Pancreas Sparing Duodenectomy for Duodenal Trauma
Hanish Kataria, Robin Kaushik, Simrandeep Singh, Rajeev Sharma

Abstract

Background: Although blunt abdominal trauma is frequently encountered, isolated duodenal injury is relatively uncommon. The management of such patients is challenging and various surgical procedures are described for their management.

Methods: Two patients presented to our emergency department with isolated duodenal injuries (transection and devascularisation) secondary to blunt abdominal trauma.

Results: Both patients underwent exploratory laparotomy, revealing transection of the duodenum along with proximal devascularization and detachment of mesentery at the duodeno-jejunal junction without any other intra-abdominal injury (especially pancreas, colon, vena cava) for which pancreas-sparing duodenectomy (infra-ampullary) was performed.

Conclusion: Pancreas-sparing duodenectomy is a valuable tool in the management of duodenal trauma, allowing the surgeon (and the patient) to avoid the complications of major surgical resections.

Key words: Duodenal injuries; abdominal trauma; infraampullary; anastomosis

Introduction

Blunt abdominal trauma is usually associated with injury to the intestine in about 15% of patients, making it the third most commonly injured organ after the liver and spleen. It is the small bowel that is injured far more frequently than the colon, possibly because of a protective effect of the relative fixity and retroperitoneal location of the colon, and such injuries usually occur due to compressive (direct) or deceleration forces that cause damage by crushing, bursting (increasing intra-luminal pressures), deforming organs, stretching or shearing that leads to tearing of mesenteric attachments, mesentery, or mesenteric vessels. This occurs more commonly at the 'transition points' between the fixed and mobile parts of the mesentery and intestine, more often than not, presenting as varying grades of injury in the duodeno-jejunal area or the terminal ileum [1].

The duodenum is uncommonly injured in blunt abdominal trauma, quite possibly due to the same factors that afford protection to the colon – duodenal injury has been reported in only about 3 - 5% of cases after abdominal trauma, and is usually accompanied by injury to other abdominal organs because of its close anatomic relationship to structures such as the pancreas, great vessels, liver and gall bladder [2].

Such injuries are notoriously difficult to detect and manage. Two cases of duodenal injury after blunt abdominal trauma that were seen and managed in our department are presented and the relevant Literature discussed.

Case Report

Case 1

A 15-year-old male was referred to our emergency with severe upper abdominal pain following a head-on collision of his motorcycle with a canter carrying wooden planks in which he received a direct blow to the upper abdomen.

On examination, there was marked abdominal tenderness, with a fullness of the upper abdomen. Although there were no obvious signs of peritonitis, the patient had severe pain out of proportion to the clinical signs, as well as persistent tachycardia. His routine hematological and biochemical workup (including serum amylase and lipase) was normal, and his X-rays of chest and abdomen also, did not reveal any abnormality. Ultrasound of the abdomen was also non-contributory. He was kept on conservative management with a plan for computerised tomography scan...
(CT scan). However, in view of his deteriorating clinical condition – increasing upper abdominal distension, severe and persisting pain, and rising pulse rate – he was taken up for emergency surgery.

At laparotomy, there was minimal hemorrhagic fluid within the peritoneal cavity. In the region of the duodenum and pancreatic head, there was bile staining, as well as an obvious, complete transection of the duodenum from the jejunum at the duodeno-jejunal flexure. Kocherisation of the duodenum revealed a duskiness of the third part of duodenum extending up to the site of duodenal transection. The duodenum was gently mobilised off the pancreas by a combination of suture ligation and cautery of the tissue between until normal colored and healthy duodenum was seen (Figure 1). The duodenum was then transected (at a level of the second part, just a few centimeters below the ampulla of Vater) and anastomosed in a single layer (interrupted 000 polygalactin 910) to the freshened end of the jejunum that was brought up through an opening in the transverse mesocolon in (Figure 2). In addition, a retrograde duodenostomy through the distal jejunum was done, leaving the tip of the tube just below the duodenal anastomosis. A feeding jejunostomy was added and the patient was shifted to the intensive care unit (ICU) post-operatively.

He remained in ICU for about a week, after which he was shifted to the ward. The patient had a relatively unremarkable recovery, but he kept us ‘on our toes’ in view of two things – firstly, he had a persistent high output (nearly up to 2.5 litres daily) through his duodenostomy during this period, and secondly, he had repeated episodes of occasional high-grade fever which prompted us to look for a source in the chest, anastomotic leak and intra-abdominal collections repeatedly, but none was found. After an upper gastrointestinal dye study on the 12th day revealed an intact anastomosis, he was started on orals. The patient was discharged in a satisfactory condition about 3 weeks after surgery.

Case 2

A 26-year-old male was seen by us a few hours after a vehicular accident in which his motorcycle collided with a pole and he received a direct blow to the upper abdomen from its handle. Following this, he developed severe abdominal pain for which he was referred to us. On examination, he had tachycardia and generalised abdominal tenderness and guarding. X-ray of the chest showed air under right dome of diaphragm, and he was resuscitated optimally and then taken up for exploratory laparotomy.