Case Report

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One Stage Emergency Pancreatoduodenectomy for Isolated Injury to Pancreatic Head Following Blunt Abdominal Trauma: Case Report and Review of Literature

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ABSTRACT

Major pancreatic injury following blunt abdominal trauma by itself is a relatively rare occurrence, and in vast majority of cases (95%) it is associated with injury to adjacent major vessels and organs; thus making isolated major pancreatic injury even rarer. While most pancreatic injuries are managed by simple measures like debridement and drainage, complex proximal injury poses surgical challenge regarding surgical skill and judgement. Disproportionate approach at any stage of management can contribute to high mortality and morbidity. Emergency pancreatoduodenectomy plays a limited but important role in managing serious trauma to proximal pancreas and duodenum. Author presents a case where isolated injury to head of pancreas required emergency pancreatoduodenectomy. After a bizarre road accident, a middle aged male underwent emergency laparotomy for intraperitoneal bleeding and during exploration a deep transverse laceration with ampullary disruption was found in the head of the organ. Duodenum in all its part was intact and there was no other injury. The nature and site of injury made emergency pancreatoduodenectomy the only viable option. Leaking pancreatojejunostomy enhances infective complications that lead to late mortality. To circumvent this problem there is enthusiasm for staged surgery with resection and tube pancreatostomy in first stage, leaving the difficult anastomosis for a later date, However, if the patient is haemodynamically stable and operated reasonably early, one stage pancreatoduodenectomy gives good result and avoids repeating surgery with inherent problems and reduces hospital stay. For successful management of pancreatic trauma it is essential to make early diagnosis of duct disruption, with sound application of operative skill and judgement by treating surgeon.

Keywords: Isolated pancreatic injury; Emergency pancreatoduodenectomy; Major duct disruption; Staged surgery; Associated injury.

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Introduction

Considering the natural location of the pancreas in abdomen, its injury by blunt abdominal trauma is rare and commonly associated with other organs and major vascular injuries [1]. Subtle clinical symptoms can cause delay in diagnosis and surgical management. Isolated injury to pancreatic head is very uncommon [2]. Duct disruption dictates appropriate surgical measure [3]. The majority of pancreatic trauma can be managed by simple measures like repair and drainage [4], and emergency pancreatoduodenectomy (PD) is rarely undertaken, and is only performed in complex proximal pancreatoduodenal injuries [5]. The author reports a case of isolated pancreatic injury that required emergency pancreatoduodenectomy. As the surgical problem and treatment is individually very

Fig. 1. Clinical photograph showing bruised transverse colon in the foreground and injured pancreatic head below the tip of suction canula.

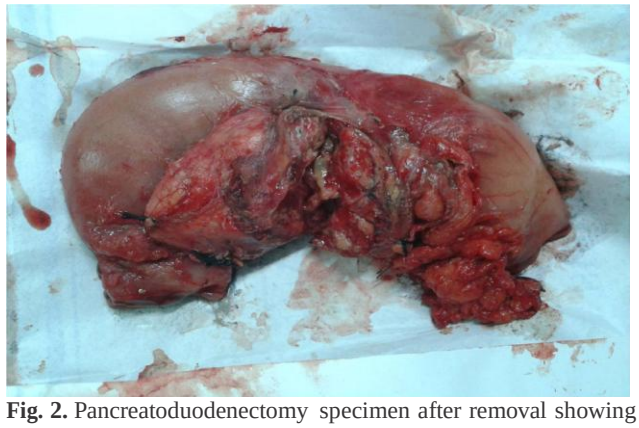

Fig. 2. Pancreatoduodenectomy specimen after removal showing deep axial laceration in pancreatic head with intact duodenum, sutures seen in the specimen were used to control initial bleeding.

rare, considering their combination assumes special significance in context of emergency management of pancreatic trauma.

Case Report

A thin built 46-year-old man was trapped between the sides of two slow moving buses and brought to our hospital about 8 hours later with severe pallor and abdominal pain. Though he was haemodynamically stable with haemoglobin of 6 gm%, he had severe tenderness and abdominal distension. GCS was 15/15 with normal CXR and ABG. FAST scan revealed haemoperitoneum for which he was subjected to emergency laparotomy, through generous upper midline incision. After draining a litre of blood, lavage was done with copious saline. There was no visible point of bleeding or solid organ injury except an area of contusion in right half of transverse colon and its mesentery (Figure 1) where blood was trickling through gastro colic omentum, which on division showed a haematoma on the head of pancreas with fresh bile in the vicinity. After evacuating the haematoma, pancreatic juice and bile were found to leak through a 4 cm long deep transverse laceration on the head (Figure 2). The laceration breached the pancreatoduodenal vascular arcade, the source of bleeding. Kocher's manoeuvre revealed no injury to retroperitoneal duodenum or bile leak. It was obvious that the laceration was deep enough to disrupt the ampulla which accounted for the bile leak from its depth. As the patient was stable under anaesthesia, we proceeded with pancreatoduodenectomy and fashioned an invaginating, stented, one layered end to end pancreatojejunostomy using 3'0 prolene suture. A feeding jejunostomy was provided at the end of surgery which took 4 hours to complete. Post operatively, he was electively ventilated overnight before being gradually weaned of support over the next day. Total parenteral nutrition (TPN) was given in the first 4 days and jejunostomy feed thereafter. Oral feeding started on the sixth day and was well tolerated. He received 8 units of cross matched blood in the perioperative period. He recovered well enough to be discharged on the 15th day. There was no major post operative complication manifested as intra abdominal collection, pancreatic fistula, diabetes or exocrine deficiency over year long follow up.

Discussion

Isolated injury to proximal pancreas without associated injury is a very uncommon occurrence as found on review of literature. One report indicates "Massive disruption of pancreatic head is rarely if ever an isolated injury" [6]. Relative unfamiliarity about surgical techniques involving an unforgiving organ, missed or delayed diagnosis in the presence of duct disruption and inappropriate judgement in choosing correct procedure for a particular injury, all contributes to high mortality and morbidity. Few patients having pancreatic injury present with equivocal signs and symptoms, leaving space for investigations like serum amylase estimation .However, helical CT, MRCP contribute to preoperative diagnosis in vast majority of patients that present with obvious abdominal signs due to associated injury needing emergency surgery. When injury is suspected, methodical exploration of the entire organ during laparotomy is essential. Most injuries are managed by debridement and drainage. The majority of proximal pancreatic and combined duodenopancreatic injuries, though problematic, can be managed by repair, drainage plus pyloric exclusion. Only when devitalisation of either duodenum or pancreas happens or when the ampulla is disrupted (grade5 injury AAST –OIS) then there is a role for pancreatoduodenectomy, an operation best avoided in acute situations because of over 30% mortality [7]. Leaking pancreatojejunal anastomosis is the major concern, that encouraged many to perform staged pancreatoduodenectomy, with initial damage control resection, followed by reconstruction few weeks later, in a stable patient [8]. The wait induces some fibrosis in the gland and improves its texture for sutures to

hold while fashioning pancreatojejunostomy thereby reducing anastomotic leak. However the very fibrosis that improves texture of the gland also induces dense surrounding adhesion making dissection during second surgery so difficult that constructing pancreatojejunostomy becomes impossible [5]. In haemodynamically stable patients operated early, both resection and reconstruction can be done together safely, as demonstrated in this case report, with uneventful recovery without any major complication. The case reported by the author has some unique features; firstly it was an isolated pancreatic injury that required emergency PD, contrasting most pancreatic lacerations occurring across the axis of the organ, and secondly this particular patient had a deep laceration along the axis of pancreas.

Complex pancreaticoduodenal injury is rare and potentially fatal, and even rarer is isolated pancreatic injury. Emergency pancreatoduodenectomy is only occasionally required, as majority of injuries can be managed by simple repair and drainage. One stage surgery in selected cases gives optimum result when operated early. The following key points need special attention:

- Because pancreatic injury is relatively rare high index of suspicion is required to actively search and manage these injuries.
- Missed or poorly managed pancreatic injury is a major cause of mortality and morbidity.
- Non- invasive diagnostic investigations are helpful but not conclusive.
- Major duct disruption of the organ is central to surgical management.
- Endoscopic retrograde cholangiopancreatography (ERCP) done early in stable patients is the gold standard in diagnosing duct injury.
- Unlike co-axial injury in the reported case, majority of pancreatic injuries following blunt trauma are trans-axial and occur in the body and tail of pancreas and can be managed by relatively simple measures.
- Major injuries in the head region of the organ create confusion regarding best surgical management.
- Proximal injuries are very commonly associated with other organ and vessel injuries in contrast with isolated injury in the reported case.
- Even proximal injuries of the head region with duct disruption should be treated by conservative surgery in the vast majority of such cases.
- Emergency pancreaticoduodenectomy(PD) is rarely required and done in cases with definite indications such as disruption of ampulla as in this case.
- Whenever indicated, emergency PD should be done in a staged procedure for cases diagnosed late or in haemodynamically unstable patients.
- One stage PD has its own advantages when done in indicated cases if diagnosed early in haemodynamically stable patients.

Conflict of Interest: None declared.

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