ABSTRACT

Pancreatic injury presenting as an isolated injury in the pediatric population is rare. Unlike other solid organ injuries, these injuries may be subtle and difficult to diagnose. The management options vary from conservative management for low-grade injuries to surgical management for high-grade injuries; the optimal course of treatment is best determined by the severity of the injury and its clinical presentation. Laparoscopic distal pancreatectomy has increasingly been described as a feasible procedure for the surgical management of such injuries.

Here we present our experience with a twelve-year-old boy with epigastric pain for eighteen hours following a road traffic accident. He was hemodynamically stable with no external signs of injury, and investigations were initially normal, but later he developed leukocytosis and hyperamylasemia; a repeat contrast-enhanced computed tomography (CECT) diagnosed an isolated grade III pancreatic injury. The case was initially managed non-operatively, but a laparoscopic distal pancreatectomy was later performed due to an acute abdomen caused by generalized peritonitis.

Laparoscopic distal pancreatectomy can be a safe and valuable surgical option when the surgical approach is considered for pancreatic injury. Laparoscopic distal pancreatectomy has been associated with an overall decrease in morbidity.

INTRODUCTION

Injuries to the pancreas account for less than 0.5% of all blunt abdominal trauma injuries in the paediatric population. Pancreatic injuries occur when a significant force is applied to the upper abdomen, compressing the lumbar vertebrae. An abdominal computed tomography (CT) scan and serum amylase is primary investigations done for the detection of pancreatic injury.

Early detection of pancreatic trauma is critical to avoiding complications such as fistula and pseudocyst formation, traumatic pancreatitis, pancreatic abscesses, peritonitis, gastrointestinal bleeding, and splenic vein thrombosis.

Conservative, endoscopic, percutaneous, and surgical interventions are among the treatment options for pancreatic injuries. We report the diagnostic challenges of the disease and its possible management using a laparoscopic approach to pancreatic resection in the setting of trauma as a viable alternative to open surgery. The case has been reported as per SCARE 2020 guidelines.

CASE REPORT

A Road Traffic Accident involving 12 years old boy who was run over by a bike presented with abdominal pain after 18 hours of the incident. The abdominal pain started in the epigastrium, gradually got worse with duration.

On the primary survey, he had tachycardia with epigastric tenderness on palpation. All of his other vital signs were within normal limits. A CECT scan was performed after a negative fast scan and revealed “minimal pelvic fluid collection, likely reactive.” His serum amylase level was 122.8 U/l when he was admitted.

On the third day of admission, he developed generalized peritonitis. A repeat CECT abdomen was done, which showed “pancreatic parenchymal disruption with ductal injury” (Figure 1).

His followed-up amylase on the third day was 1779.9 U/l, and his leucocyte counts were 15,200/ml. With the diagnosis of “isolated pancreatic injury grade III with clinical features of peritonitis,” laparoscopic distal pancreatectomy with spleen preservation was planned.

Using a 5 mm umbilical camera port and two 5 mm working
ports lateral to umbilicus (right and left), Laparoscopy revealed adhesions along with saponified fat deposits between the stomach, omentum, and transverse colon. Gastro-colic ligament was divided, and lesser sac was entered (Figure 2).

Figure 1: A repeat CECT scan showing isolated pancreatic injury grade III in a 12 years boy with blunt abdominal trauma

Figure 2: Intraoperative laparoscopic view while performing laparoscopic distal pancreatectomy

Two sutures with prolene 2-0 were used to tack the stomach to the anterior abdominal wall. A total pancreatic fracture was observed at the junction of the neck and body. A laparoscopic spleen-preserving distal pancreatectomy was performed. Laparoscopic over-sewing of the transected surface was done with PDS 4-0 using technique described by Reynolds et al.5

This being said, in our experience, adhesions following pancreatic inflammation and saponified fat deposits made the dissection, especially of splenic vessels, more tedious and time-consuming than an open procedure would have been.

A single drain was placed within lesser sac. Total blood loss was 150–200 ml. Total operative time was 120 min.

The patient’s postoperative recovery was uneventful. He was started on enteral feeding on third POD. His mean drain output was of 40 mL per day, however drain amylase level (1200 IU/L) on the third postoperative day, suggesting biochemical leakage. After 6 days, the surgical drain was removed, and the patient was discharged on the 7th postoperative day. At the 6-month follow-up, there were no evidence of endocrine as well as exocrine insufficiencies.

DISCUSSION

Pancreatic injuries are rare and account for less than 0.5% of findings in blunt abdominal trauma.6 Children, unlike adults, are more vulnerable to pancreatic injury due to the lack of a protective retroperitoneal fat.6 These injuries possess significant morbidity with complications such as fistula and pseudocyst formation, traumatic pancreatitis, and peritonitis.3

On initial presentation, pancreatic injuries have been shown to be clinically occult. Although the abdominal CECT scan has typically been used as the primary investigation of choice in trauma, especially for solid organ injuries, it has a sensitivity of 65%–80% for ruling out pancreatic injury.6,4 As demonstrated in this case report, amylase and lipase are also both regarded as unreliable screening indicators for traumatic pancreatic injuries, particularly during initial presentation or at the time of admission. As a result, relying solely on these may underestimate patients in such cases.7 Having said that, a trend in an increase or decrease in serum amylase and lipase levels can be used to detect pancreatic injuries.5 And Christopher et al. have also reported the use of serial CECT scans or MRI for the identification of such cases.

Although AAST guidelines have greatly helped in the management of these injuries, conservative management (fluid resuscitation, analgesics), ERCP, and percutaneous drainage of peripancreatic collections for AAST classes I and II and surgical management like distal pancreatectomy with or without splenectomy or non-anatomical pancreatic resection for AAST classes IV and V.4 However, surgical versus conservative management of AAST Class III injuries with distal transection and ductal injuries has been debated. The case we describe was initially managed nonoperatively, but a laparoscopic distal pancreatectomy was later performed due to an acute abdomen caused by peritonitis.

The majority of case reports for laparoscopic distal pancreatectomy for trauma have been reported in case of isolated pancreatic injuries. Despite concerns about the safety and efficacy of these procedures in pediatric populations, laparoscopic distal pancreatectomy with spleen preservation has been performed safely with good outcomes.5,9–11 Three children treated for isolated pancreatic laceration with laparoscopic distal pancreatectomy were described by Rutkoski et al, demonstrating low morbidity and successful results.10

Based on our own experience, we believe that laparoscopic distal pancreatectomy is a good alternative to open surgery, with the benefits of a shorter hospital stay, less postoperative pain, and earlier start of enteral feeding. More research comparing the open and laparoscopic approaches is needed to determine whether the laparoscopic approach is superior to open approach in treatment of blunt pancreatic trauma.

CONCLUSION

Laparoscopic distal pancreatectomy has been associated with an overall decrease in morbidity. It has the potential to become a good standard of care even in the pediatric age group for pancreatic injury; however, these cases should be performed by highly skilled laparoscopic and pancreatic surgeons.
REFERENCES:


