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Laparoscopic Sleeve Gastrectomy: Bariatric Surgery Peak?

Marcos Lim Acosta[1], Christian Flores Ruiz[2], Gerardo Israel Zamora Rivera[3], Diana Gala Botello Fajardo[4]

[1,2,3]Unidad Medica de Alta Especialidad, Hospital de Especialidades Centro Medico Nacional de Occidente IMSS

[4]Universidad Autónoma de Guadalajara

ABSTRACT

Bariatric surgery is a great option not only for rapid weight loss but also as an alternative for type 2 diabetes mellitus and ravages of metabolic syndrome. The Surgical Therapy and Medications Potentially Eradicate Diabetes Efficiently showed that this surgical alternative is better than the more aggressive treatment against diabetes and the ravages of metabolic syndrome.

The laparoscopic sleeve gastrectomy (LSG) is a restrictive bariatric operation. Weight loss is achieved by drastically reducing the capacity of the gastric chamber, consequently, making the patient undergoing this procedure reduce their food consumption. In addition to this, the presence of biochemical changes lead the patient to a state of significant weight loss, with ghrelin being the main hormone involvedVarious authors conclude that sleeve gastrectomy is "the holy grail of bariatric surgery", but it is not. If so, this was the only surgery performed by these surgeons, which is not the case. Its benefits on the control of obesity as well as the almost complete remission of type 2 diabetes mellitus are very clear. Its intention is a surgery without the need for anastomosis and with preservation of the digestive tract, which makes it of very low mortality as well as future complications, including the few nutritional deficiencies that patients present after the procedure. In conclusion, laparoscopic sleeve gastrectomy deserves an important place among the bariatric procedures performed.

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INTRODUCTION

Bariatric surgery has advanced rapidly during the last decades both in the complexity of its techniques as well as the breadth of its indications to not only be used for rapid weight loss but also as an alternative for type 2 diabetes mellitus and ravages of metabolic syndrome. The STAMPEDE (The Surgical Therapy and Medications Potentially Eradicate Diabetes Efficiently) showed that this surgical alternative is better than the more aggressive treatment against diabetes and the ravages of metabolic syndrome. [1,2]

This has evolved to be even better known than the Roux gastric bypass since its surgical technique is less complex and its long-term effects are more lasting. Due to its results in clinical studies, it has been a highly preferred procedure by both surgeons and patients. The immediate advantages of laparoscopic sleeve gastrectomy over Roux bypass are the use of this technique in patients with various complex pathologies (inflammatory bowel disease, liver transplant candidates, and patients with previous complex abdominal surgery or complex hernias of the abdominal wall). It has been documented to eliminate the risk of developing a dumping syndrome. [1,2,3]

BACKGROUND

The first sleeve gastrectomy was performed by Hess in 1988 as part of his biliopancreatic diversion with the duodenal switch procedure (BPD-DS), this led to the fact that in 1991 and 1993, Marceau also proposed his modifications at the time of performing the biliopancreatic diversion by Scopinaro that did include early forms of sleeve gastrectomy variations as we know it today. With the early onset of laparoscopic surgery during the 1990s, Gagner performed essentially the first laparoscopic sleeve gastrectomy as part of the BPD-DS in 1999. Due to its significantly less demanding technique, it achieved high popularity at the turn of the 21st century. Initially, it was performed as an almost exclusive intervention for patients with a BMI > 60 kg/m2, before undertaking a definitive intervention with procedures such as bypass. Currently, the benefits it provides, as well as the ease of

performing it, have made this one of the most widely used bariatric surgeries. [4,5,6]

MECHANISMS INVOLVED IN WEIGHT LOSS AND CONTROL OF CHRONIC-DEGENERATIVE DISEASES.

The laparoscopic sleeve gastrectomy (LSG) is a restrictive bariatric operation. Weight loss is achieved by drastically reducing the capacity of the gastric chamber, consequently, making the patient undergoing this procedure reduce their food consumption. In addition to this, the presence of biochemical changes lead the patient to a state of significant weight loss, with ghrelin being the main hormone involved. [7,8,9,10]

At the time of removal of the gastric fundus, ghrelin levels are reduced and therefore appetite is suppressed. Peptide YY (PYY), is a hormone produced after the consumption of food in the intestine, it inhibits the release of NPY and has an anorexigenic effect. This peptide is markedly increased after sleeve gastrectomy, leading to prolonged satiety and reduced food intake in gastric sleeve patients. Glucagon-like peptide 1 is secreted by enteroendocrine cells after food intake. GLP-1 stimulates insulin release, inhibits glucagon secretion, and has a satiating effect on patients. Due to gastric emptying as well as hyperglucagonemia after food intake, GLP-1 levels are extremely high. All these biochemical changes are the main mechanisms involved in weight loss and its success in reducing insulin resistance in these patients, hence its success and increased popularity. [11,12]

The effects of this procedure in relation to the control of DM2 have been clarified at the moment and with the passage of time. It has been recorded that glycemic control, normalization of hemoglobin A1c and even the resolution of DM2 are common results of this surgery, this is strongly associated with the decrease in ghrelin levels. In addition to faster gastric emptying and small bowel transit time observed after the procedure, they have an additive effect in controlling DM2. 13.14

Complications and their management

Compared to laparoscopic gastric bypass and biliopancreatic diversion, LSG is easier to perform and therefore involves fewer risks, but despite being easier to perform, its complications can be more serious than other techniques described bariatric surgeries. Complication rates after surgery vary between 0% and 18%, with postoperative mortality in the first month ranging between 0% and 0.4%. Postoperative complications can be mainly divided into early and late. Early complications generally include bleeding, gastric fluid leak, obstruction, presence of abscesses, surgical site infection, among others. [16]

Postoperative bleeding is the most important and frequent complication that can occur in up to 16% of patients, this occurs during the first or second postoperative day and generally originates from the staple line or divided gastroepiploic vessels. Adjacent organs such as splenic injury or hepatic laceration are common up to 4.6%. Management can be conservative with blood products and fluid resuscitation of the patient, but there are cases in which reoperation is necessary for definitive control of bleeding. [17]

Gastric leak is a serious complication with an incidence ranging between 0% and 3.7%. A leak occurs when intraluminal pressure exceeds the staple line or the resistance of the tissue itself. This situation usually occurs when different local factors are present, such as poor blood supply, stapling problems or infection, which acutely prevent the healing of the gastric wall. For this, tissues must be handled with care and devices such as staples, electrocautery or other surgical equipment must be used rationally and carefully. [18]

Recent studies suggest that staple line reinforcement may reduce the incidence of postoperative leaks, as well as the use of a continuous serous suture that invaginates the staple line from the angle of Hiss to the midpoint of the section, and a second continuous suture from this point to the end, may be adequate to reduce the leak rate. During stapling, it is also very important to carefully hemostasis the gastric tissue for a long time, in order to reduce tissue edema. In addition, a nasogastric tube can be left in the newly formed gastric pouch for a period of 24 hours in order to reduce intrasuminal pressure and thus prevent leaks. [19,20]

CONCLUSIONS

Various authors conclude that sleeve gastrectomy is "the holy grail of bariatric surgery", but it is not. If so, this was the only surgery performed by these surgeons, which is not the case. Its benefits on the control of obesity as well as the almost complete remission of type 2 diabetes mellitus are very clear. Its intention is a surgery without the need for anastomosis and with preservation of the digestive tract, which makes it of very low mortality as well as future complications, including the few nutritional deficiencies that patients present after the procedure. In conclusion, laparoscopic sleeve gastrectomy deserves an important place among the bariatric procedures performed.

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