International Surgery Journal
Kasliwal NR et al. Int Surg J. 2023 Feb;10(2):309-311
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20230273

Case Report

Pancreatico-duodenectomy in a blunt trauma abdomen: a rare case report

Navin R. Kasliwal, Kruttika Singh*, Soorya C. Sekar, Chaitanya K. Parupally

Department of General Surgery, MGM Medical College and Hospital, Aurangabad, Maharashtra, India

Received: 06 December 2022
Revised: 04 January 2023
Accepted: 07 January 2023

***Correspondence:**
Dr. Kruttika Singh,
E-mail: kruttika.singh@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Abdominal trauma, a very common occurrence, especially in a country like India with an abundance of road traffic accidents. However, very few of such patients present with pancreatic or duodenal injury. At times such an injury requires the complex and intricate procedure of pancreatico-duodenectomy. Such a procedure requires highly trained surgeons as well as extensive post operative monitoring. In the scenario that these are available, this major surgery becomes a lifesaving procedure. This case report describes one such successful outcome. Early presentation to the hospital, the availability of skilled surgeons and a good tertiary care set up have made the once rarely performed surgery called Whipple's procedure (pancreatico-duodenectomy) into a live saving surgery which can be used for abdominal trauma cases as well.

Keywords: Blunt abdominal trauma, Pancreatic injury, Duodenal injury, Whipple's procedure

INTRODUCTION

Pancreatic and duodenal injuries are uncommon following blunt trauma abdomen as they are placed retroperitoneally and are relatively protected. They require excessive force of blunt trauma for any injury to occur. An incidence of 4.3% of isolated duodenal injuries is reported in all abdominal injuries, and pancreatic trauma occurs in only 3%.[1] The neck of the pancreas is seen to be most commonly injured, caused by direct compression against the vertebral column. Pancreas head or tail injuries develop due to injury to the flanks, but these are less common.

Even with the low frequency of these injuries they are associated with significant morbidity and mortality, resulting in mortality rates of 23.4% for blunt trauma abdomen.[2] Main causes leading to death being haemorrhage, shock, peritonitis, acidosis, coagulopathy, etc.

Many such complex injuries tend to occur at peripheral centres, away from specialised centres where pancreaticoduodenectomy can be performed. Hence, the main aim for such centres is hemodynamic stability and diagnosis before referring the patient to higher centres for further management.

CASE REPORT

A 21-year-old male presented to casualty following a road traffic accident between two-wheeler and a bullock cart, sustained injury to the abdomen and right sided thorax. Patient was initially admitted at another hospital and was referred to our hospital the next day. The patient presented with severe pain abdomen with history of nausea and hematemesis. He also complained that the pain was radiating to the back. There were no other injuries. Although the patient was hemodynamically stable on presentation, his abdomen was tense and showed guarding and rigidity.

Upon conducting radiological investigations, he was found to have duodenal perforation along 2nd or 3rd part with moderate hemoperitoneum with peri-duodenal hematoma and free air foci. It also showed contusion and laceration of pancreatic head. HRCT showed bilateral mild hydropneumothorax.

Patient was then admitted in SICU and ICD was inserted on right side thorax. Patient was taken for emergency laparotomy. After opening the peritoneal cavity, right side colon was mobilized by Cattell-Braasch technique. Evidence of sloughed off 2nd and 3rd part of duodenum and head of pancreas along with a hematoma of approximately 200 ml volume was seen. Intra op decision was taken to perform the Whipple's surgery.

Though Whipple's surgery is a supra-major surgery with lot of complications associated with it, it was highly indicated in our case. The surgery took 7 long hours carried out by a highly efficient team of surgeons, anaesthetist and scrub nurses. Resection of D2, D3, Gall bladder with common bile duct and pancreatic head was done. Followed by jejunal connection with the hepatic duct, pancreatic duct and stomach. After an extensive surgery, patient was shifted to surgical intensive care unit and managed. 2 units of packed RBC was transfused post operatively.

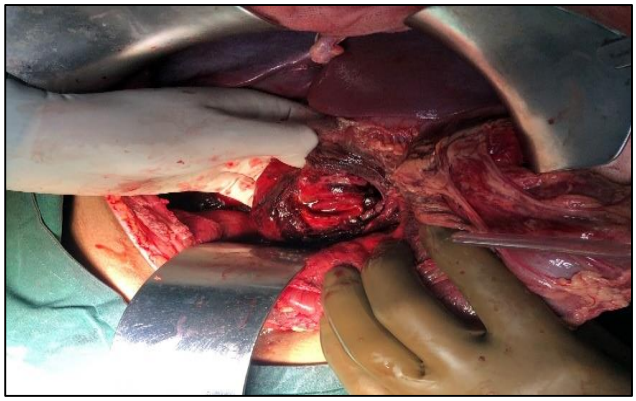

Figure 1: Intra operative findings.

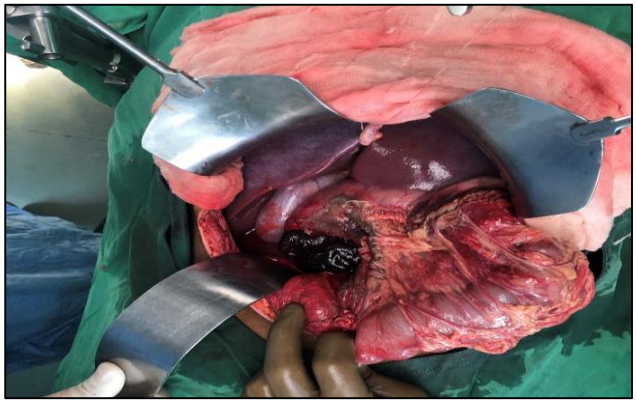

Figure 2: Blood collected intra-peritoneally due to massive haemorrhage.

Early mobilisation of patient and diet was started for the patient on post-operative day 1 through the naso-jejunal tube which is placed beyond the anastomosis. Patient improved symptomatically and shifted to ward. On post-operative day 6, NJ tube was removed and started orally. Patient was discharged on post-operative day 10.

DISCUSSION

With mechanization and revolution in technology, vehicular trauma is more and more common nowadays in India. Mostly young patients presented with history of trauma in a study conducted in a trauma centre in New Delhi. Vehicles were the most common inflicting instrument of injury, accounting for 43.7% of the cases followed by heavy objects like lathi (rod), hammer, etc., contributing to 20.5% of the cases. There were various modes of injury that can inflict trauma to a person. According to a study, the most common victims of the trauma were included motorcycle riders (30.7%) and car drivers or passengers (21.3%).[3] High blood alcohol levels in patients indicate alcohol consumption is an added factor to accidents leading to blunt trauma abdomen.[4]

Although abdominal trauma is fairly common, trauma to pancreas is rare. However, it is a life-threatening condition. As the patient has no visible external injury, pancreatic traumas are frequently associated with delayed diagnosis. The most common site of traumatic pancreatic injury is at the junction of the body and tail due to shearing injuries with compression against the spine.[1] Undiagnosed pancreatic injuries are associated with significant complications, such as intra-abdominal abscess, fistula, and fluid collections. Up to 75% of deaths occur within the 48 to 72 hours after trauma, and most are related to hypovolemic shock. Patients with pancreatic injury often present with associated injuries such as hepatic, gastric, splenic or colonic lesions. Retroperitoneal rupture of the duodenum may mimic traumatic pancreatitis in all respects, including raised amylase levels.

Patients with pancreatic trauma present with the complaint of severe pain abdomen, guarding and rigidity on examination. Hemodynamic instability is common as the patient might have intra-abdominal bleed. Such patients are managed by immediate fluid resuscitation through a wide bore cannula along with analgesics such as tramadol.

Diagnosis requires skilful radiological intervention along with surgical skills. Hence such diagnoses are often missed at peripheral centres. Pancreatic injuries are difficult to diagnose on X-ray or sonography. Ideal investigation in such cases is a CT scan of the abdomen and pelvis region. ERCP is the most useful procedure for the diagnosis of pancreatic ductal injury in stable patients. However, the endoscopist must be skilled and experienced in its use as this procedure has potential

complications that can limit its usefulness in patients with pancreatic trauma.

Early diagnosis and treatment are essential to reduce the significant morbidity and mortality associated with pancreatic trauma. Most frequent cause of mortality is haemorrhage and sepsis. Traumas not associated with ductal leak are manageable with conservative treatment.

Surgical management is usually reserved for patients with uncontrollable bleeding from pancreas, or extensive damage to pancreas and nearby structures such as duodenum. The surgery is extremely complex and requires a team of highly skilled surgeons to provide a good outcome. As the mortality rate of pancreaticoduodenectomy is high in emergency surgeries, some cases might demand an initial lifesaving conservative management such as drain placement, followed by a second laparotomy and Whipple's procedure after hemodynamic stabilisation of the patient. The type of surgical intervention has varied from drainage only, suturing repair, to pancreatic resection with or without immediate reconstruction.[5]

Whipple's procedure for trauma is rarely conducted, and is reserved for high grade injuries. The American Association for the surgery of trauma (AAST), pancreatic injury classified as grade III or higher necessitates operative management due to involvement of the main pancreatic duct.[6]

A lot of centres opt for a first stage damage control surgery when the patient is hemodynamically unstable, followed by a later second surgery-pancreaticoduodenectomy after stabilising the patient. 2 staged surgery is also done when the patient presents to a peripheral centre without the availability of trained surgeons. In such settings a primary life-saving DCS is done followed by transfer to higher centre. While the time taken for DCS is less than pancreatico-duodenectomy, overall rate of post operative complications did not show a significant difference.[7] In our case a single setting surgery was done and led to a successful outcome.

In a study conducted by Wilden in 2008-2010, he compared traumatic patients who underwent Whipple procedure and conservative management. He observed that there was a faster mortality in conservative group than the operated group.[8]

CONCLUSION

Whipples procedure, which was originally done for malignancies only, is nowadays seeing use in other cases also. A complicated procedure requiring a highly trained surgeon might seem daunting, but is now proved to be lifesaving in certain cases of blunt trauma abdomen.

Early decision to operate, skilful team, intensive post op management and keeping a watch for post operative complications have made this case a successful one. The patient was successfully discharged without any complications on post operative day 10.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Paulino J, Vigia E, Cunha M. Two-stage pancreatic head resection after previous damage control surgery in trauma: two rare case reports. BMC Surg. 2020;20:98.
2. Hasanovic J, Agic M, Rifatbegovic Z, Mehmedovic Z, Jakubovic-Cickusic A. Pancreatic injury in blunt abdominal trauma. Med Arch. 2015;69(2):130-32.
3. Harna B, Arya S, Bahl A. Epidemiology of Trauma Patients Admitted to a Trauma Center in New Delhi, India. Indian J Crit Care Med. 2020;24(12):1193-7.
4. Cox EF. Blunt abdominal trauma. A 5-year analysis of 870 patients requiring celiotomy. Ann Surg. 1984;199(4):467-74.
5. Ono K, Abe T, Amano H. Grade IV traumatic pancreatic injury with primary duodenum malignant lymphoma following pancreatoduodenectomy: a case report. Surg Case Rep. 2020;6(1):54.
6. Asensio JA, Petrone P, Roldán G, Kuncir E, Demetriades D. Pancreaticoduodenectomy: a rare procedure for the management of complex pancreaticoduodenal injuries. J Am College Surg. 2003;197(6):937-42.
7. Thompson CM, Shalhub S, DeBoard ZM, Maier RV. Revisiting the pancreaticoduodenectomy for trauma: a single institution's experience. J Trauma Acute Care Surg. 2013;75(2):225-8.
8. Van der Wilden GM, Yeh D, Hwabejire JO, Klein EN, Fagenholz PJ, King DR et al. Trauma Whipple: do or don't after severe pancreaticoduodenal injuries? An analysis of the National Trauma Data Bank (NTDB). World J Surg. 2014;38(2):335-40.

Cite this article as: Kasliwal NR, Singh K, Sekar SC, Parupally CK. Pancreatico-duodenectomy in a blunt trauma abdomen: a rare case report. Int Surg J 2023;10:309-11.