparoscopic Roux en Y gastric bypass with creation of the gastrojejunal anastomosis, which was performed with circular stapler type CEAA No 21 in 265 patients and with a linear stapler in 15 patients. In all patients with persistent feeding intolerance barium transit and/or gastroscopy were performed. When gastrojejunal stricture showed proceeded to endoscopic pneumatic dilation.

Results: Twenty cases (7.1%) developed a gastrojejunal stricture; in 4 of these cases the initial diagnosis was made by barium transit and all cases were confirmed by endoscopy. Five patients had a history of digestive bleeding that required endoscopic sclerosis of the bleeding lesion. All cases were resolved by endoscopic dilatation. One patient suffered a perforation and a re-intervention. At follow-up re-stricture has not been detected.

Conclusion: Stricture at the gastrojejunal anastomosis after gastric bypass is the commonest complication early after surgery. Endoscopic balloon dilatation is a safe and effective therapy.

☆ Please cite this article as: García-García ML, Martín-Lorenzo JG, Lirón-Ruiz R, Torralba-Martínez JA, Campillo-Soto Á, Miguel-Perelló J, et al. Estenosis de la anastomosis gastroyeyunal en el bypass gástrico laparoscópico. Experiencia en una serie de 300 casos en 8 años. Cir Esp. 2014;92:665–669.

* *Corresponding author.*
E-mail address: mlgrgr@gmail.com, miliki2@hotmail.com (M.L. García-García).

Estenosis de la anastomosis gastroyeyunal en el bypass gástrico laparoscópico. Experiencia en una serie de 300 casos en 8 años

Palabras clave:
Obesidad mórbida
Estenosis gastrointestinal
Cirugía bariátrica
Bypass gástrico laparoscópico
Complicaciones postoperatorias

RESUMEN

Introducción: La estenosis de la anastomosis gastroyeyunal (GY) representa la complicación más frecuente en la cirugía de derivación gástrica por laparoscopia, llegando en algunas series a alcanzar el 15%. Presentamos nuestra incidencia de estenosis de la anastomosis GY en el bypass gástrico laparoscópico, su forma de presentación y su manejo a largo plazo.
Material y método: Desde enero del 2004 hasta diciembre del 2012 se han realizado 280 bypass gástricos por la laparoscopia, según la técnica de Wittgrove modificada. La anastomosis GY circular se practicó con material de autosutura tipo CEAA n.° 21 en 265 casos, en los restantes se realizó con una anastomosis longitudinal con grapadora lineal de 45 mm. A todos los pacientes con intolerancia persistente a la alimentación se les realizó tránsito baritado o gastroscopia. Cuando se evidenció estenosis GY (diámetro <10 mm), se procedió a dilatación neumática endoscópica.
Resultados: En 20 casos (7,1%) se desarrolló una estenosis GY, en 4 de ellos el diagnóstico inicial fue con tránsito baritado. Todos los casos fueron confirmados por gastroscopia. De ellos, 5 pacientes tenían antecedentes de hemorragia digestiva alta que precisaron esclerosis endoscópica de la línea de sutura de la anastomosis GY. Todos los casos se han resuelto mediante dilatación endoscópica, precisando en un caso 2 sesiones de dilatación, en otro caso 3 sesiones y el resto, una. No se han detectado reestenosis. Uno de los pacientes sufrió una perforación de úlcera postanastomótica.
Conclusiones: La estenosis de la anastomosis GY es una complicación frecuente tras el bypass gástrico en Y de Roux. Favorecida por anastomosis de pequeño calibre. La endoscopia es la piedra angular para el diagnóstico y tratamiento, pues resuelve la mayoría de casos, siendo rara la revisión quirúrgica.

Introduction

Obesity is one of the main health problems in developed countries; in Spain, 15% of the people aged 25–64 are affected. Surgical treatment of morbid obesity is the only long-term effective strategy to obtain and maintain significant weight loss over time.[1]

A good bariatric surgical procedure must be effective in achieving the desired weight loss; it must be safe, with less than 10% morbidity and less than 1% mortality; it must offer good quality of life and produce minimum side effects.

Over 30 bariatric techniques have been developed since its inception in the 1950s in the U.S., and currently, Roux-en-Y laparoscopic gastric bypass (LGB) is the most widely used procedure. However, today there is no consensus as far as the ideal technique for gastrojejunal anastomosis (GJ) with the least short-term and long-term complications.[2] Stenosis after laparoscopic gastrojejunal (GJ) anastomosis is the most frequent complication in laparoscopic gastric bypass surgery amongst the procedures listed above; it reaches 25% rates in some case series.[3]

This study aims to analyse long-term incidence of stenosis after laparoscopic gastrojejunal (GJ) anastomosis in our patients, to determine its clinical presentation, and its response to endoscopic dilation.

Patients and Method

Patients

From January 2004 to December 2012, 280 patients at the General and Digestive Surgery Department of the Hospital General Universitario J. M. Morales Meseguer [J. M. Morales Meseguer University General Hospital] of Murcia underwent LGB according to the Wittgrove modified technique,[4] which includes a bypass between the stomach and jejunum by circular or longitudinal anastomosis.

There were 112 men and 158 women; their mean age was 44 years (25–60). After endocrinologist and psychiatric assessment, indications were: BMI equal to or greater than 40 kg/m^2, or BMI at 35 if associated with major comorbidities. Some patients with BMI>60 and severe disease were sent for temporary gastric balloon placement. After the anaesthetist assessed the surgical risk, they underwent surgery by the same group of surgeons specialised in bariatric surgery.

GJ anastomosis was performed on 265 patients using a CEAA No. 21 AutoSuture instrument (ILS, Ethicon®) with end-to-side construction. Fifteen patients underwent anastomosis using an Endo GIA 45 reload beige (Covidien®) with side-to-side construction. In both techniques, after verifying anastomotic tightness, 2 or 3 Hoffmeister sutures were applied on each side and centre of the anastomosis.

On the day before surgery and subsequent days, 5000 subcutaneous units of Heparin were given as antithrombotic prophylaxis. During surgery and on the first postoperative day, we used pneumatic compression stockings; early mobilisation was achieved after removal. Cefazolin 2 g was used routinely as antibiotic prophylaxis at anaesthetic induction. We followed up on the procedure according to our clinical care guidelines regarding medical, nursing and nutritional aspects.[4]

All patients with persistent feeding intolerance underwent barium transit studies or gastroscopy. Pneumatic endoscopic dilation was performed (1.5 cm maximum dilation) on all patients with GJ stenosis (diameter <10 mm). We recorded the number of dilation sessions and complications.

Method

Patients were examined in outpatient surgery consultations at the first postoperative month, and then periodically every 3 months.

Patient follow-up was performed prospectively from the postoperative period. The following variables were recorded: sociodemographics, personal history, BMI, type of surgical technique, average stay, rates of re-surgery, mortality and its causes. The statistical study was for descriptive purposes; mean values were used for continuous variables, and percentages for categorical variables.

Results

Between January 2004 and April 2013, 280 laparoscopic gastric bypasses were performed in our surgery department. They were followed up for an average of 89 months (3–108).

In 20 cases (7.1%), patients who underwent circular mechanical anastomosis developed GJ stenosis. No stenosis cases occurred with linear side-to-side mechanical anastomosis.

All patients had progressive oral intolerance during the first 3 postoperative months. Four cases were detected by barium transit study; subsequently, all cases were confirmed by gastroscopy.

Five patients had a history of upper digestive bleeding originated from the GJ anastomosis suture line; they needed endoscopic sclerosis for the bleeding lesion (circumferential sclerosis and sclerosis at bleeding sutures).

All cases were solved by endoscopic dilation; one case needed 2 dilation sessions, 3 were performed on another, and a single session for the rest. No long-term restenosis was found.

After the second dilation, one patient suffered a perforation from a post-anastomotic ulcer and required urgent surgery. No mortality occurred from this complication.

Discussion

Over 30 different surgeries have been reported for treating morbid obesity. According to Forbi,[5] a good bariatric procedure must be effective in terms of obtaining the desired weight loss; it must be safe, with less than 10% morbidity, and less than 1% mortality; it must offer good quality of life, and produce minimum side effects. Although many techniques meet these characteristics in the short-term, sequelae occur in the long term, and this rules them out, as the type of possible complications depends on the type of surgery.[2] Therefore, bariatric surgery requires close postoperative and multidisciplinary follow-up for early detection and treatment of complications and sequelae.[4]

LGB is a widely used technique and it is considered the gold standard, as its complications are few and manageable.[6] Stenosis after laparoscopic gastrojejunal (GJ) anastomosis is a far from negligible complication of this technique, with variable incidence according to the case series (2.9%–25%).[3] Stenosis may be functional or anatomical.

Incidence in asymptomatic patients is not known since routine endoscopy is not performed on all patients.[7] In our case series, we have had 7.1% incidence that has slightly diminished with respect to a previously published preliminary study, in which 62 patients were analysed who underwent gastric bypass with 8.1% stenosis incidence.[4]

Symptoms include progressive oral intolerance and vomiting, with or without abdominal pain, usually appearing from the first 1–2 months from the postoperative period, during the phase where patients receive semi-solid diet, since during the first 4–6 weeks, patients who underwent LGB ingest a liquid diet.[4]

Oesophagogastric transit is useful as a first screening study when compatible symptoms occur, although diagnostic radiological image testing is being dropped due to low specificity and low positive predictive value.[8] Therefore, if symptoms are suspected, it is always necessary to perform an endoscopy as a diagnostic method. Stenosis is considered to have occurred when anastomotic diameter <10 mm is found or when the endoscope is unable to pass through it.[6,9,10] Stenosis can be classified by anastomosis diameter: mild (7–9 mm), moderate (5–6 mm) and serious (<4 mm).[7]

Endoscopic treatment is the first choice and consists of pneumatic dilation in single or multiple sessions. We recommend progressive dilation and avoid dilating to diameter >18 mm, due to perforation risk (approximately 2% risk); this provides excellent long-term results in terms of low rates for complications and failures; therefore, most GJ stenosis can be managed without surgery.[3,10] Although balloon dilation has few complications, it is not free of risks. In our series, one patient (5%) suffered perforation after pneumatic dilation, and needed subsequent surgery. No failure was recorded with endoscopic treatment for all other patients.

Its physiopathology is not fully known. Some favouring factors may be possible anastomosis subclinical leaks, ischaemia from vascular changes in the jejunum handle, anastomosis pressure or delay in healing after marginal ulcer.[11,12] Digestive bleeding history in 5 patients (25%) during the immediate postoperative period that required circumferential endoscopy electrocoagulation lead us to think that it can be a risk factor for subsequent stenosis as a result of secondary inflammatory-scarring reaction. This association has not been reported in the literature and

additional studies would be necessary to reach sound conclusions.

To date, there is great controversy about which GJ anastomosis and which technique is the most suitable one. Factors involved include technical errors: small diameter anastomosis to avoid fast gastric evacuating, and a mechanical factor: type of anastomosis, whether manual or mechanical.

González et al.[13] published a study comparing mechanical to manual circular anastomosis, in which they found 30.7% stenosis from mechanical anastomosis vs 3% from manual anastomosis. A 21 mm circular stapler was used in that study, and later studies have found greater stenosis incidence with this diameter compared to 25 mm circular staplers, without finding differences in the loss of weight between the two groups.[9,12,14,15] Between 4% and 7% have been reported for linear mechanical anastomosis, results which are similar to those of manual anastomosis.[16] Bohdjalian et al.[17] recently compared 25 mm circular anastomosis to longitudinal anastomosis, with 5.3% and 0% stenosis incidence, respectively. Bendewald et al.[18] analysed 835 patients who underwent Roux-en-Y laparoscopic gastric bypass, and conducted a comparative study between the 3 GJ anastomosis techniques (manual, linear mechanical, circular mechanical). Stenosis incidence was 6.1% for manual, 6% for linear mechanical, and 4.3% for 25 mm circular mechanical, without statistically significant differences. No differences in other complications were found, such as leakage or marginal ulcer. Therefore, the type of anastomosis does not affect the incidence of early complications.

In our case series we have not yet had any case of stenosis in patients who underwent linear anastomosis. Therefore, we considered that although results when using the mechanical circular anastomosis technique meet published standards, at an average stenosis percentage, we could lower complication incidence further by using linear anastomosis.

In conclusion, stenosis after laparoscopic gastrojejunal (GJ) anastomosis is a frequent complication following Roux-en-Y laparoscopic gastric bypass. Endoscopy is key for diagnosis and treatment because it solves most cases, and revision surgeries are rare. Therefore, bariatric surgery requires close and multidisciplinary postoperative follow-up. As the number of bariatric procedures increases, interrelation between surgeons and endoscopy specialists is crucial to recognise and to treat associated complications.

Funding

Paper financed partly by the Fundación para la Formación e Investigación Sanitaria de la Región de Murcia [Foundation for Health Training and Research of the Region of Murcia], Spain, Group FFIS-008.

Conflict of Interest

The authors declare having no conflict of interest.

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