

## Case Report

# Delayed presentation of traumatic sigmoid perforation accompanied by ileal devascularization due to mesenteric tear in a patient with blunt abdominal trauma-a case report

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### ABSTRACT

Isolated colonic injuries are unusual following blunt abdominal trauma, and often have a delayed presentation. Associated or isolated mesenteric injuries of small bowel although more frequent than the former, tend to present late as well. Due to the atypical presentation, these injuries are often missed and lead to significant morbidity and mortality. We present a case of blunt abdominal trauma that presented 7 days after primary injury with fecal peritonitis leading to septic shock. Patient had a sigmoid perforation with associated mesenteric tear, devascularising its corresponding bowel. Patient underwent exploratory laprotomy. A resection of perforated sigmoid colon with descending-sigmoid anastomosis along with resection of devascularised ileum and double barrel stoma were performed. Patient required intensive care in the early perioperative period. He recovered well and was discharged on post operative day 10.

**Keyword:** Blunt abdominal trauma, Mesenteric injuries, Sigmoid perforation, Stoma, Fecal peritonitis

### INTRODUCTION

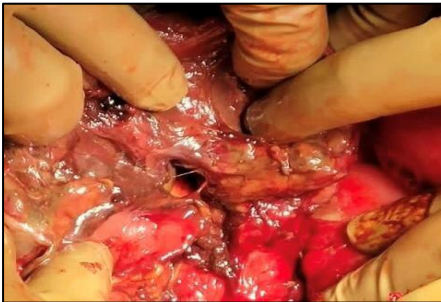
Approximately 4% of colonic injuries are caused by blunt abdominal trauma.<sup>1</sup> Blow-out injuries by seat belt and wheel cause vascular injury and colonic ischemia, and often cause delayed colonic perforation which sometimes present hours or days after initial injury. These injuries are commonly in the mobile areas of the colon, such as caecum, transverse colon and sigmoid colon, whereas secondary injuries by mesenteric devascularisation occur in the right side of the colon. There is often a delay in diagnosis of colonic injuries due to blunt trauma compared to penetrating trauma, hence higher mortality and morbidity.<sup>2</sup> In blunt traumatic injuries, delayed perforation may be found few days later and in the

presence of severe fecal contamination during surgery and sepsis, a stoma would serve better than a primary repair.<sup>3</sup> Mesentery of the small bowel is the third most common site of injury in blunt abdominal trauma and is often a delayed diagnosis.<sup>4</sup> Treatment is repair of mesentery if there is no significant compromise of bowel vascularity. Devascularised bowel needs resection followed by primary anastomoses or creation of a stoma.

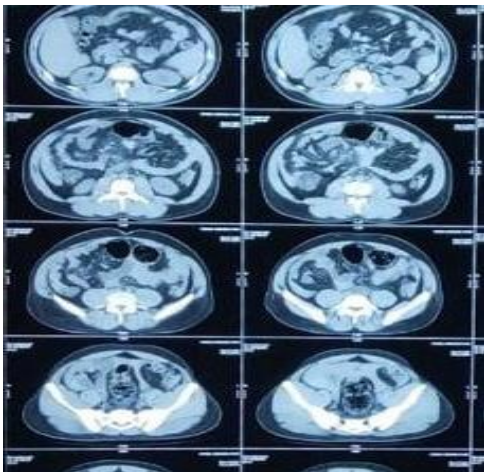
### CASE REPORT

A 32-year-old man, presented to the emergency department with complaints of pain in abdomen and distension since 7 days following a blunt trauma to the abdomen. Patient's truck collided with an oncoming truck and patient sustained trauma to the abdomen with his

own steering wheel. Patient did not have any other injuries. In an unusual turn of events, patient decided to drive back to his hometown, a distance of approximately 270 kms, before seeking medical attention. After returning to his hometown, he had a contrast CT scan of the abdomen done and decided to get discharged against medical advice, in spite of the CT findings of gross free fluid in abdomen. He presented to us, 7 days after the primary incident with severe abdominal pain and distension, tachycardia and hypotension. He was shifted to the operating room on an urgent basis and started on ionotropes. Exploratory laprotomy revealed, feculent peritonitis with a laceration of proximal 2/3 of sigmoid colon. Additionally, there was a tear in the mesentery of mid ileum, approximately 100 cm from Ileo-Caecal junction, causing devascularisation of approximately 20 cms of the ileum. There were no solid organ injuries and rest of the bowel was healthy. The lacerated segment of sigmoid colon was resected and a descending- sigmoid anastomosis was performed with a resection of the devascularised ileum and the two ends of ileum brought to the surface as a double barrel ileostomy. Two litres normal saline was used for abdominal cavity lavage. Patient showed remarkable recovery, was extubated the next morning and was weaned off ionotropes after a day, stoma was functional on the third post operative day and was discharged a week later. He developed a Surgical Site Infection-South Hampton grade 4 and was treated for the same.



**Figure 1: Intra-op picture of sigmoid perforation.**



**Figure 2: CT abdo-pneumoperitoneum and free fluid.**

## DISCUSSION

Colonic injuries can be penetrating, iatrogenic or secondary to blunt abdominal trauma. First record of colonic injury is in the Old Testament (Book of Judges, p-17-25) where Ehus stabbed Eglon with knife, the colon was injured, feces was released into the wound and he ultimately died.<sup>5</sup> Colonic injuries and their management is controversial. Colonic injury related mortality has decreased from 60% during World War 1 to 40% in World War 2 to 10% during Vietnam War and less than 3% in the last decade. However abdominal sepsis rate is 20% in colonic perforations.<sup>6,7</sup> The U. S. surgeon general during world war enforced exteriorisation or proximal diversion and so did Ogilvie in England, as it showed reduced mortality.<sup>8,9</sup> Imes, Tayler and Thompson and Gordon Taylor reported that in elective cases, primary repair showed better results.<sup>10,11</sup> In 1979, Stone and Fabian showed significant results from primary repair which contradicted the past guidelines.<sup>12</sup> Colonic injuries can be graded by two systems, Flint scale and colon injury scale of American association of surgery for trauma (AAST).<sup>13,14</sup>

Injured bowel should be thoroughly examined. Adequate mobilisation of the bowel is required. A right or left sided colonic injury can be closed primarily irrespective of contamination or transient shock state. Extensive injuries where primary repair is not possible or where there is a significant luminal compromise, a segmental resection and anastomoses can be performed or a diversion stoma can be done with a Hartmann's procedure for Sigmoid injuries. Mucous Fistula is created if distal segment is long enough. Rectal injuries below peritoneal reflection mandate diversion colostomy and presacral drainage. George et al managed 102 patients of penetrating intraperitoneal colonic injuries with primary repair in 83, segmental resection and anastomoses in 12 and resection and end colostomy in 7 and concluded that nearly all penetrating colon wounds can be repaired primarily or with resection and anastomoses regardless of risk factors.<sup>15</sup>

Small bowel injuries, both perforation and devascularisation have less mortality compared to colonic or gastro- duodenal injuries.<sup>16</sup> Small bowel injuries may have a delayed presentation and patients presenting with blunt abdominal injuries should be judiciously evaluated and investigated. A focused assessment and sonography for trauma (FAST), should be performed, which if inconclusive should be followed by a CT scan of the abdomen. A hemodynamically unstable patient may need urgent exploration even without radiological evidence if clinical findings warrant the same.<sup>17</sup> Bowel devascularisation secondary to mesenteric injury requires resection. Resected bowel may be anastomosed primarily or brought out on the surface as a stoma.

## CONCLUSION

Blunt abdominal traumas should be meticulously evaluated even in the absence of significant hemodynamic instability at presentation due to the probability of mesenteric and bowel injuries, both of which tend to have delayed presentation. All patients of blunt abdominal trauma should be admitted for observation irrespective of initial Ultrasound or CT findings. Exploration with either primary anastomoses or diversion stoma remains the cornerstone of surgical management in such cases.

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