CASE REPORTS

Pancreatoduodenectomy in abdominal trauma: a viable alternative

G R VERMA, J D WIG

Department of Surgery, Postgraduate Institute of Medical Education and Research, Chandigarh 160 012

Pancreatoduodenectomy was performed in five patients with severe pancreatoduodenal trauma following vehicular accidents. Three of them presented within five hours of injury and two patients, four and ten days later. Surgery was performed within 6-12 hours of hospitalization. All patients underwent pancreatectoduodenectomy; in one the pancreatic stump was closed completely owing to its friability. Three patients survived; two succumbed to ongoing preoperative sepsis due to late presentation. The results of pancreate-duodenectomy are good when patients are operated on early, before the development of sepsis. [Indian J Gastroenterol 1997; 16: 26-27]

Key words: Duodenal injury, pancreatic injury

Pancreatoduodenectomy (PD) is considered a formidable undertaking especially when it is performed on an emergency basis in abdominal trauma. The procedure is done rarely due to low incidence of severe pancreatoduodenal injuries, also some authors12-14 still maintain that section should be done only as a last resort. Recent experience with PD in trauma has been more favorable.14 The purpose of this report is to emphasize the usefulness of early PD in patients with severe pancreatoduodenal injuries.

Case Reports

Case 1: A 28-year-old man sustained injury when he fell from a running tractor. He had right-sided hemopneumothorax and generalized peritonitis. He was admitted 5 hours after the injury. An intercostal drain was placed in the right pleural cavity and he was explored after 6 hours of hospitalization. There was complete transaction of the pyloroduodenal junction along with multiple lacerations in the third and fourth parts of the duodenum. The head and uncinate process of the pancreas were shattered. PD was performed. The patient recovered uneventfully.

Case 2: A 14-year-old boy sustained penetrating injury of the abdomen by a bamboo stick when his nose collided with a tractor. He came to the hospital 4 hours after the injury. Rebound tenderness could be elicited all over the abdomen. He was explored after 9 hours of admission. Operative findings revealed through-and-through longitudinal lacerations in the second part of the duodenum involving the ampulla. The head of the pancreas was also lacerated. Pancreatic ductal injury could not be ascertained. PD was performed. The patient recovered uneventfully.

Case 3: A 14-year-old boy sustained blunt injury of the abdomen in a road accident and was hospitalized within 12 hours of trauma. There were multiple abrasions over the epigastrium and obvious features of generalized peritonitis. Laparotomy performed after 10 hours of admission revealed 1.5 L of bile and blood in the peritoneal cavity and near-total transection of the head of the pancreas to the right of the superior mesenteric vessels. There was total breach in continuity of the pancreatic duct. A big hemotoma and tear in the proximal one third of the transverse mesocolon was also noticed. PD and right hemihepatectomy was performed. The patient had an uneventful recovery except for superficial wound infection.

Case 4: A 45-year-old man was admitted four days after laparotomy done outside for duodenal injury sustained in a road accident. He presented with a bilious fistula, generalized peritonitis, oliguria and septicemia. All the sutures had given way. Laparotomy was done after resuscitation. There was extensive longitudinal laceration of the second part of the duodenum involving both its anterior and posterior walls. The duodenal wall lateral to the transaction was dusky and the remaining duodenum was edematous. The pancreatic head was lacerated and fat necrosis was seen over the pancreas and gastroduodenal area. There was no obvious injury to the pancreatic duct. PD was performed. He was electrically ventilated and was given dopamine support. However he succumbed after four days due to sepsis and multiorgan failure.

Case 5: A 35-year-old man sustained abdominal injury when he fell down from a running tractor trolley. At admission 10 days later, he was febrile and in a state of shock (BP 70/50 mmHg). He had a vague epigastric lump and generalized peritonitis. Laparotomy was done after 12 hours of adequate resuscitation. There was transection at the junction of the third and fourth parts of the duodenum. The head and neck of the pancreas were totally shattered and contained necrotic tissue and infected blood. PD was performed and the divided end of the pancreas was closed with nonabsorbable sutures as the gland was friable. Histopathological report was normal. He developed biliary leak and was re-explored. Repair of choledochoduodenal anastomosis and cholecystectomy were performed. However he developed sepsisemia and died of secondary hemorrhage.

Discussion

The management of combined injuries of the pancreas and duodenum presents a surgical challenge. The type of operative management depends on the severity of the injuries. The principles of management of pancreatic injuries are to control hemorrhage, assess pancreatic ductal injury, debride and achieve adequate drainage.

Duodenal diverticulization was initially reported by Donovan et al15 who noted a 33% mortality rate in patients with combined pancreatoduodenal injuries. Pyloric exclusion procedure also achieves most of the objectives of diverticulization of the duodenum without sacrificing the pyloric antrum and has been proposed in the management of severe duodenal16 and combined pancreatoduodenal injuries not involving the pancreatic duct.17

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Non-resectonal therapy for an extensively injured pancreas with injury to the duodenum is associated with high rate of intra-abdominal abscess, duodenal fistula formation, and secondary hemorrhage. Deaths are more frequent after drainage than after resection in pancreatic injury.

Pancreatoduodenal resection was suggested in 1964 as a method for managing severe pancreatic injury. Subsequently, other authors reported their experience with such resections for a variety of injuries involving the pancreas, duodenum, and common bile duct, either singly or in combination, with 50%-75% survival rate.

Pancreatoduodenal resection is indicated whenever there is ductal transaction in the head of the pancreas, vascular compromise of the duodenum, injury to the duodenal ampulla, and uncontrollable bleeding in the region of the head of the pancreas. The pancreatogastrostomy anastomosis may be a source of postoperative complication. Therefore, whenever this is not feasible due to friability of the pancreas, the pancreatic duct may be ligated completely – as was done in our fifth patient – or drained outside with the help of a thin polyethylene tube, and pancreaticojejunostomy can be performed as a second-stage procedure.

All our patients sustained grade IV to V pancreaticoduodenal injury. The first three patients survived following pancreatoduodenectomy without major complications. The causes of death in the latter two patients were late presentation, sepsis, and multiorgan failure. Secondary hemorrhage in Case 5 was due to sepsis following leak from the bilioenteric anastomosis. Complete closure of the pancreatic stump does not appear to have contributed to his demise as repeated postoperative amylase values were within normal limits and the pancreas was found to be normal with intact sutures at re-exploration.

In conclusion, we suggest that PD is an effective procedure for severely injured pancreas and duodenum. Late presentation and sepsis-related complications are poor prognostic factors and contribute to the high mortality. Early surgery is rewarding.

References