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Surgical treatment of postoperative laparostomy and pyloroduodenostomy—Case report

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ABSTRACT

INTRODUCTION: Postoperative duodenal-cutaneous fistula represents a rare and very complex problem. In most cases operative management becomes necessary, but only after local and systemic stabilization and sepsis control.

CASE PRESENTATION: A 39-year-old man was admitted for surgical management of laparostomy and pyloro-duodenostomy of the first (DI) and second (DII) duodenal segments with one year of evolution, as a complication of several surgical interventions.

The patient had been previously submitted to surgical interventions in another institution for:

1- lower gastrointestinal haemorrhage: treated with total colectomy; 2- upper gastrointestinal haemorrhage: performed a pyloroduodenotomy and pyloroplasty; 3- evisceration: abdominal wall closure; 4- biliary peritonitis due to pyloroplasty dehiscence: submitted to laparotomy with placement of a gastrostomy tube and pyloroduodenostomy tube; 5- intestinal haemorrhage through the pyloroduodenostomy tube: inconclusive exploratory laparotomy plus laparostomy; 6- gastrointestinal haemorrhage and shock: submitted to jejunal segmental resection (haemorrhagic mucous nodule); 7- several complications related to drainage, fistulae and celiotomy.

DISCUSSION: After initial medical treatment for local and systemic stabilization during four months, the following surgical procedures were performed: antrectomy; duodenectomy of DI and the suprapapillary part of DII; T-L gastrojejunostomy; duodenojejunostomy (DII and DIII) L-L at 40 cm of the gastrojejunal anastomosis; T-L jejunojejunostomy; abdominoplasty with a mesh and fibrin glue application; primary cutaneous closure. A multitubular drain was positioned near the duodeno-jejunal anastomosis and a suction drain was positioned in the subcutaneous space.

CONCLUSION: The patient was discharged at the 60th postoperative day, asymptomatic and with a weight gain of 10 kg.

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1. Introduction

Postoperative duodenocutaneous fistula represents a very rare and complex problem. They are associated with significant morbidity due to skin and wound care problems, nutritional abnormalities, malabsorption of fat-soluble vitamins, steatorrhea and rarely sepsis [1]. Intestinal fistulas are first treated medically [2]. In patients whose fistulas do not resolve with conservative management, operative management becomes necessary [3]. However, because of the technical difficulty of dissection, surgery is reserved for cases of failure of expectant and endoscopic management [4,5]. In most cases operative management becomes necessary with bowel resec-

tion and reconstruction of the abdominal wall, but only after sepsis control and local and systemic stabilization.

The authors present the surgical treatment of a very complex pylorostomy, duodenostomy of DI and DII with major duodenal papilla exposure.

This work is reported in line with the SCARE criteria [18].

2. Case presentation

A 39-year-old man was admitted in our Hospital for surgical treatment of laparostomy and pyloroduodenostomy of the first (DI) and second (DII) duodenal parts, with one year of evolution, as a complication of several surgical operations (Fig. 1).

The patient had been submitted to several surgical interventions in another institution, within a period of 30 days, successively by:

1- lower gastrointestinal bleeding and shock (total colectomy); 2- upper gastrointestinal bleeding and shock (pyloroduodenotomy and pyloroplasty); 3- evisceration; 4- biliary peritonitis due to

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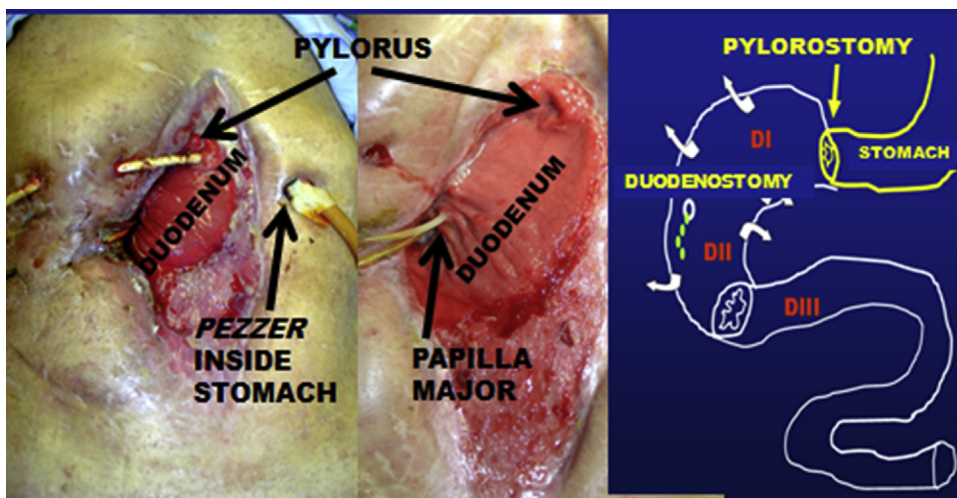


Fig. 1. Laparostomy and pyloroduodenostomy of the first (D1) and second (DII) duodenal parts.

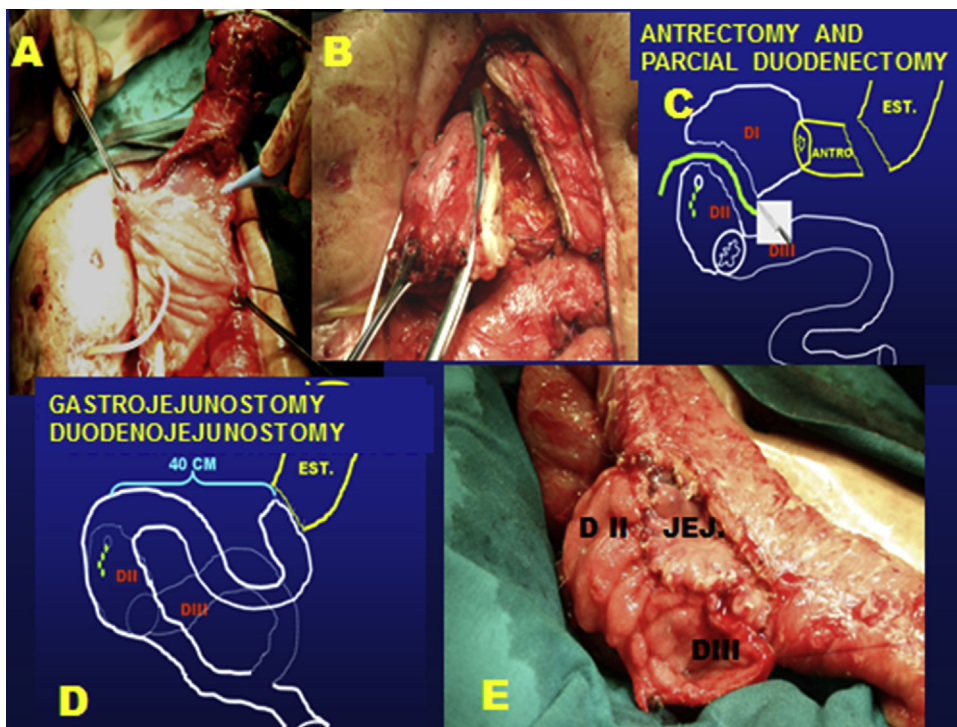


Fig. 2. (A–C) Antrectomy and duodenectomy of D1 and duodenectomy of the suprapapillary part of DII; (D,E) gastrojejunostomy (end-to-side), duodenojejunosomy (DII and DIII) side-to-side at 40 cm of the gastrojejunal anastomosis, and jejunojunosomy.

pyloroplasty dehiscence (gastrostomy tube and pyloroduodenostomy tube); 5- intestinal bleeding through pyloroduodenostomy tube (inconclusive exploratory laparotomy + laparostomy); 6- gastrointestinal bleeding and shock (jejunal segmental resection by hemorrhagic mucous nodule – degenerative lesion?, adenocarcinoma?); 7- several complications related to drainage, fistulae and celiostomy.

Initially the patient received medical treatment at the origin Hospital for local and systemic stabilization (control of sepsis, enteral and parenteral nutrition), for four months. Immediate surgery could not be performed because the tissues would be sub-optimal because of malnutrition and chronic inflammation.

Four months later at our Hospital the following surgical procedures were performed: circumferential para-celiostomic incision in a non-inflamed tissue; extensive lysis of dense intestinal adhesions;

dissection and identification of the gastric antrum and antrectomy; dissection and identification of the first (D1) and second (DII) duodenal parts; duodenectomy of D1 and duodenectomy of the suprapapillary part of DII; gastrojejunostomy (end-to-side) (T-L); duodenojejunosomy (DII and DIII) side-to-side (L-L) at 40 cm of the gastrojejunal anastomosis; jejunojunosomy T-L (Fig. 2). Abdominal Wall plasty with a mesh (polypropylene, polydioxanone and regenerated cellulose), application of fibrin glue and primary cutaneous suture. Multitubular drain near the duodenal anastomosis and subcutaneous suction drainage were set (Fig. 3). The patient started oral feeding seven days after the surgical intervention. The post-operative period was complicated by a subcutaneous seroma treated successively by drainage, serum instillation and fibrin glue application. The patient was discharged at the 60th postoperative day with a weight gain of 10 kg (Fig. 3).

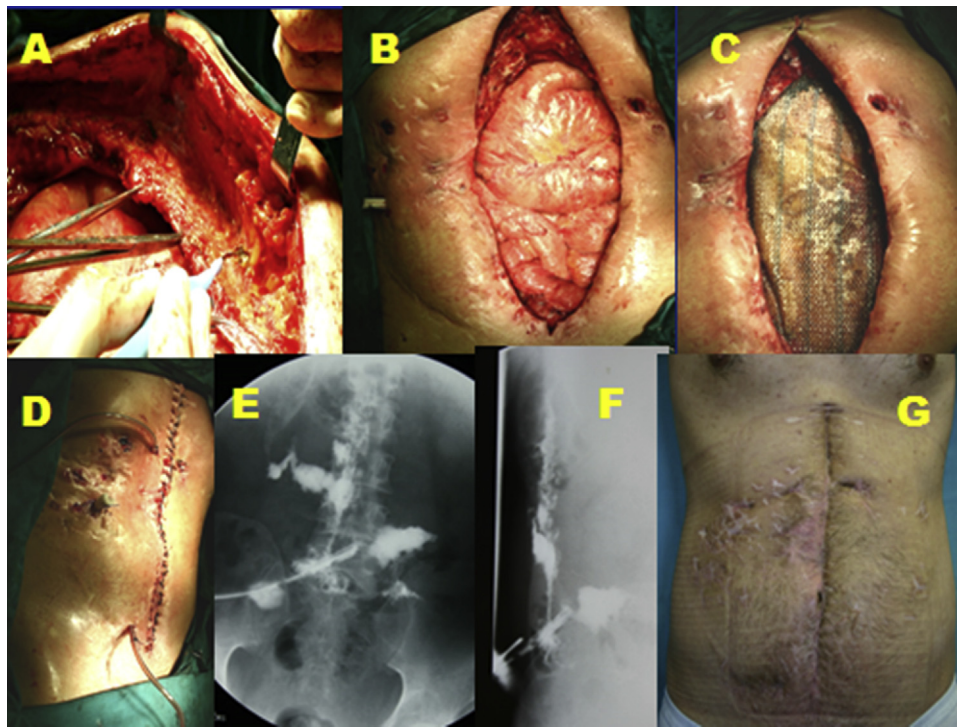


Fig. 3. (A–C) Abdominal Wall plasty with a *Proceed*® mesh. (D) Primary cutaneous suture and multitubular drain near duodenal anastomosis and subcutaneous suction drainage. (E,F) Postoperative subcutaneous seroma. (G) The patient was discharged at the 60th postoperative day.

3. Discussion

The treatment of enterocutaneous (EC) fistulas is complex. The successful management of an EC fistula requires a multidisciplinary team, including a Gastroenterologist, Interventional radiologist, Enterostomal therapist, Dietician, Social worker and Surgeon [6]. The initial treatment of intestinal fistulas in the first few hours to days is medical, including resuscitation, control of sepsis, local control of fistula output, drainage of localized collections, metabolic stability, adequate nutritional support and pharmacologic management [2,7–9]. Enteral nutrition with appropriate local care may be used in the majority of high-output enterocutaneous fistulae, with an acceptable rate of spontaneous closure [10]. Approximately one third of EC fistulas close with supportive care and without operative management [3] namely using: percutaneous gelfoam embolization [11], percutaneous biological plug [12], vacuum sealing method [13], biological fibrin glue by endoscopy [14].

In the case reported, the patient presented a very complex pylorostomy, duodenostomy of the D1 and DII with major duodenal papilla exposure, as a complication of several surgical operations, as described above. This type of bowel fistulas located in the depth of an abdominal wall defect allows contact of peritoneal surfaces with gastrointestinal contents which increases the absorption of toxic products and prolongs the infection [15]. As it is universally accepted the patient was initially submitted to medical treatment. At this time surgical definitive repair of the fistula should not be attempted, once malnutrition, chronic inflammation and the presence of adjacent infection would prevent the complete healing [2]. This could aggravate the problem by creating more enterotomies, completely disrupting an anastomosis, reformation of a fistula or converting a contained abscess into diffuse abdominal sepsis [3].

To control gastric output it was used at the origin Hospital a percutaneous Pezzer catheter inside the stomach, and a Foley catheter through the pylorus. Proton pump inhibitors and sucralfate were prescribed to decrease the acidity of the effluent and to potentially

limit corrosive effects on skin. To control bilio-pancreatic output it was placed a catheter through the major duodenal papilla and it was administered octreotide, a long-acting somatostatin analog, which decrease fistula output by inhibiting secretion of various gastrointestinal hormones [16,17]. Skin barriers, adhesives (liquid, aerosol, and discs), dressings, and pouches were applied daily for protecting and maintain skin integrity.

The surgical treatment was performed four months after the fistula formation to minimize the chances of inadvertent enterotomy or serosal tear and to reduce the incidence of a new anastomotic dehiscence. The surgical incision was performed circumferentially away from the celiotomy in virgin tissue. Careful and extensive adhesiolysis was made and the viscera near stomach, duodenum and jejunum were completely freed from each other. As the pylorus was open as well as the anterior face of the gastric antrum by the presence of the Pezzer it was necessary to resect the antrum of the stomach and D1. In fact the first part of the duodenum was retracted and very thickened due to chronic inflammation. Its conservation would require a longer anastomosis, with no practical utility, and a greater risk of dehiscence.

After resection of the stomach and duodenum it was impossible to reestablish the intestinal transit by a Roux-en-Y gastrojejunal anastomosis because of the chronic inflammatory retraction of the mesentery. Therefore the solution found was to perform a gastrojejunostomy (end-to-side) (T-L), duodenojejunostomy (DII and DIII) side-to-side (L-L) at 40 cm of the gastrojejunal anastomosis and jejunojejunostomy T-L.

The closure of the abdominal wall also carried a complex problem. The area of resection was quite large and the edges of the laparostomy were very thick and heavily calcified, mainly the upper part of the wound. Wide subcutaneous dissection was performed but the component muscular wall separation was impossible to achieve. Abdominal wall plasty with a mesh was performed and then fibrin glue was applied on it to decrease seroma formation. However after dissecting the subcutaneous cellular tissue in a broad way it was possible to perform primary cutaneous suture.

4. Conclusions

Complex fistulas with duodenal exposure accompanied by large defects of the anterior abdominal wall cannot be treated with conservative treatment only. Although surgical intervention is mandatory, a 4–5 month period is required to achieve parietal, visceral and systemic stability with control of sepsis, electrolyte imbalance, fistula output, and nutrition management. Only then is possible to proceed to the definitive surgical treatment, which requires duodenojejunostomy and gastrojejunostomy in Roux-en-Y preferably. In the case reported, it was not possible to perform this type of anastomosis because the mesentery was very retracted due to the chronic inflammation of the multiple operations, not allowing the necessary mobilization of the small bowel loops. However the patient is cured and lives a normal life.

Conflicts of interest

The authors report no conflicts of interest.

Sources of funding

There were no sponsors involved.

Ethical approval

The study is exempt from ethnical approval in our institution.

Consent

It was obtained a written and signed consent from the patient to publish this case.

Author contribution

António Bernardes: Data collection, analysis and interpretation, writing the paper.

Catarina Melo: Analysis and interpretation, writing the paper.

Sandra Ferraz: Data collection, analysis and interpretation.

Registration of research studies

None.

Guarantor

António Bernardes.

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