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Case Report

When Silence Hides Severity : Complete Pancreatic Transection After Blunt Trauma Successfully Managed by Distal Pancreatectomy

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Abstract

Pancreatic trauma is rare but associated with high morbidity and mortality, particularly when the main pancreatic duct is involved. We report the case of a 22-year-old man admitted for blunt abdominal trauma following a motorcycle accident. Initial clinical signs were nonspecific, and the diagnosis was confirmed by a contrast-enhanced computed tomography (CT) scan, which revealed a grade III pancreatic injury with complete transection of the duct. The patient underwent an emergency distal pancreatectomy with spleen preservation. The postoperative course was uneventful. This case highlights the diagnostic challenges of pancreatic trauma and underscores the importance of early imaging and tailored surgical management for high-grade lesions.

Introduction

Pancreatic injuries are among the least common traumatic abdominal injuries, accounting for less than 5% of cases involving solid organ damage [1]. Due to its retroperitoneal location, the pancreas is often protected from direct impacts. Consequently, initial clinical manifestations are often subtle or non specific, leading to delayed diagnosis and an increased risk of complications [2].

Despite their low frequency of these injuries they are associated with high morbidity and mortality, with mortality rates reported in the literature reaching 23.4% for blunt trauma and 30.2% for penetrating trauma [3]. High-energy trauma, particularly road traffic accidents, constitutes the main injury mechanism [4].

The therapeutic management of pancreatic trauma is primarily based on the grade of the injury, the integrity of the main pancreatic duct, and the patient's hemodynamic status. High-grade injuries, particularly those associated with ductal rupture, most often require surgical treatment.

The standard surgical procedure included distal pancreatic resection and proximal pancreatic closure [5]. More recently, placement of a bridging stent along the injured main pancreatic duct has been used successfully [2 ,6].

We report the case of a 22-year-old patient who underwent surgical treatment for a complete traumatic transection of the pancreatic duct (Wirsung's duct), classified as grade III.

Case presentation

In this clinical case, we describe a 22-year-old patient with no significant personal or family medical history, transferred to our hospital two days after his initial hospitalization at a regional hospital. He had sustained a blunt abdominal injury following a motorcycle accident. On arrival, he was conscious with a Glasgow Coma Scale (GCS) score of 15/15, tachycardia with a heart rate of 125 bpm, normal blood pressure, breathing normally, and an SpO2 of 97%. Clinical examination revealed abdominal tenderness predominantly in the epigastric region, without ecchymosis or open wounds. Functional impairment of the

right upper limb was also noted.

Blood tests revealed a normal hemoglobin level (Hb: 14.2), leukocytosis (WBC: 16,600/µL), elevated C-reactive protein (225), and a slight elevation in serum lipase (900 U/L). Other tests, including liver, kidney, electrolyte, and coagulation studies, were normal (Table 1).

Table 1: *Initial Laboratory Findings*

Parameter	Patient Value	Normal Range
WBC (white blood cell count)	16,600 K/µL	4.0–11.0 K/Ml
Lipase	900 U/L	13–73 U/L
AST (aspartate aminotransferase)	54 U/L	10–40 U/L
ALT (alanine aminotransferase)	60 U/L	7–56 U/L
CRP (C-reactive protein)	225 mg/L	< 5 mg/L
Procalcitonin	0,7 ng/mL	< 0.5 ng/Ml

A thoraco-abdomino-pelvic CT scan with contrast revealed two transfixing pancreatic lacerations, one in the body and the other in the body-tail, extending through the main pancreatic duct, classified as stage III according to the AAST classification, associated with a large peripancreatic and intraperitoneal effusion (Fig. 1).

Radiography of the right hand showed a comminuted fracture of the scaphoid bone as well as fractures of the second and third metacarpals.

Given the clinical data and the CT scan findings consistent with a pancreatic body fracture, urgent surgery was indicated.

During the laparotomy, we observed a transfixing injury to the body of the pancreas with complete transection of the pancreatic duct (Wirsung's duct), signs of local inflammation and early pancreatic necrosis, and extensive hemoperitoneum without other associated injuries (Fig 2).

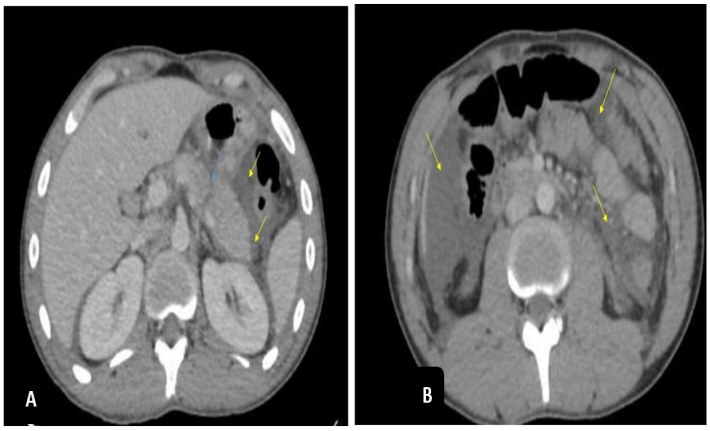

Figure 1: *A: pancreatic laceration from the body to the tail through the main pancreatic duct (blue arrow) associated with a peripancreatic fluid effusion (yellow arrows)*

B : Pancreatic body laceration passing through the main pancreatic duct (blue arrow) classified as AAST III, associated with a peripancreatic fluid ffusion (yellow arrows)

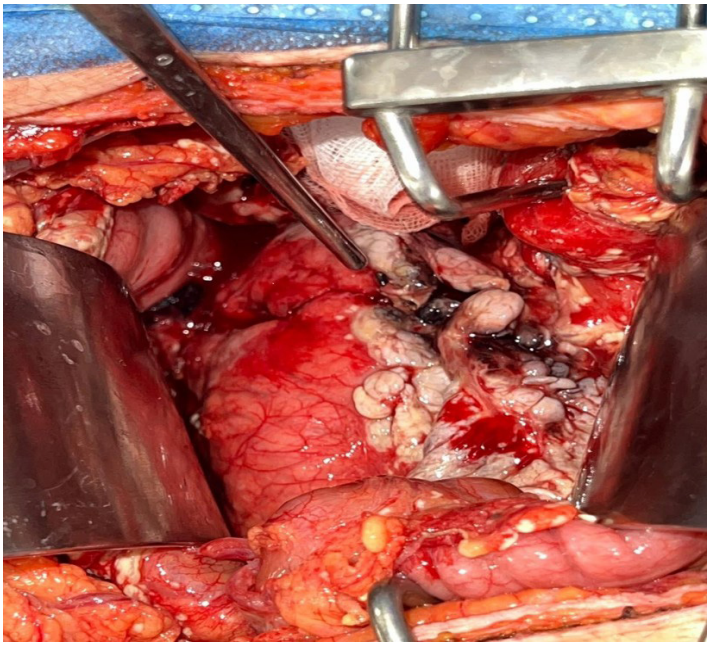

Figure 2: *Intraoperative view of complete pancreatic transection with ductal disruption*

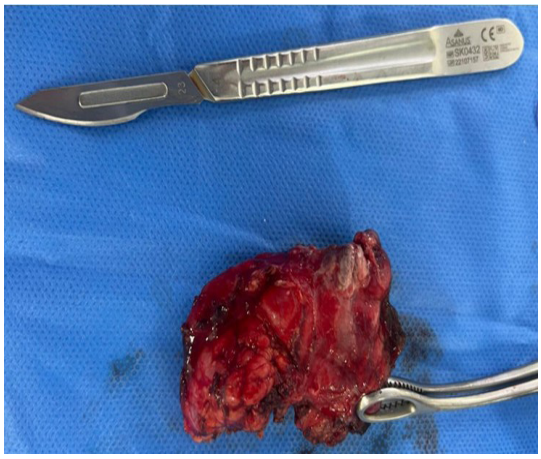

Figure 3: *Image of distal pancreatectomy*

The surgical procedure performed consisted of a distal pancreatectomy without splenectomy, as the spleen was intact (Fig 3). The abdominal cavity was well drained, with two drainage points at the pancreatic resection margin and two at the pouch of Douglas.

Identifying the pancreatic duct intraoperatively was difficult due to the significant local inflammation.

Following the procedure, the patient was admitted to intensive care. His clinical condition gradually improved under a structured multidisciplinary management approach. The lipase level in the pancreatic bed drainage fluid decreased ,Serum amylase and lipase levels also decreased, reaching 183 and 200 U/L, respectively, on the second postoperative day, demonstrating the successful outcome of the procedure. The postoperative course was uneventful, and the patient recovered well. After three days in intensive care, he was transferred to general surgery, where a follow-up CT scan showed no fluid collection, fistula, hemorrhage,

or thrombosis, with a satisfactory postoperative appearance and no detectable abnormalities. The patient was then discharged on the ninth postoperative day.

Discussion

Blunt pancreatic injuries occur primarily during sudden deceleration mechanisms with compression of the pancreas against the spine. They are among the least frequent abdominal injuries, representing less than 5% of solid organ injuries [4]. However, they constitute a significant diagnostic and therapeutic challenge due to often subtle initial clinical signs related to the retroperitoneal location of the pancreas [7] and the low sensitivity and specificity of both serum amylase and lipase [8, 9]. This leads to a delay in diagnosis and a consequent worsening of prognosis, with morbidity rates between 45 % and 60 % and mortality rates between 23.4 % and 30.2 % [7,10].

The clinical presentation can be highly variable, ranging from mild epigastric discomfort to overt peritonitis and hemodynamic instability [11].

Most patients with pancreatic trauma are often asymptomatic initially. Once acute pancreatitis develops, abdominal pain worsens, accompanied by abdominal guarding due to peritoneal inflammation from the diffusion of pancreatic enzymes [12].

In this case, the patient presented with a clinical picture of acute pancreatitis with epigatric tenderness, associated with hyperamylasemia and leukocytosis 48 hours after the trauma.

A persistent or increasing elevation of combined serum amylase and lipase levels can be used as indicators of pancreatic injury. Still, the elevation is time-dependent and may not be diagnostic within 6 h or less after trauma [9].

Imaging, therefore,remains the reference imaging technique but can underestimate ductal lesions, particularly in the early stages [4, 13]. Has an overall sensitivity of approximately 80% for detecting all grades of pancreatic lesions [14].

A normal CT scan in the initial phase cannot rule out an underlying pancreatic lesion, hence the need for follow-up imaging in the event of worsening clinical and laboratory findings [15].

The CT scan performed on our patient showed a complete transection of the pancreatic body. Involvement of the pancreatic duct is not detected by CT in only half of pancreatic trauma patients [16]. Pancreatic MRI is a highly sensitive and specific examination when there is doubt about pancreatic duct injuries.

The management of pancreatic trauma is essentially based on three elements: the patient's hemodynamic stability, the integrity of the main pancreatic duct , and the location of the injury.

In an unstable patient, early laparotomy to control the injuries is generally indicated, allowing for intraoperative evaluation of the pancreas. Conversely, in a stable patient, an initial conservative approach can be adopted, with the final therapeutic direction based on the results of further investigations [2].

The American Association of Trauma Surgery (AAST) has established a classification of trauma, distinguishing between low-grade injuries (grades I–II), generally amenable to conservative treatment, and high-grade injuries (grades III–V), for which surgical management is most often recommended. [14]

Although many authors have attempted endoscopic placement of pancreatic stents in recent years, this technique has only been used in patients with an intact or partially damaged pancreatic duct. [17].

In our case, the complete transection corresponds to a severe injury requiring a distal pancreatectomy without splenectomy, with good drainage of the abdominal cavity. This approach allows for the excision of the injured segment, thus reducing the risk of fistula and the occurrence of late complications such as pseudocysts or abscesses, and resulted in complete healing for the patient.

However, conservative management can be considered, preserving pancreatic function and avoiding surgical complications. However, this option carries a risk of secondary complications and may require further surgery. Therefore, the therapeutic choice must be based on an individualized and multidisciplinary assessment, taking into account the patient's clinical condition, available resources, and long-term follow-up options.

Conclusion

Severe pancreatic trauma remains a rare but potentially fatal surgical emergency. Diagnostic suspicion should be high in any case of high-energy abdominal trauma. Early surgical exploration and a strategy tailored to the injury grade determine the prognosis. Downy tail pancreatectomy with splenic preservation is an effective option in cases of complete distal transection.

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