

Accidental Blunt Abdominal Injury Causing Multiple Small Bowel Loops' Avulsion from the Mesentery and Dismembered Colon

Nilesh Punjabhai Sondarva

Department of General and Laparoscopy surgery, Zydus hospital, Anand, Gujarat, India

Abstract

A 50-year-old male, truck driver, met with an accident with blunt steering wheel injury to the abdomen with no external marks of injury over the abdominal wall. He had severe abdominal pain with tossing up in bed. As the abdomen showed no external marks of injuries, strikingly, abdominal palpatory findings were prominent with severe tenderness in the left side umbilical and pelvic regions. He had consumed heavy food with liquids within an hour before the accident. He collided with another stationary lorry; thus, he received massive blow to his abdomen with the steering wheel. He displayed the signs of hemorrhagic shock on arrival to the emergency care. Computed tomography scan confirmed moderate hemoperitoneum with multiple bowel perforations. On exploratory laparotomy, multiple jejunal and ileal loops were found completely avulsed from the base of the mesentery, making them completely devascularized along with dismembered descending colon from the sigmoid. Resection of nonviable small bowels and end-to-end jejunoleal anastomosis was done. Colocolic anastomosis was performed after adequate descending colon mobilization with protective loop ileostomy in the right lower quadrant. The patient had developed wound infection; hence, he was put on daily dressing. Gradually, the patient improved and was discharged with functioning ileostomy.

Key words: Avulsed bowels, Blunt abdominal injury, Deceleration and compressive force, Devascularized small bowel loop, Dismembered colon, Mesenteric base avulsion of small bowels, Resection and anastomosis, Traumatic bowel injury

INTRODUCTION

In 2020, 8.4 million people will die every year from injury, and injuries from road traffic accidents will be the third most common cause of disability worldwide and the second most common cause in the developing world.^[1] The reported incidence of bowel and mesenteric injuries after blunt abdominal trauma is approximately 1.3%.^[2] It was observed that the proximal jejunum and distal ileum were more prone to perforation in such injuries.^[3] Devascularization is more common in small bowel than in large bowel.^[4] Accidental blunt abdominal trauma with steering wheel may cause extensive intra-abdominal hemorrhage with or without small bowel perforations. The

severity of such injury depends on the velocity of impact and usage of safety aids such as wearing seat belts and deployment of air bags. Underlying bowel perforations and hemoperitoneum may obscure their manifestation when presented early, particularly with no apparent abdominal injury marks, but careful general and regional examinations point out impending doom. Inadequacy of surgical diagnosis and proper management affect morbidity and mortality. Thus, early recognition, resuscitation, and prompt surgical treatment appear to be within the capability of surgeons,^[5] which, in turn, improves the outcome.

CASE REPORT

A 50-year-old male, truck driver, met with an accident while driving, as he collided with another truck on the highway. He was brought to the emergency room with severe abdominal pain and hypotension. He got severe thrust to his abdomen with the steering wheel of the truck, and as per history, in his words, he had heavy food within an hour before the accident. On examination, he was restless but conscious. He did not

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Corresponding Author: Dr. Nilesh Punjabhai Sondarva, F/303, Nilkanth Greens, Behind Delhi Public School, Kalali Road, Vadodara – 390 012, Gujarat, India.



Figure 1: Devascularized small bowel loop due to avulsion from mesenteric supply

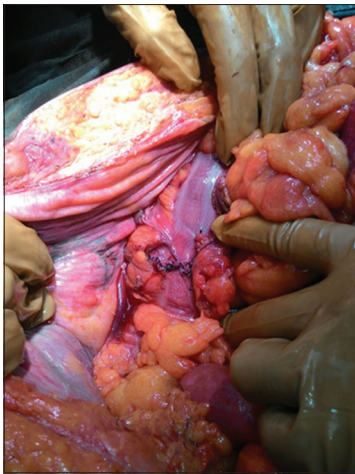


Figure 2: Colocolic anastomosis

show any signs and symptoms of head injury. His vitals were showing that he was in hypotensive shock (Temperature 96 degree Fahrenheit (units), pulse: 110, BP: 90/60 mmHg). However, his abdomen did not show up any external marks of injuries. Per abdominal palpatory findings showed tenderness in the left side umbilical and hypogastric regions. The patient was resuscitated and made hemodynamically stable with inotropic support and blood transfusions 2 units. Computed tomography (CT) scan of the abdomen with contrast study showed moderate hemoperitoneum with multiple jejunal perforations. No solid organ injuries were found; hence, he was taken for emergency exploratory laparotomy. Intraoperative, gross hemoperitoneum (>1 L) with multiple jejunal and ileal loops were entirely avulsed from the base of mesentery along with intervening normal loops along the entire length of the small bowel [Figure 1]. The descending colon was completely dismembered from the sigmoid, and the later was lying free into the pelvis. Bowel decompression and thorough peritoneal lavage were done. It was impossible to salvage the devascularized bowel loops;

hence, the resection of jejunal and ileal loops of about 4 feet was done and end-to-end jejunioileal anastomosis was performed. The descending colon was anastomosed with sigmoid after adequate mobilization of the colon [Figure 2] and protective loop ileostomy created in the right lower quadrant. The patient had developed surgical site infection which was dealt with the appropriate usage of antibiotics and daily dressings. The patient was discharged in stable hemodynamic condition with functioning ileostomy.

DISCUSSION

Injury to the intra-abdominal structures can be classified into two primary mechanisms of injury – compression forces and deceleration forces.^[6] Compression forces may result from direct blows or compression. These forces may deform hollow organs and transiently increase intraluminal pressure, resulting in rupture. Deceleration forces cause stretching and linear shearing between relatively fixed and free objects. In this case, few loops showed complete avulsion from the mesenteric blood supply causing them devascularized. Similarly, the junction of descending and sigmoid received the same forces and displayed complete sheared and dismembered sigmoid colon. The high mortality rates reflect the severity of the high-velocity impact and associated injuries. Such patients should be carefully monitored for related injuries and complications,^[7] as early resuscitative measures and timely surgical management could reduce morbidity and mortality.

CONCLUSION

Detection of bowel and mesenteric injury can be challenging in patients after blunt abdominal trauma. Early diagnosis and treatment are critical to decrease patient morbidity and mortality. CT has become the primary modality for the imaging of these patients.^[8] “Golden hour” concept is crucial in managing this case. Patient life was salvaged with a multidisciplinary approach with active involvement of other allied branch consultants.

Resection of a significant length of the small intestine may severely affect protein absorption which, in turn, reflects in poor collagen content at healing site and scar tissue^[9,10] and diminishes the quality of healing.^[11] High-protein diet and vitamin supplements are essential for a healthy later life.^[12,13]

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