

CLINICAL CASE

**BILIO-JEJUNOSTOMY STENOSIS AFTER
CEPHALIC-DUODENOPANCREATECTOMY IN CHRONIC
PANCREATITIS - CASE REPORT****I. Slavu¹, V. Braga¹, M. Bărbulescu¹, L. Alecu¹**¹ General Surgery Clinic, The Clinical Emergency Hospital "Prof. Dr. Agrippa Ionescu", Bucharest, Romania

Corresponding author: Lucian Alecu

Phone no. 0040722513768

E-mail: lucianalecu@yahoo.com

Abstract

We present the case of patient SC aged 44 years who underwent surgery 5 years prior to the presentation to our clinic for a tumor in the head of the pancreas, the operation than consisted of a cephalic duodenopancreatectomy which was followed by a number of complications. On admission the patient had abdominal pain in the right flank, giant median postoperative eventration and a external "a la Witzel" biliary drainage tube. Abdominal ultrasound revealed the presence of a interhepaticodiaphragmatic collection that measured 4.6 / 3 cm. A cholangiography was done which showed biliary tract opacification of the left lobe with the full stop of the contrast in the distal left main hepatic duct without intrahepatic biliary dilatation. Surgery was undertaken under total anesthesia – the intraoperative diagnosis consisted of: almost complete stenosis of the bilio-jejunosotomy. After the adhesions were cut, the bilio-jejunosotomy was redone using the left hepatic duct in a terminal-lateral anastomosis. The collection was drained and the abdominal defect was corrected. The patient maintained a favorable external biliary drainage of about 200 ml per day so in the 5-th postoperative day the drainage was clamped without any complications. Conclusions: 1. Duodenopancreatectomy should be reserved for average / high volume surgical centers. 2. During the intervention the steps to achieve the biliary-digestive anastomosis should be respected thoroughly 3. Fast reoperation may increase the chance of survival of the patient.

Keywords: *bilio-jejunosotomy, hepatic duct, interhepaticodiaphragmatic collection, chronic pancreatitis*

Intoduction

Chronic pancreatitis is a chronic inflammatory process of the pancreas that produces continuous and irreversible damage to the parenchyma. The incidence of chronic pancreatitis is 3-10 cases per 100,000 population [1]. The main risk factor is chronic alcohol consumption. Depending on the location of inflammation, various surgical procedures are

indicated. When the head of the pancreas is involved in the inflammatory process, the operation of choice is cephalic duodenopancreatectomy ("Whipple" procedure).

Whipple described this procedure for the first time in 1935 as a two-step procedure [1]. Ten years later, the author describes a cephalic duodenopancreatectomy performed in a case of pancreatic cancer in the head of the pancreas in a single step. The Whipple procedure consists of

the excision of the duodenum, head of the pancreas, gallbladder, bile duct and part of the stomach sometimes. The digestive tract continuity is achieved by choledoco-jejuno-stomy, pancreatico-jejuno-stomy or pancreatico-gastrostomy. The major indications for this procedure are: malignant pathological processes such as neoplasms of the head of pancreas, duodenum neoplasm or benign pathologies such as chronic inflammation of the pancreas or pancreatic cysts.

One of the most serious and feared complication is considered today the pancreatic fistula with an incidence of 2-12% [2,3]. To prevent this complication there have been imagined two ways to restore the digestive continuity: the pancreatic stump is linked by an anastomosis with a jejunal loop or with the stomach lining, the latter appearing to have better results [4]. Cephalic duodeno-pancreatectomy has a mortality rate between 0-5% [5]. The most common complications of this intervention are: pancreatic fistula, pancreatic leakage, gastric stasis, postoperative bleeding and intra-abdominal abscess [6]. However, the pancreatic resection remains the only current therapeutic option that could lead to prolonged survival of the patient not only in malignant affections, but also in the benign pathologies such as chronic pancreatitis and pancreatic cysts. The first results published on this intervention in 1960 reported a postoperative morbidity of 60% and a mortality rate of up to 25% [7]. Since then remarkable progress has been made in the diagnosis of pancreatic pathologies with the help of radiology (the earlier the stage the better the results) and modern surgical techniques. Currently, the post-duodeno-pancreatectomy mortality rate has decreased to below 5%, however, morbidity is still high at 30-60% [8-11]. Although most postoperative events are not life threatening, they can prolong hospital stay and increase the cost of care of patients and for patients suffering from cancer, complications can prolong the period until they receive oncological therapy. Surgery is increasingly important in the treatment of benign pathology of the pancreas such as chronic pancreatitis. In this situation the main goal of surgery is to release the compression on adjacent organs such as the duodenum, bile duct, portal vein (its compression can result in ascites), inferior vena

cava (its compression can result in bilateral edema of the legs) and to reduce the pain that occurs through invasion / compression of the peripancreatic nerves. Among the medical causes of postoperative mortality are: cardiovascular events, respiratory failure, renal failure, pneumonia, pulmonary embolism. The rate of postoperative medical complications is placed around 4-19% [12].

The incidence of intra-abdominal abscesses varies between 1 and 12% and occurs more frequently after surgery for biliary-digestive pathology [12]. It occurs frequently after anastomotic leakage of the pancreatic-entero-anastomosis, hepatico-jejunoanastomosis or gastrointestinal jejuno-anastomosis. The abscess appears as a subhepatic or interhepatico-diaphragmatic collection. When an abscess is suspected after a duodeno-pancreatectomy, we always recommend a CT with contrast medium that can diagnose liver tissue necrosis or the presence of hydroaeric levels. Treatment consists of imaging guided percutaneous drainage or surgical reintervention in difficult cases.

Material and methods

We present a patient, SC 44 years old, diagnosed with chronic infection with hepatitis C virus, exocrine pancreatic insufficiency and type II diabetes, who had undergone surgery in another health facility 5 years ago for pseudotumoral exacerbated chronic pancreatitis followed by multiple postoperative complications. He was admitted to our hospital for right upper quadrant abdominal pain, postoperative giant sub and supraumbilical eventration with an external biliary drainage that produced 1,000 ml daily, exteriorized through a transparietohepatic, catheter mounted about 6 weeks ago with a CT-guide in the left lobe.

Surgical history of the patient

It was extremely complex, grafted with multiple postoperative complications after the primary duodeno-pancreatectomy. Presented below are the cornerstones of his medical history:

- 2000 - open cholecystectomy for gallstones.
- 3.12.2009 - subtotal antro-duodeno-pancreatectomy with a termino-lateral hepaticojeuno-anastomosis exteriorized with a Witzel T tube and a termino-lateral gastrojeuno-anastomosis. The remaining pancreas bunt was sutured. The intraoperative diagnosis was: pancreatic cancer in the head of the pancreas with invasion of the duodenum D2 and D3. Postoperative histopathological examination found: fibrous chronic pancreatitis with intrapancreatic and interduodenopancreatic abscesses.

- 01/03/2010 - sanguinous pleural effusion – solved by minimum pleurotomy in the V-th right intercostal space.

- 05/01/2010 - subphrenic abscess with necrosis of the VI-VII-th hepatic segments. The operation consisted of necrosectomy, lavage, and drainage of the abscess.

- 10.03.2010 - biliary fistula of the right hepatic duct, necrosis of the V-VI-VII-th segments of the liver. The operation consisted of hepatic necrosectomy, lavage, suture of the biliary fistula and drainage of abscess.

- 05.2010 – right pleural minimal effusion and right subphrenic abscess. Both were treated conservatively. Median postoperative incisional hernia.

- 27.11.2010 – interhepatodiaphragmatic recurrent abscess. The operation consisted of lavage and drainage of the abscess.

- 02.2011 – acute angiocholitis with jaundice syndrome.

Blood results at admission: Neutrophils-73.7%; -Hb 12.4 g / dL; H, 36.5%; GGT-120 U / L; Total cholesterol -138mg / dl, Coagulation: INR- 1, 66; Quick-Time 17.6 sec; Otherwise laboratory results were normal. Abdominal ultrasound revealed the presence of a right interhepatodiaphragmatic collection that measured 4.6 / 3 cm and the presence of the external biliary drainage tube exteriorised through the left hepatic lobe with the internal limit in the Rex space (Figure 1). There was no intrahepatic biliary duct dilatation. A cholangiography was made through the tube and it showed diffuse opacification of the left hepatic lobe, and a obstruction at the end of the left hepatic biliary duct. No intrahepatic biliary dilation was identified.



Figure 1 - In the preoperative CT – the external biliary drainage can be seen with its internal end in the Rex space

After an adequate preoperative preparation, surgery was undertaken under total anesthesia (V.C.O. nr 991 / 23.10.2014). The intraoperative diagnosis consisted of: almost complete stenosis of the bilio-jejunostomy (left hepatic duct), multiple adhesions, minimum collection in right interhepatic-diaphragmatic space and a large postoperative eventration. After the adhesions were cut the bilio-jejunostomy was redone using the left hepatic duct in a terminal-lateral anastomosis (Figure 2). The collection was drained and the abdominal defect was corrected.



Figure 2 – Postoperative aspect of the bilio-jejunostomy, the left hepatic duct was linked with a jejunal loop via a terminal-lateral anastomosis

Results

The postoperative evolution was slow. The patient maintained a favorable external biliary

drainage of about 200 ml per day so in the 5th postoperative day the drainage was clamped without any complications. The patient was discharged on the 11th post-operative day.

The evolution was favorable 2 months after discharge with no other postoperative complications.

Discussions

The peculiarity of the case presented is an example of long-term postoperative adverse outcomes after cephalic duodenopancreatectomy in a young patient with benign pancreatic pathology, performed in a small volume case hospital.

After the duodenopancreatectomy performed in 2009 the patient had 26 admissions in Surgery, Gastroenterology and Infectious Diseases (for hepatitis C virus infection detected postoperatively) clinics, totaling 294 days of hospitalization, being examined by CT - 14 times and MRI - 4 times.

Cephalic duodenopancreatectomy is a difficult operation, considered by some surgeons as the Cadillac of abdominal interventions [13]. The main complication is the pancreatic fistula while biliary fistula is placed below it, and the incidence of bilio-jejunosomy stenosis is almost absent in the medical literature. Although these last two complications are not at the forefront of thinking when one manages a duodenopancreatectomy patient, they must be taken into account as they raise the postoperative morbidity. Bilio-jejunosomy is a rare complication of the cephalic duodenopancreatectomy. The factor that could influence the development of a future stenosis is the external biliary drainage [14]. This biliary stenosis usually has a benign origin and one should not automatically assign the cause to local tumor recurrence. The stenosis is visible on average 13 months postoperatively. One reason circulated in literature on bilio-jejunosomy stenosis is the bile duct ischemia that could be produced by clipping the bile duct before performing the anastomosis to prevent leaking in the peritoneum. It was demonstrated that there is no correlation between the incidence of stenosis for surgeons who perform this manouvre and those who do not practice it

[14]. Another issue proposed and considered a risk factor is the microvascular ischemia. So patients who have comorbidities that could affect visceral microcirculation are at risk to develop a stenosis [15]. Patients diagnosed with jaundice secondary to biliary obstruction showed a higher incidence of postoperative biliary stenosis. It is recommended that these patients go through a bile duct dilatation before surgery [14].

Conclusions

- Duodenopancreatectomy should be reserved for average / high volume surgical centers.
- Preoperatively, patients with jaundice should benefit from decompression of the bile duct by ERCP.
- During the intervention the steps to achieve the biliary-digestive anastomosis should be respected thoroughly.
- Postoperatively, the patient should be monitored in the Intensive Care Unit to identify complications as early as possible.
- Fast reoperation may increase the chance of survival of the patient.

References

- [1] Adrian O'Sullivan, Whipple pancreaticoduodenectomy : a historical comment, *MED Ltd*, 2007.
- [2] A. Barto, D. Barto, N. Al-Hajjar, C. Puia, D. Munteanu, R. Bodea, L. Mocan, F. Zaharie, C. Iancu, Risk Factors for Complications after Duodenopancreatectomy. Initial Results after Implementing a Standardized Perioperative Protocol, *Chirurgia* (2014) 109:318-324, No. 3, May – June.
- [3] Tr. Pătraşcu, H. Doran, C. Bugă, O. Mihalache, Fl. Bobircă, A. Costache, R. Boana, The mangement of postoperative pancreatic fistula, *Chirurgia* (2011) 106: 737-741.
- [4] Miron A., Ardelean M., Sîrbu-Boeţi V., Calu V., Giulea C., Pop A.I., Pancreatico-jejunal vs pancreatico-gastric anastomosis after cephalic duodenopancreatectomy, *Chirurgia* (Bucur). 2006 Mar-Apr;101(2):151-7.
- [5] I. Popescu, T. Dumitrascu, Duodenopancreatectomy, past, present, future. *Chirurgia* (2011) 106: 287-296.
- [6] Luis T., Alejandro S., Postoperative Pancreatic Biliary Surgical Complications Tejedor, 2013 Vol. 1.

- [7]Crist D.W., Sitzmann J.V., Cameron J.L., Improved hospital morbidity, mortality and survival after the Whipple procedure. *Ann Surg.* 1987;206:358–65.
- [8]Büchler M.W., Wagner M., Schmied B.M., Uhl W., Friess H., Z'graggen K., Changes in morbidity after pancreatic resection: toward the end of completion pancreatectomy. *Arch Surg.* 2003 Dec; 138(12):1310-4; discussion 1315.
- [9]Stojadinovic A., Brooks A., Hoos A., Jaques D.P., Conlon K.C., Brennan M.F.J., *Am Coll Surg*, An evidence-based approach to the surgical management of resectable pancreatic adenocarcinoma. 2003 Jun; 196(6):954-64.
- [10]Balcom J.H. 4th, Rattner D.W., Warshaw A.L., Chang Y., Fernandez-del Castillo C. *Arch*, Ten-year experience with 733 pancreatic resections: changing indications, older patients, and decreasing length of hospitalization *Surg.* 2001 Apr; 136(4):391-8.
- [11]Büchler M.W., Wagner M., Schmied B.M., Uhl W., Friess H., Z'graggen K., Changes in mortality after pancreatic resection: towards the end of completion pancreatectomy. *Arch Surg.* 2003; 138:1310–14.
- [12]Halloran C.M., Ghaneh P., Bosonnet L., Hartley M.N., Sutton R., Neoptolemos J.P. Complications of pancreatic cancer resection. *Dig Surg.* 2002; 19(2):138-46.
- [13]S. Crippa, R. Salvia, M. Falconi, G. Butturini, L. Landoni, C. Bassi, Anastomotic leakage in pancreatic surgery HPB (Oxford). 2007; 9(1): 8–15.
- [14]Michael G. House MD, John L. Cameron, MD, Richard D. Schulick MD, Kurt A. Campbell MD, Patricia K. Sauter ACNP, JoAnn Coleman ACNP, Keith D. Lillemoe MD, Charles J. Yeo MD., Incidence and Outcome of Biliary Strictures After Pancreaticoduodenectomy. *Ann Surg.* May 2006; 243(5): 571–578.
- [15]Pitt HA, Kaufman SL, Coleman J, et al. Benign postoperative biliary strictures: Operate or dilate? *Ann Surg.* 1989;210:417–425.