Pancreatoduodenectomy for trauma (PDT), colloquially named “Trauma Whipple,” is exceedingly rare in the adult and pediatric population. We present a staged repair of a fifteen year old female who sustained high grade combined pancreas and duodenal injuries (CPDI) following a high speed motor vehicle collision.

On presentation, the patient was hemodynamically stable with examination revealing epigastric tenderness, seatbelt sign, and vertebral step-off. Computed tomography of the abdomen revealed free intraperitoneal air and suggested pancreatic and duodenal injuries. Emergent laparotomy confirmed a transection of the duodenum, with additional pertinent pancreatic neck, in addition to disruption of the second portion of the duodenum posterior to the pancreas at the level of the renal veins, and right colonic perforation. A damage control strategy was employed and the patient underwent duodenal repair, right hemicolectomy, primary IVC negative pressure wound dressing placement. The indications for PDT are dependent on the severity of pancreatic and duodenal injury (figure below, left). The American Association for the Surgery of Trauma (AAST) has reported that Grade V injuries should be managed by resection if massive disruption of the pancreatic head is suspected. EAST makes no recommendation regarding Grade V injuries. In the context of trauma, repair should be performed in a staged fashion: exploratory laparotomy for damage control followed by definitive reconstruction.

Pancreaticoduodenectomy for trauma in an adolescent female: Case report and review of the literature

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Background

The American Association for the Surgery of Trauma (AAST) conditionally recommends resection for AAST Grade III/IV pancreatic injuries in adults. Observational studies on this topic are limited by sample size and single institution series, and no randomized trials exist. There is a further paucity of literature in pediatric/adolescent cases, however a large review of the National Trauma Data Bank in the last decade chronicles a similar management trajectory, as well as our patient represents a successful outcome of this strategy.

Results: Literature Review, Clinical Summary

PDT, colloquially named “Trauma Whipple,” is exceedingly rare in the adult and pediatric population. We present a staged repair of a fifteen year old female who sustained high grade combined pancreas and duodenal injuries (CPDI) following a high speed motor vehicle collision.

Review of the National Trauma Data Bank: Adult Patients, van der Wilde et al 2014

• Retrospective database review
• Inclusion criteria: patients ≥16, who underwent PDT between 2008-2010, n = 39.
• vs: CPDI Grade IV/V AAST grade injuries who did not undergo PDT, n=38.
• excluded delayed PDT
• no significant difference in length of stay, ventilator days, complications, death.
• small sample sizes.

Review of the National Trauma Data Bank: Pediatric Patients, Engholm et al 2016

• Retrospective database review
• Inclusion criteria: patients ≤18, blunt pancreatic trauma where specific injury location was known; 2007-2011, n = 674
• Operative vs non-operative management
• Definitions for operative management
• Operative vs non-operative management
• Factors predicted non-operative management or operative management

CDPId heralds significant morbidity and mortality. The Eastern Association for the Surgery of Trauma (EAST) conditionally recommends resection for AAST Grade III/IV pancreatic injuries in adults.

Conclusions & Lessons Learned

Once the extent of pancreatic injury can be graded, individualized surgical intervention can be proposed based on society recommendations.

A limitation of this case report is whether in retrospect the entire pancreatic parenchyma should have been resected in order to prevent future episodes of pancreatitis. The decision lies in the need for future insult administration, which in a pediatric patient should be avoided if possible. We believe this was the correct surgical decision. This is a potential area for future investigation.

Pancreatic and duodenal injuries must be considered following abdominal blunt trauma. Appropriate management should follow best available recommendations using both radiography and direct visualization of the injury to maximize patient outcomes.

Selected References


Learning Objectives

• The indications for PDT are dependent on the severity of pancreatic and duodenal injury (figure below, left).
• The American Association for the Surgery of Trauma (AAST) has reported that Grade V injuries should be managed by resection if massive disruption of the pancreatic head is suspected. EAST makes no recommendation regarding Grade V injuries. In the context of trauma, repair should be performed in a staged fashion: exploratory laparotomy for damage control followed by definitive reconstruction.

Fig. 3. Adjusted odds ratios for factors associated with operative vs. nonoperative pancreatic management. Blue dots represent point estimate and black lines represent 95% confidence interval. Abbreviations: ref — reference, IS — injury severity score, MVC — motor vehicle collision, GCS — Glasgow Coma Scale, OPDM — operative pancreatic management, Non-OPDM — non-operative pancreatic management.

Fig. 2. 2003 AAST pancreatic trauma grade.

• The AAST grading system for pancreatic trauma (figure below, right) ranges from Grade 1 (minor) to Grade 5 (massive disruption).

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