

Traumatic Rupture of Pancreas

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Citation

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Abstract

Isolated traumatic rupture of pancreas is rare presentation. It occurs in less than 5% of cases. The case reported is a 24 yrs old male patient with a history of blunt abdominal injury. An urgent USG and CT Scan were performed showing rupture of body of pancreas near tail with a large collection in lesser sac. Splenic vessels were normal. After detailed evaluation radiological diagnosis of a Pancreatic Rupture stage III was established. Patient was operated upon and imaging findings were confirmed. Blunt abdominal injury should be diagnosed as early as possible to assess severity of injury, to prevent serious complication and plan proper treatment.

INTRODUCTION

Pancreatic injury occurs in less than 5% of cases of major abdominal trauma (1). Usually pancreatic injury is associated with injury to other intra abdominal organ or skeletal injury. Isolated pancreatic injury is rare. Among total pancreatic injuries 66% of cases are with penetrating trauma and 33% of cases are due to blunt abdominal trauma (2).

An early diagnosis of pancreatic trauma is important as it can lead to various complications like splenic vessel rupture, pseudo-cyst formation and pseudo-aneurysm. In blunt abdominal trauma early diagnosis is difficult, due to lack of correlation between clinical findings & Imaging with severity of trauma. Previously it was difficult to detect pancreatic injury, but now with CT Scan it has become easy (3).

Morbidity and mortality increases with associated injury to intra abdominal organs, vascular structures & delay in diagnosis. We present an unusual case report of isolated pancreatic rupture after road side traffic accident without injury to other abdominal organs.

CASE REPORT

A 24 year old male patient presented with history of tractor wheel passing over his abdomen before two days. He had complaints of pain in the epigastrium, which was gradually increasing in severity. He also complained of gradual distension of abdomen at epigastric region. Both chest x-ray

and erect abdominal x-ray were normal.

An urgent USG of the patient was advised. USG was performed with 3.5 MHz sectoral probe. USG showed rupture of body of pancreas at distal end near tail (Fig 1), with a large anechoic collection in lesser sac (Fig 2). Splenic artery and vein appeared normal. Other solid organs of abdomen like liver, spleen, GB, kidney and major vessels were normal. Diaphragm was normal on USG. Mild-moderate ascites was noted in abdomen.

Figure 1

Fig 1 – Rupture of pancreas near tail region with anechoic collection in lesser sac



Figure 2

Fig 2 – Rupture of pancreas near tail region with anechoic collection in lesser sac, splenic vessels appear normal



Contrast enhanced CT of abdomen was performed which clearly showed fracture of body of pancreas near tail with a hypodense large collection in lesser sac (Fig 3). Splenic vessels appeared normal (Fig 4). Mild ascites was also detected on CT scan. Other intra-abdominal organs were normal. We diagnosed a post-traumatic pancreatic rupture, type III with ascites.

The patient was operated and imaging findings were confirmed.

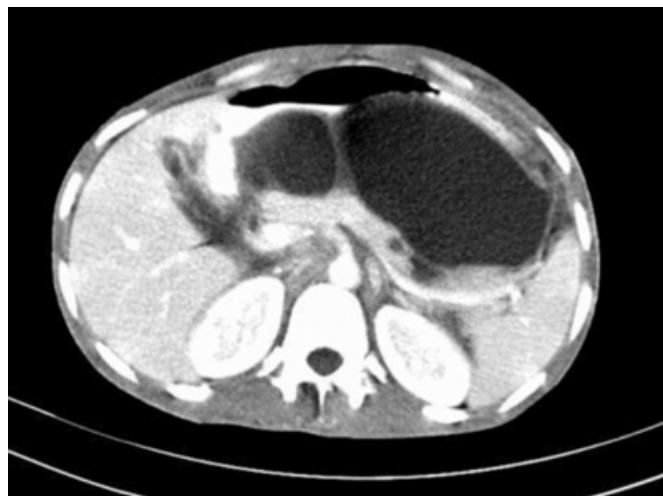
Figure 3

Fig 3 – CECT shows fracture of pancreas distal body near tail with large hypodense collection in lesser sac



Figure 4

Fig 4 - CECT shows fracture of the pancreas at distal body near tail with large hypodense collection in lesser sac, splenic vessels appear normal



DISCUSSION

Pancreatic injury is a rare complication in patient with single or multiple injuries, either with blunt or penetrating abdominal trauma (4). The deep, central and retroperitoneal location of the pancreas usually protects it from injury, but this anatomical location is also responsible for the diagnostic challenge (5). Pancreatic injury can range from minor contusions, hematoma to major lacerations or fractures or rupture with associated duct injury according to severity as described in table 1 (6).

Abdominal radiograph may show retroperitoneal air due to rupture of duodenum. However in our patient this finding was not present. Laboratory investigations like serum amylase and lipase levels are important for pancreatic parenchymal injury. Initial serum amylase levels carry a low sensitivity for the prediction of injury. However, persistently elevated or rising serum or urinary amylase levels are more reliable indicators of pancreatic injury (6).

In patients with blunt injury to the pancreas, the Computed Tomography (CT) Scan is the simplest, easiest and the least invasive diagnostic modality available currently to improve the detection of a stable blunt pancreatic injury (7). Imaging features of pancreatic injury includes pancreatic edema or enlargement, peripancreatic or intrapancreatic fluid collection and fluid collection in lesser peritoneal sac. CT Scan can pick up pancreatic injury in as many as 85% cases (3). Contusion appears as a low attenuating non enhancing area contrasting with enhancing pancreatic parenchyma. Lacerations and fractures are seen as poorly enhancing,

linear lesions, often perpendicular to the long axis of body and neck of pancreas (3). Other findings like intraperitoneal fluid, extra peritoneal fluid, thickening of the anterior renal fascia, and pancreatic enlargement have been evaluated as indicators of pancreatic injury (8).

USG can detect fluid collection very easily. Pseudo cysts associated with pancreatic injury are seen as anechoic to hypoechoic, and usually in relation to the pancreas (3). Pancreas appears enlarged, bulky and hypoechoic with intra and peripancreatic fluid collection. Fluid collection along the sub pyloric, anterior pararenal, lesser sac and pancreatic tail region may be seen.

For identification of pancreatic duct injury, imaging modalities of choice are Endoscopic retrograde cholangio-pancreaticography (ERCP) or Magnetic resonance cholangio pancreaticography (MRCP) in hemodynamically stable cases (3). Accurate recognition of pancreatic injury is essential because delay in the diagnosis and associated vascular complication lead to high mortality and morbidity.

Hemodynamically stable patients and in the absence of other associated injuries, blunt injuries to the pancreas may be managed conservatively with close monitoring of vital signs and general condition. However, patients with continuous pain, whose condition is worsening and develop symptoms of pancreatic injury, should be reassessed thoroughly for it whether immediate operative intervention is needed (3). Pancreatic resection is most suitable treatment in case of pancreatic rupture and injury to duct.

Minor injury of pancreas recovers well. Severe injuries have poor prognosis due to frequent association with other injuries and vascular complications. Complications of pancreatic injury are bleeding, pancreatic abscess, recurrent pancreatitis, fistula formation, pancreatic pseudo-cyst,

thrombosis and pseudoaneurysm.

To conclude, isolated pancreatic injury is very uncommon. Initial serum amylase level is not associated with the severity of pancreatic injury. The majority of pancreatic injuries can be managed conservatively. Patients with grade III pancreatic injury with stable vitals can be managed conservatively. Blunt abdominal injury should be diagnosed as early as possible by CT Scan and other modalities to prevent serious complications that result from the diagnostic delay.

Figure 5

Table 1. Classification of severity of pancreatic injury

Grade	Type of injury	Description of injury
I	Hematoma	Minor contusion without duct injury
	Laceration	Superficial laceration without duct injury
II	Hematoma	Major contusion without duct injury or tissue loss
	Laceration	Major laceration without duct injury or tissue loss
III	Laceration	Distal transection or parenchymal injury with duct injury
IV	Laceration	Proximal parenchymal injury involving Ampulla
V	Laceration	Massive disruption of pancreatic duct

References

1. Craig MH, talton DS, Hauser CJ, Poole GV, Pancreatic injuries from blunt abdominal trauma. *Am Surg* 1995;61:125-128.
2. Yeo CJ, Cameron JJ. Exocrine pancreas. In: Townsend CM. Editor. *Sebastian textbook of surgery*, 16th ed. Harcourt Asia Ltd & WB Saimders and Co. 2001:457-472.
3. Khanna Lt Col V, Gualti Lt Col YS, Sceeram Col MN, Sharama R, A rare case of pancreatic injury; case report and imaging perspective: *Asian oceanian journal of Radiology* April-sep 2004; 9:64-67.
4. Wright MJ, Stanski C, Blunt pancreatic trauma: a difficult injury. *South Med J* apr 2000; 63:598-604.
5. Buechester Kennan J, Blunt pancreatic trauma: *South Med J* 200; 43:383-385.
6. Hoyt DB, Coimbra R, winchell RJ, *Sebastian textbook of surgery*, 16th ed. Harcourt Asia Ltd & WB Saunders and Co.,2001:334-335.
7. Cirillo RL JR, Kiniaris LG, Detecting blunt pancreatic injuries. *J Gastrointest Surg* 2002; 6:587-598.

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