ISOLATED FRACTURE OF PANCREATIC NECK: A CASE REPORT

ABSTRACT:
Aim of the study: Through our case of pancreatic neck rupture, the study aim was to emphasize the advantages of an early laparotomy when there is a doubt about a canal disruption and the risks of a later surgical management.

Patients and results: Our patients was operated on for a neck disruption of the pancreas due to blunt trauma,after a radiological exploration. He underwent a left pancreatectomy with spleen preservation. There were no associated injuries, no lesions of acute pancreatitis.

Then, when pancreatic trauma occurs, an exploration with echography, scanner, endoscopic retrograde cholangiopancreatography or magnetic resonance cholangiopancreatography can suggest a neck disruption and a canal rupture. When the canal is safe, a drainage close to the pancreas is sufficient. When the rupture of the canal is suspected or proved, an early laparotomy is necessary in order to investigate the pancreas and to perform the appropriate procedure. This surgery is easier before the occurence of pseudocyst and acute pancreatitis.

KEYWORDS: isolated fracture, left pancreatectomy, laparotomy, pancreatic neck rupture

INTRODUCTION

Abdominal injuries are on the rise growing, linked to road accidents more common [1, 2]. There are often multiple associated lesions on which the vital prognosis depends. These lesions require urgent surgical management [3, 4] and are burdened with a high rate of morbidity and mortality [2, 3, 5]. Isolated trauma to the pancreas is rare: 1 to 12% depending on the series [5, 6].

OBSERVATION

Patient was 22-year-old man.

He had no medical history.

He was referred to our emergency, he was the victim of a public road accident, a motorcyclist hit by a pole, causing him a trauma at the point of abdominal impact the patient presented abdominal pain with vomiting without exteriorized digestive hemorrhage.

On examination, he was afebrile, with normal respiratory rate and normal resting heart rate.

On physical exam, he had epigastric tenderness.

Digital rectal exam was normal.

Abdominal CT scann showed colonic distention affecting the right and transverse colon.

The left colic angle was ascended into the thorax via a left diaphragmatic orifice with hydroaeric level at this level.

CT scann noted an infiltration of the omental fat also herniated with liquid effusion blade.

The abdominal ultrasound showed hemoperitoneum of great abundance, a liver of normal size with regular contours, the study of the pancreas is hampered by digestive gases, the spleen of echo structure normal.

The thoraco-abdominal scanner showed a solution of corporeo-caudal continuity of the pancreas with very probable involvement of the duct of wirsung, peritoneal effusion of great abundance, with absence of detectable lesion of the liver, spleen, kidney, adrenal glands, absence of pneumoperitoneum.

In conclusion, corporeal-caudal fracture of the pancreas grade 3 of the AAST classification associated with a large hemoperitoneum.

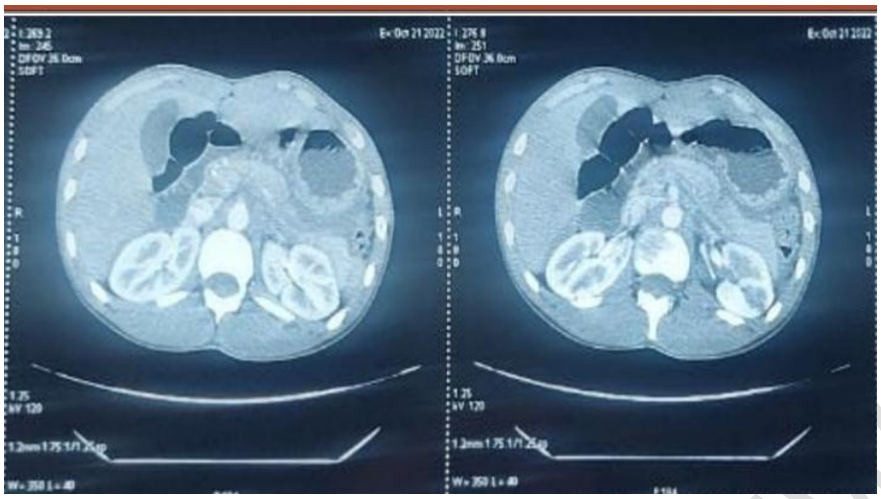

Figure 1 : CT scan image showing the lesion of the pancreas

On the same admission day, the patient was transferred to the operating room.

The patient and his family gave their approval to do surgery.

During laparotomy under general anesthesia, the exploration showed hemoperitoneum of moderate abundance, absence of traumatic lesion of the liver, and the spleen.

After the colo-epiploic detachment, we noted the presence of candle stains in the back cavity of the omentums, presence of a complete section of the body of the pancreas with rupture of the Wirsung duct: LUCAS.

The head of the pancreas, stomach, small intestine, large intestine were normals.

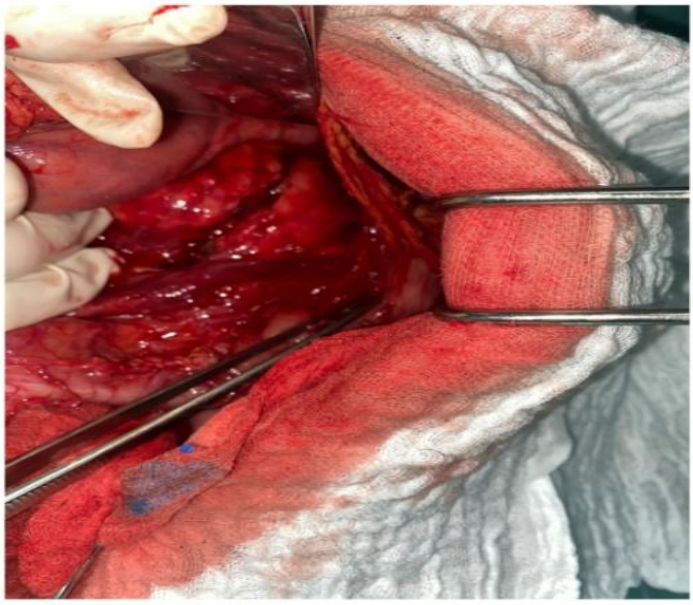

Figure 2 : isolated fracture of the left pancreas

Figure 3 : piece of left pancreatectomy

We proceeded to dissection of the upper edge of the pancreas in relation to the splenic pedicle, left pancreatectomy after ensuring hemostasis, closure of the wirsung canal with resorbable suture, closure of the pancreatic slice with non-resorbable suture, and its drainage with a Delbet blade

The post-operative care was simple, the patient was discharged from hospital on postoperative day 15, then seen again in consultation without incident.

DISCUSSION

Abdominal injuries are on the rise growing, linked to road accidents more common [1, 2]. There are often multiple associated lesions on which the vital prognosis depends. These lesions require urgent surgical management [3, 4] and are burdened with a high rate of morbidity and mortality [2, 3, 5]. Isolated trauma to the pancreas is rare: 1 to 12% depending on the series [5, 6]. The deep situation of this organ in the retroperitoneum explains what low percentage. These lesions may be overlooked and only discovered at the stage

of complications: acute pancreatitis, abscess, pseudocyst [1,6-8]. Questioning the patient and the family specify the circumstances and the mechanism of the trauma. Deceleration and direct impact are the two incriminated mechanisms leading to a compression of the gland on the spine.

Clinical examination finds only tenderness epigastric [4, 6, 8]. This finding was made in our patients. In addition, the symptomatology may only appear for a few days, or even a few weeks later [9].

Laboratory tests are not contributive.

Increased amylase may occur in any multiple trauma patient even without pancreatic involvement [10, 11]. Conversely, normal amylase values do not exclude a pancreatic lesion [12, 13].

Some authors have suggested carrying out a second dosage three hours after the initial treatment, emphasizing that amylase could increase secondarily [10].

We did not find in the literature of studies concerning lipasemia.

The ASP remains a benchmark exam that can reveal the consequences of associated lesions such as pneumoperitoneum, retropneumoperitoneum, fractures, etc. It is not contributory for isolated trauma to the pancreas.

Ultrasound retains a place of choice during an abdominal trauma [14]. In addition to setting evidence of associated lesions, this examination can demonstrate pancreatic lesions.

The reference examination in emergency remains the scanner with injection of contrast medium. It allows to perform a relatively complete examination of the intra-abdominal organs [1, 4, 8, 14]. At the pancreas, it highlights a contusion, a fracture, even a hematoma and in case of diagnosis unknown, it visualizes the complications [1, 7, 14].

In our observation, the scanner has confirmed the diagnosis.

In hemodynamically stable patients, endoscopic retrograde cholangiopancreatography helps identify rupture root canal or possible stenosis [15, 16].

The magnetic resonance cholangiopancreatography, due to its non-invasive nature, could, in the future, replace ERCP [17, 18]. We stay however faced with the lack of availability devices and the difficulty of obtaining this examination in emergency

Several classifications of pancreatic trauma have been proposed [19-22]. Currently, the majority of authors adopt the classification of

Moore and al. [22] (table I) and Lucas [23] (table 2).

Grade[a]	Type	Injury description
I	Haematoma	Subcapsular, <10% surface area
	Laceration	Capsular tear, <1 cm parenchymal depth
II	Haematoma	Subcapsular, 10–50% surface area, intra-parenchymal <10 cm in diameter
	Laceration	1–3 cm parenchymal depth, <10 cm in length
III	Haematoma	Subcapsular, >50% surface area or expanding; ruptured subcapsular or parenchymal haematoma, intra-parenchymal haematoma ≥10 cm or expanding
	Laceration	>3 cm parenchymal depth
IV	Laceration	Parenchymal disruption involving 25–75% of hepatic lobe or 1–3 Couinaud's segments within the single lobe
V	Laceration	Parenchymal disruption involving >75% of hepatic lobe or >3 Couinaud's segments within the single lobe
	Vascular	Juxtavenous hepatic injuries, i.e. retrohepatic vena cava/central major hepatic veins
VI	Vascular	Hepatic avulsion

AAST American Association for Surgery of Trauma
[a]Advance one grade for multiple injuries, up to grade III

Table 1: the classification of Moore and al.

Grade	Injury
I	Simple superficial contusion or peripheral laceration with minimal parenchymal damage; any portion; intact pancreatic duct
II	Deep laceration, perforation or transection of the neck, body or tail of the pancreas, with of without duct injury
III	Severe crush, perforation or transection of the head of the pancreas, duct injury

Table 2: the classification of Lucas

Trauma to the pancreas can only be recognized during a laparotomy. When suspected during an intervention, certain maneuvers are essential to explore the pancreatic gland [2, 6, 24]. The complete duodenopancreatic detachment to the left edge of the aorta, the opening of the back cavity of the omentums by section of the gastrocolic ligament, the opening of the lesser omentum and mobilization of the root of the transverse mesocolon allow good visualization the head, isthmus and body of the pancreas.

The therapeutic strategy depends on the existence or not of a rupture of the Wirsung channel. Whether this was not demonstrated preoperatively (endoscopic retrograde cholangiopancreatography, magnetic resonance cholangiopancreatography), it must be systematically sought intraoperatively. In case of doubt, some authors suggest a pancreatography by a short duodenotomy and an approach to the ampulla of Vater [2, 8, 24].

In the event of an unrecognized diagnosis, the complications late are essentially a treated by medical treatment [1, 25, 26]: analgesics, parenteral nutrition, octreotide.

Abscesses and pseudocysts late can be treated by puncture under control radiological [6, 8, 9].

In case of intraoperative discovery, the treatment depends on the type of lesions. Mildly deteriorating pancreatic trauma, grade 1, 2 or 3 without canal rupture according to Lucas, are treated in a way conservative with trimming and drainage on contact [1,6]. For grade 2 lesions with duct rupture, a left pancreatectomy is performed [2, 5,27] and every effort should be made to preserve the spleen [27].

Thanh et al. carried out a more conservative treatment in three patients by closing the slope of the isthmic rupture and by anastomasating the corporeal side with a jejunal loop in Y or with the stomach [27]. This conservative intervention could make it possible in certain cases to avoid postoperative diabetes [28]. The treatment of more severe lesions (grade 3 with canal rupture and grade 4) remains more problematic [29].

CONCLUSION

Isolated trauma to the pancreas is rare and are likely to be overlooked. The clinical examination is little contributory. Blood amylase is not always high, lipasemia would seem to be more sensitive. The reference examinations remain the scanner and the ERCP but the CPRM will take, in the coming years, an increasingly important place. In case of doubt about a canal rupture, laparotomy early exploration is needed to avoid progression to acute pancreatitis, making surgery more difficult. Treatment should be as

conservative as possible; excision surgery is not justified only in case of canal rupture. Conservative treatment by cystojejonostomy can be performed for early onset pseudocysts.

1 Zerbib P, Brams A, Chambon JP. Les fractures isthmiques du pancréas. Ann Chir 2001 ; 126 : 421-6.

2 Carrel T, Lerut J, Niederhauser U, Schweiger W. Diagnostic et traitement des lésions traumatiques du duodénum et du pancréas. J Chir 1990 ; 127 : 438-44.

3 Arvieux C, Létoublon C. La laparotomie écourtée. J Chir 2000 ; 137 : 133-41.

4 Kielen J, de la Coussaye JE. Prise en charge d'un polytraumatisé. J Chir 1999 ; 136 : 240-51.

5 Farrel RJ, Krige JEJ, Bornman PC, Knottenbelt JD, Terblanche J. Operative strategies in pancreatic trauma. Br J Surg 1996 ; 83 : 934-7.

6 Wilson RH, Moorehead RJ. Current managment of trauma. Br J Surg 1991 ; 78 : 1196-202.

7 Chun Ki Sung, Kon Hong Kim. Missed injuries in abdominal trauma. J Trauma 1996 ; 41 : 276-8.

8 Jurczak F, Kahn X, Letessier E, Plattner V, Héloury Y, Le Néel JC. Traumatismes fermés duodénopancréatiques sévères. À propos d'une série de 30 patients. Ann Chir 1999 ; 53 : 267-72.

9 Boudet MJ. Traumatisme du pancréas à huit clos. Gastro Médical Staff 1998 ; 46 : 6-8.

10 Taskishima T, Sugimoto K, Hirata M, Asari Y, Ohwada T, Kakita A. Serum amylase level on admission in the diagnosis of blunt injury to the pancreas. Ann Surg 1997 ; 226 : 70-6.

11 Vitale GC, Larson GM, Davidson PR, Bouwman DL, Weaver DW. Analysis of hyperamylasemia in patients with severe head injury. J Surg Res 1987 ; 43 : 226-33.

12 Boulanger BR, Milzman DP, Rosati R, Rodriguez A. The clinical significance of acute hyperamylasemia after blunt trauma. Can J Surg 1993 ; 36 : 63-9.

13 Buechter KJ, Arnold M, Steele B, Martin L, Byers P, Gomez G, et al. The use of serum amylase in elevating management blunt abdominal trauma. Am. Surg 1990 ; 56 : 204-8.

14 Richardson MC, Hollman AS, Davis CF. Comparaison of CT and US imaging in the assessment of blunt abdominal trauma in children. Br J Surg 1997 ; 84 : 1144-6.

15 Patel SV, Spencer JA, El-Hasani S, Sheridan MB. Imaging of pancreatic trauma. Br J Radiol 1998 ; 71 : 985-90.

16 Bozymski EM, Orlando RC, Hold JW. Traumatic disruption of pancreatic duct demonstrated by CPRE. J Trauma 1981 ; 53 : 244-5.

17 Lomanto D, Pavone P, Laghi A, Panebianco V, Mazzochi P, Fiocca E, et al. Magnetic resonance cholangiopancreatography in the diagnosis of bilio pancreatic diseases. Am J Surg 1997 ; 174 : 33-7.

18 Nirula R, Velmahos GC, Demetriades D. Magnetic resonance cholangiopancreatography in pancreatic trauma : a new diagnostic modality. J Trauma 1999 ; 47 : 585-7.

19 Perissat J, Collet D, Arnoux R, Salloum J, Bikandou G. Traumatisme du duodénopancréas : principes de technique et tactiques chirurgicales ; Éditions techniques Encycl Med Chir (Paris France) Techniques chirurgicales, appareil digestif : 40898, 1991, 15 pages..

20 Moore JB, Moore EE. Changing trends in the managment of combined pancreatoduodenal injury. World J Surg 1984;8: 791-7.

21 Smego DJ, Richardson JD, Flint LM. Determinants of outcome in pancreatic trauma. J Trauma 1985 ; 25 : 771-6.

22 Moore EE, Cogbill TH, Malangoni MA, Jurkovich GJ, Champion H, Gennarelli TA, et al. Organ injury scaling 2 : pancreas, duodenum, small bowel, colon, rectum. J Trauma 1990 ; 30 : 1427-9.

23 Lucas CE. Diagnosis and treatment of pancreatic and duodenal injury. Surg Clin North Am 1977 ; 57 : 49-65.

24 Asensio JA, Demetriades D, Berne JD, Falabella A, Gomez H, Murray J, et al. A unified approach to the surgical exposure of pancreatic and duodenal injuries. Am J Surg 1997 ; 174 : 54-60.

25 Lopez Viedma B, Sala Felis J, Perterjo Pastor V, Urquijo Pnoce JJ. Pancreatic trauma successfully treated by endoscopy. Gastroenterol Hepatol 1998 ; 21 : 394-7.

26 Bass J, Di Lorenzo M, Desjardins JG, Grignon A, Ouimet A. Blunt pancreatic injuries in children : the role of percutaneous drainage in the treatment of pancreatic pseudocysts. Pediatr Surg 1988 ; 23 : 721-4.

27 Thanh LN, Duchman JC, Latrive JP, Thon That B, Huguier M. Conservation du pancréas gauche dans les ruptures de l'isthme pancréatique : à propos de 3 cas. Chirurgie 1999 ; 124 : 165-70.

28 Duron F, Duron JJ. Pancreatectomie et diabète. Ann Chir 1999 ; 53 : 406-11.

29 Campbell R, Kennedy T. The management of pancreatic and pancreaticoduodenal injuries. Br J Surg 1980 ; 67 : 845-50.