

## Diagnosis and Management of Two Cases of Post-Traumatic Pseudocyst in Young Adults

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### Abstract

### Case Report

Pancreatic injuries can be difficult to diagnose, given the low frequency of these injuries and the associated nonspecific clinical features, subtle imaging findings, and multiorgan trauma. The two most important determinants of outcome following pancreatic injury are the time from injury to definitive diagnosis and the status of the main pancreatic duct (MPD). We present two cases highlighting the diverse spectrum of post-traumatic pancreatic pseudocysts to underscore the importance of individualized management strategies.

**Keywords:** Pancreatic injuries, diagnose, multiorgan trauma, Post-Traumatic Pseudocyst.

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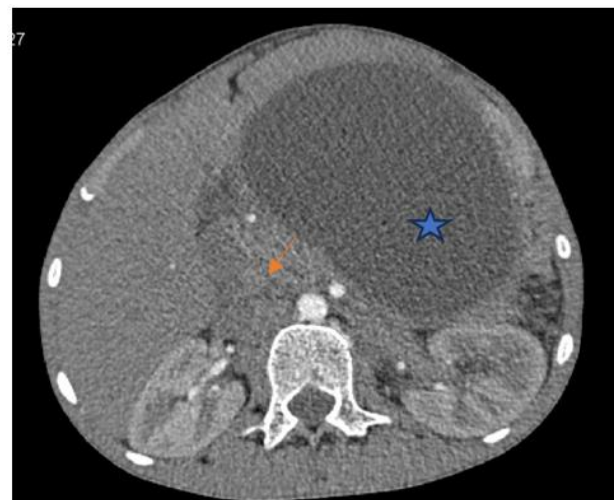
## INTRODUCTION

Pancreatic pseudocysts represent a fearsome complication of pancreatic trauma, often arising from blunt or penetrating injuries. These fluid collections, encapsulated by fibrous tissue, pose diagnostic and therapeutic challenges, requiring a multidisciplinary approach for effective management. In this article, we delve into the complexities of post-traumatic pancreatic pseudocysts through the exploration of two distinct case studies, shedding light on their clinical presentations, diagnostic workup, treatment strategies, and outcomes.

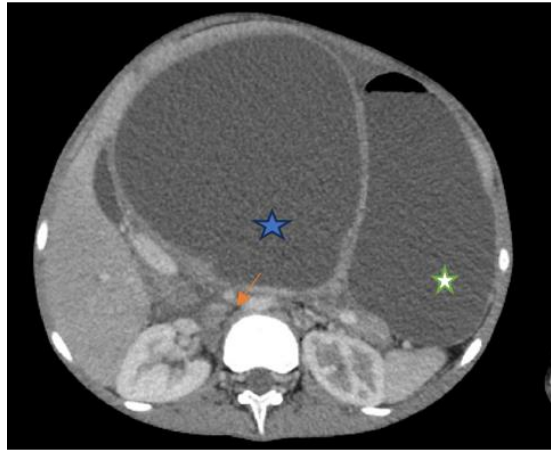
### Case 1

A 19-year-old male engaged in a motor vehicle accident resulting in blunt abdominal trauma. Upon admission, he complained of severe epigastric pain. Initial imaging studies, including a computed tomography (CT) scan, revealed evidence of pancreatic proximal transection with surrounding fluid collection suggestive of a pseudocyst and heterogeneous enhancement of the pancreatic head (grade 4 of AAST) (Fig 1). Despite conservative management with analgesia, intravenous fluids, and bowel rest, the pseudocyst failed to resolve and continued to enlarge, and lipase serum levels went from 400 UI/L at admission to 990 UI/L, whereas white blood count levels and C-reactive proteins were within normal range. The patient benefited from an endoscopic ultrasound-guided drainage via cystoduodenostomy, and

cyst fluid analysis was sterile. Control imaging at 4 weeks found evidence of low enhancement of the pancreatic head in favor of ischemia and proximal occlusion of the third segment of the duodenum due to pseudocyst enlargement (Fig 2). Due to a proximal lesion involving MPD, and cyst recurrence, surgical management was proposed with cyst ablation and sphincterotomy. Patient recovery was uneventful.



**Figure 1: Initial abdominal CT scan, arterial phase: enlarged heterogeneously enhanced pancreatic head with proximal transection (arrow), pseudocyst (blue star)**

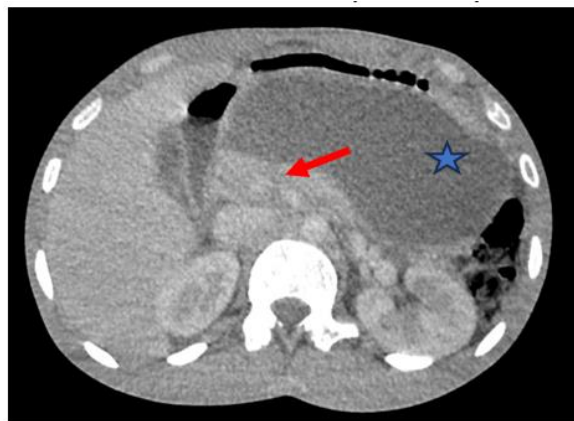


**Figure 2: Control abdominal Ct scan (4 weeks): persistence of proximal transection with pancreatic head ischemia (orange arrow), enlargement of pancreatic pseudocyst, (blue star), with significant gastroduodenal distention (white star) and ascites**

**Case 2**

A 24-year-old male, presented to the ER with epigastric pain, tenderness, and vomiting. Interrogation found a history of blunt abdominal trauma 1 month prior due to a physical altercation. Lab results were altered in favor of pancreatitis with an elevated white blood count of 12000WBCs per microliter, a C-reactive protein of 92 mg/L, and serum lipase of 766 UI/L.

Abdominal CT scan objectified distal laceration of the pancreatic body with multiple communicating peripancreatic pseudocysts, (grade 3 of AAST), and ascites (Fig 3). Therefore, the patient benefited from CT-guided percutaneous drainage (Fig 4). The procedure provided symptomatic relief and facilitated the resolution of the pseudocyst over subsequent weeks, as evidenced by serial imaging follow-up.



**Figure 3: Portal phase abdominal CT: distal laceration of pancreatic body (red arrow) with peripancreatic pseudocyst (blue star)**



**Figure 4: CT guided of percutaneous drainage**

## DISCUSSION

Pancreatic pseudocysts developed in 23% of patients following pancreatic trauma and endoscopic retrograde pancreatography demonstrated duct injury in half of these (grade III pancreatic injury) [1].

Imaging has a vital role in the diagnosis and management of pancreatic injuries, given the nonspecific clinical findings. A multimodality approach is often required: Contrast-enhanced CT serves as the initial imaging modality, and MR cholangiopancreatography (MRCP) and/or endoscopic retrograde cholangiopancreatography (ERCP) serve as a problem-solving modality in hemodynamically stable patients for whom there is no immediate indication for laparotomy, to assess MPD integrity.

Radiologists should synthesize the imaging findings to determine and report an injury grade. In the AAST-OIS classification system, there are five grades (I–V) of pancreatic injury. The key distinction between low-grade (AAST-OIS grades I and II) and high-grade (AAST-OIS grades III–V) pancreatic injuries is the involvement of the MPD. Although associated vascular injury and active vascular contrast material extravasation are not included in the current AAST-OIS classification, these findings are vital to determining patient management and predicting outcomes and must be reported in a timely fashion [2].

Traumatic pancreatic pseudocysts associated with peripheral ductal injury may resolve spontaneously or be treated successfully by percutaneous aspiration, although they present a failure rate of 55%, with considerable risk of infection and fistula formation and are not suitable for communicating mature pseudocysts [3, 4]. Endoscopic or endoscopic ultrasound (EUS)-guided drainage of pancreatic pseudocyst that bulges into the gut lumen via a cystgastrostomy, cystduodenostomy or transpapillary method is another alternative, but requires careful patient selection. Whereas those associated with injuries to the proximal duct (head of pancreas) require internal drainage by Roux-en-Y cyst jejunostomy [3]. The optimal point of drainage can be inferred from the CT scan, where the cyst wall is thin and extrapancreatic but careful intraoperative assessment for dependent drainage is desirable [5].

A common misdiagnosis for pseudocysts is mucinous cystic tumors, which make up to 40–50% of pancreatic cysts, therefore a sample of the pseudocyst wall is sent routinely for histological examination to exclude the presence of an epithelial lining and confirm that the collection was inflammatory rather than neoplastic. A cystgastrostomy would effectively drain a retrogastric pseudocyst and prevent reaccumulation of fluid [6]. An inferior pseudocyst that bulges through the

transverse mesocolon as in the first case is preferentially drained into a Roux loop of jejunum. This obtains dependent drainage and excludes the cyst contents from food and bile preventing activation of the pancreatic secretions until they are within the jejunum [3]. More rarely, those at the head of the pancreas may be drained into the duodenum by a cystoduodenostomy, and those related to the tail of the pancreas are best managed by distal pancreatectomy with a splenectomy. If possible, surgical intervention should be avoided until the pseudocyst is at least 6 weeks old, by which time the wall will usually be fibrotic enough to hold sutures.

After excluding a mucinous cystic tumor via EUS-guided fine needle aspiration of cyst fluid for analysis, a pancreatic sphincterotomy with or without stenting of the main pancreatic duct disruption would manage a persistent communicating pancreatic pseudocyst.

## CONCLUSION

Post-traumatic pancreatic pseudocysts represent a challenging clinical entity requiring a comprehensive approach for optimal management. The selection of treatment modalities, whether conservative, interventional, or surgical, ought to be tailored to individual patient characteristics and guided by close clinical monitoring and serial imaging assessments. Collaboration between trauma surgeons, radiologists, and gastroenterologists is paramount in achieving favorable outcomes and minimizing potential complications associated with this condition.

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