

A Rare Case of Traumatic Combined Duodenal and Jejunal Perforation

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Abstract: Duodenal perforation following blunt abdominal trauma is a rare and often overlooked injury leading to increased mortality and morbidity. We report a case of combined duodenal and jejunal perforation following blunt trauma abdomen and highlight the challenges associated with their management. This case emphasizes the need of a thorough systematic search for any other intraperitoneal injuries with Kocherization in cases with suspected duodenal injuries. On initial evaluation, CT Abdomen (plain) reported a suspicious defect in D2 segment of duodenum. A thorough bowel run revealed another perforation in the jejunum. Patient was managed with a simple closure of both the perforations with a nasogastric tube decompression, proximal duodenostomy and a distal feeding jejunostomy.

Keywords: Blunt trauma abdomen, Duodenal perforation, jejunal perforation, Duodenostomy, Jejunostomy.

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I. Introduction

High speed vehicular accidents often result in duodenal injuries due to crushing or shearing forces on the abdomen. Duodenal lesions occur in 4.3% of all patients with abdominal injuries⁽¹⁾. These comprise of 0.2–3.7% of all trauma related laparotomies⁽²⁾. Duodenal injuries constitute a challenge to the trauma surgeon, mainly due to their retroperitoneal location. When identified, they are associated with other abdominal injuries ranging from simple hematoma to perforation and rupture with disruption of the pancreaticoduodenal complex⁽³⁾. Duodenal perforation due to blunt trauma abdomen with jejunal perforation is rare, a similar case has been reported with handlebar hernia earlier⁽⁴⁾. There is no single method of duodenal repair that eliminates the possibility of dehiscence of the duodenal suture line.⁽³⁾ However, great care has to be taken while performing the duodenal repair.

II. Case Report

A 49-year-old male was admitted to the casualty with alleged history of blunt abdominal trauma sustained due to a road traffic accident while riding a two wheeler. Patient complained of diffuse abdominal pain with an episode of vomiting containing food particles. On examination, patient was conscious, oriented and vitals were stable - blood pressure was 130/70 mmHg, heart rate was 98 bpm., respiratory rate was 18/minute, and SpO₂ 99% at room air. On abdominal examination, there was diffuse tenderness with signs of guarding and rigidity throughout the abdomen, bowel sounds were sluggish. A Focused Assessment with Sonography for Trauma (FAST) of the abdomen was

performed which reflected free fluid in the peritoneal cavity and specifically in the right upper quadrant, with a clear chest and pericardium.

CT Abdomen showed pneumoperitoneum. Mild to moderate free fluid in the peritoneal cavity predominantly in right sub-hepatic and right paracolic gutter. Large extra-luminal focal air collection measuring ~9x8x5cm was noted in the right para-renal space. Heterogeneous focus with mottled air was seen within the collection-->P/o gastric contents. Suspicious defect was noted in lateral wall of D2 segment of duodenum. Initial laboratory tests showed a white blood cell count of 5900/mm³, hemoglobin of 12.8 g/dL, platelet count of 2,34,000 /mm³, aspartate aminotransferase of 279U/L, and alanine aminotransferase of 125U/L.



Figure 1: CT Picture of this patient

Under the impression of acute abdomen with pneumoperitoneum, free fluid collection and suspicious defect in D2 segment of duodenum, the patient was planned for emergency exploratory laparotomy.

Intra-operative findings:

Using a midline incision, peritoneal cavity was opened and about a liter of blood (haemoperitoneum) was drained. No solid organ injury noticed on systematic search. A thorough bowel run revealed an irregular perforation in the jejunum of about 2 X 2cm size. Then, about 300ml turbid retroperitoneal collection containing food particles was also noticed. On further dissection of the retroperitoneal space, a 3 X 3 cm perforation in the lateral wall of D2 segment of the duodenum was noticed. Both the perforations were repaired. Nasogastric tube was placed for stomach decompression. A proximal duodenostomy was done using Foley's catheter to facilitate biliary drainage and a distal jejunostomy tube was also inserted to be used for enteral feeding. Thorough peritoneal lavage was given. 3 drains placed and secured, one in the right paracolic gutter, one near the site of duodenal perforation and one in the pelvis.

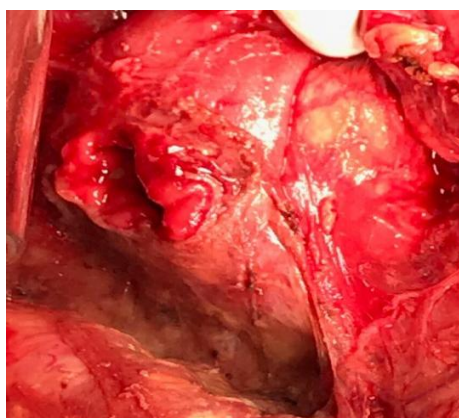


Figure 2: Site of the duodenal perforation



Figure 3: Site of the jejunal perforation

Post-operative period:

Post-operative period was uneventful. Jejunostomy feeding was started on POD -5 and then, clear fluids were orally started on POD-6. Duodenostomy tube removal was done on POD-14. Following removal, a bile stained track formed opening exteriorly which eventually closed. Jejunostomy tube removal was done on POD-20. Patient was discharged 22 days post surgery.

III. Discussion

Isolated duodenal injuries after blunt abdominal trauma are uncommon. Concomitant injuries are more common, and overall outcome depends on the nature and the severity of these injuries. Blunt abdominal injuries may have a very general clinical presentation, which may result in delay in diagnosis. In such serious injury, even a very short delay significantly worsens both the general condition and the prognosis.

In the vast majority of retroperitoneal perforations, there is at first only mild upper abdominal tenderness with progressive temperature rise, tachycardia and occasional vomiting. After several hours, the duodenal contents extravasate into the peritoneal cavity with the development of peritonitis⁽³⁾ The triad of vomiting, upper abdominal pain, and leukocytosis, though individually less specific, when present together in blunt abdominal trauma, may suggest duodenal injury⁽⁵⁾. The presence of a normal amylase level, however, does not exclude duodenal injury⁽⁶⁾. Contrast enhanced CT (CECT) can detect small amounts of retroperitoneal air, paraduodenal haematoma or extravasated contrast from the duodenum. Occasionally, contrast enhanced computed tomographic scan may also be negative when performed early or may suggest subtle findings like small amount of unexplained fluid or unusual bowel morphology due to paraduodenal hematoma⁽²⁾

There are several options to deal with duodenal injury, which range from simple repair like primary closure (duodenorrhaphy) to more complex procedures like resection and anastomosis, duodenal diverticulation, pyloric exclusion, pancreaticoduodenectomy. However, no single method of repair completely eliminates the possibility of a duodenal fistula⁽⁷⁾

Most of the duodenal injuries are adequately managed with primary closure (duodenorrhaphy) in one or two layers or by resection and anastomosis. In our case we have managed the two perforations with primary closure, advanced a nasogastric tube to decompress the stomach, retrograde duodenostomy done using Foleys catheter just above the repaired perforation for biliary diversion, an anterograde jejunostomy done distal to the jejunal perforation for enteral feeding. Early enteral feeding avoids the need for more expensive total parenteral nutrition (TPN) with its attendant complications. This case highlights the importance of difficulties that can be encountered during diagnosis and management of blunt abdominal trauma with duodenal injury and the need of systematic search for other abdominal injuries, which might not be detected on a plain computed tomography scan. Hence, exploratory laparotomy remains the ultimate diagnostic test in the face of absent or equivocal radiographic signs

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