Abstract:
BACKGROUND In blunt abdominal trauma, an isolated pancreatic injury is uncommon. Physical signs and laboratory parameters are often inaccurate, and missing this diagnosis can cause serious clinical problems.

CASE OUTLINE Four patients were reported who sustained blunt abdominal trauma with isolated pancreatic injury. All patients had fracture of pancreas, grade III pancreatic injuries was diagnosed. Pancreatic tissue was conserved by performing a pancreaticojejunostomy.

DISCUSSION After any episode of blunt abdominal trauma, isolated injury to the pancreatic duct should be considered. Abdominal CT scanning can be helpful in early diagnosis. Preservation of pancreatic tissue can be achieved with a good clinical outcome.

Introduction
The incidence of pancreatic trauma is 2-4% in blunt abdominal trauma. It most commonly occurs in road traffic accidents where the mechanism of injury is trauma to the epigastrium by the steering wheel, causing compression of the organ against the vertebral column. Usually pancreatic injury is associated with other abdominal injuries. Here we describe the management of grade III pancreatic injury (distal transection). The management options for grade III injury is distal pancreatectomy or pancreaticojejunostomy. We consider the organ preserving approach is ideal when the distal pancreatic segment is viable and the patient is stable. We report a series of 4 cases of grade III injury, in which we successfully preserve the pancreas in all cases.

Case Details
Case 1 A 27 year old man was referred to our center 12 hrs after sustaining of blunt abdominal trauma by the steering wheel of a van. On admission, the patient was stable and had no signs of peritonitis. The serum amylase level was elevated (202 U/L). Ultrasound scan showed free fluid in the abdomen. CT
abdomen showed complete transection of the neck of the pancreas (grade III injury) [Fig 3]. Laparotomy was performed by upper midline incision. Roux en Y loop Pancreaticojejunostomy was done to drain the distal part of pancreas and the proximal pancreas was sutured using non absorbable sutures [Fig 1 and 2]. The patient recovered well and discharged on 13th postoperative day without any complications.

Case 2 An 18 year old male was admitted with the history of fall from height, had a blunt injury over the epigastrium. He came 4 hrs after the injury and was hemodynamically stable. Serum amylase level was normal. Ultrasound showed doubtful pancreatic injury. CT abdomen showed complete transection of the pancreas distal to the neck (grade III injury). We performed the same procedure. He recovered without any complications, he was discharged on the 11th postoperative day.

Case 3 A 26yrs old male who sustained a blunt injury abdomen on the epigastric region by a steering wheel injury was referred to our centre after 48hrs of the trauma. On admission he had abdominal pain, distension and hypotension. After resuscitation, CT abdomen was done, it showed grade III pancreatic injury with contusion of the proximal part of the pancreas with mesenteric hematoma [Fig 3]. We performed Pancreaticojejunostomy using Roux en Y loop to the distal part and jejunal serosal patch covering of the proximal part. He developed pancreatic leak, which was confirmed by drain fluid amylase and lipase analysis. He was managed conservatively and discharged on the 30th postoperative day.

Case 4 A 38 year old male who met with a road traffic accident and sustained blunt injury abdomen was referred to our centre 3 days after trauma. He had a rib fracture and hypotension with hemoperitoneum. Laparotomy was done the next day after adequate resuscitation. The distal pancreas was preserved by pancreaticojejunostomy. Patient was in ICU for 7 days and went home on the 16th post
operative day without any complication.

**Discussion**

Trauma to the pancreas is not common, and isolated pancreatic trauma is even less common. In 50-98% of pancreatic trauma cases, there are associated injuries to other organs. We had 2 cases of isolated pancreatic trauma and 2 cases with associated injury. In patients with multiple organ involvement, prompt surgical intervention is usually undertaken. But those with isolated pancreatic trauma, delay in diagnosis and exploration can often occur because the patient is stable, and there is no indication for urgent laparotomy. It is difficult to diagnosis the severity of ductal injury, since it is a retroperitoneal organ. There are reports which show that patients with complete ductal transection can reportedly be asymptomatic for months. It has been shown repeatedly that serum amylase is neither a reliable diagnostic nor a significant prognostic parameter in assessing pancreatic injury. Patients with blunt or penetrating abdominal trauma, the routine day today measurement of lipase or amylase can not be recommended in the diagnosis of pancreatic injury. Ultrasound scanning of the abdomen is done routinely in all blunt injury abdominal cases. It is useful to detect free fluid in the peritoneal cavity. But its role in assessing specific pancreatic duct injury is limited.

Helical computed tomography (CT) scanners can quickly achieve an overview of abdominal and skeletal injuries. CT allows the additional assessment of the severity and extent of pancreatic tissue damage and concomitant injuries. In all our cases the severity of pancreatic ductal injury was identified after CT abdomen. Injury to the pancreatic ductal system is the main cause of morbidity. It is difficult to make a decision when isolated pancreatic injury is suspected, but evidence of complete transection makes laparotomy necessary (as in our cases). The choice of operative procedures are distal pancreatectomy or pancreaticojejunostomy. We believe that organ preservation surgery is ideal if the patient is hemodynamically stable and the distal segment is viable. All 4 cases had complete transection of the pancreas and viable distal segment without any injury. We did Roux en Y loop pancreaticojejunostomy without any major complications. We had a pancreatic leak in one patient, he had a contusion and hematoma over the proximal segment and a delayed presentation. We covered that area using jejunal loop serosa. Leak was managed conservatively.

In conclusion, we stress the importance of suspecting a isolated pancreatic injury in patient after blunt injury abdomen particularly in epigastrium. CT abdomen is useful to find out pancreatic injury and assessment of the severity. We prefer organ preservation with internal drainage with Roux en Y loop if patient is hemodynamically stable and the distal pancreatic segment is viable.
References


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