

# Delayed Presentation of an Isolated Sigmoid Colon Injury Following Blunt Abdominal Trauma: A Case Report & Review of Literature

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## ABSTRACT

**Introduction:** Most colonic injuries are due to penetrating abdominal trauma. Colon injury rarely occurs after blunt abdominal trauma. Colonic trauma is usually associated with other intra-abdominal and extra-abdominal injuries. The low incidence of colon injury due to blunt abdominal trauma and the lack of a definitive diagnostic method for the same can lead to delays in diagnosis and treatment, subsequently resulting in high morbidity and mortality. **Case presentation:** a 25-years-old man who present after seven days of blunt abdominal trauma with clinical evidence of peritonitis, on laparotomy isolated sigmoid colon perforation was found which was managed with end colostomy. **Conclusion:** Isolated colon injury after blunt abdominal trauma is rare and difficult to diagnose. Delay in diagnosis increases the morbidity and mortality rates. Therefore it is important for the trauma surgeon to keep high index of suspicion colonic perforation, to facilitate its timely diagnosis and management.

**Key words:** Colon, Blunt trauma abdomen, Isolated, Morbidity.

## INTRODUCTION

Most colonic injuries are due to penetrating abdominal trauma. Colon injury rarely occurs after blunt abdominal trauma. Moreover transverse colon is the most commonly injured part of colon after blunt abdominal trauma and sigmoid colon perforation is relatively rare. Most colon trauma is due to motor vehicle accidents and associated injuries are commonly present. Simple, isolated colon injuries are uncommon. The low incidence of colon injury due to blunt abdominal trauma and the lack of a definitive diagnostic method for the same can lead to delays in diagnosis and treatment, subsequently resulting in high morbidity and mortality. We report a case of isolated proximal sigmoid colon injury, who presented after seven days of blunt abdominal trauma.

## CASE SUMMARY

A 25 years old man presented in emergency department with history of fall from bike; there was no evidence of head injury or spine injury. At that time he had mild diffuse pain all over the abdomen and there was no external injury mark over abdominal wall and no evidence of any peritonitis on clinical examination. All investigation including X- ray abdomen and ultrasound were within normal limit. Patient was observed for 24 hours and was discharged. At the time of discharge there was no abdominal pain and on per abdominal examination there was no tenderness and no guarding. After 7 days of in-

jury patient again came to emergency department with complains of abdominal pain for last 2 days and distension for one day. On per abdominal examination abdomen was distended with generalized tenderness and guarding suggestive of peritonitis. After resuscitation patient was investigated, his hemoglobin was 14.2 gm%, TLC- 14000/cmm, DLC- P<sub>78</sub>, L<sub>20</sub>, M<sub>1</sub>, E<sub>1</sub>, blood urea- 79 mg%, serum electrolyte showed hyponatremia (Sodium-132 m Eq/L). X-ray abdomen reveals mild rim of air under right hemi diaphragm. His ultrasound abdomen showed an irregular collection with moving internal echoes and multiple foci of air surrounded by echogenic inflamed mesentery suggestive of intestinal perforation. After resuscitation patient underwent exploratory laparotomy. Intraoperative findings include gross fecal contamination and sigmoid colon injury involving more than 50% of the colonic wall. Rest of the large intestine and whole of small intestine and all solid viscera were normal. Peritoneal lavage with normal saline was done and proximal end was brought as end colostomy and distal end was closed in two layers. Patient was discharged on seventh postoperative day.

## DISCUSSION

Colon injuries generally occur after penetrating abdominal trauma, whereas they are rarely encountered after blunt abdominal trauma. Incidence of colon injury has been reported in 1.1% of cases in

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a single institution retrospective series of 16,814 patients with blunt abdominal trauma.<sup>[1]</sup> Despite their infrequency, traumatic blunt injuries to the colon are extremely destructive and generally associated with damage to multiple organ systems, making diagnosis and treatment difficult. Most colonic trauma is due to motor vehicle accidents. Other common causes include impacts to the abdomen (a direct blow, occupational accidents) and falls.<sup>[2,3]</sup> In the present case report patient had blunt abdominal injury due to fall from bike. Several mechanisms of colon injury following blunt abdominal trauma have been suggested. Direct compression of the colon between the anterior abdominal wall and the vertebrae or pelvis is the most widely accepted mechanism.<sup>[4]</sup> This results in local lacerations of the bowel wall, mural and mesenteric hematomas, transection of the bowel, and localized devascularization and full-thickness contusion of the bowel. Devitalization of the areas of contusion may subsequently result in late perforation. The transverse colon is the most vulnerable colonic segment to blunt trauma due to its unprotected location. The sigmoid colon is relatively less vulnerable and is generally exposed to closed-loop perforations. Colonic injury is usually associated with other intra-abdominal and extra-abdominal injuries, associated intra-abdominal injuries are present in 74% of cases; extra-abdominal lesions occur in 90% of patients. Isolated colon injury following blunt abdominal trauma is a rarely encountered condition. Colon injury is usually accompanied by other intra-abdominal organ injuries, with the small intestine, spleen, liver and pancreas being the leading areas.<sup>[5]</sup> Diagnosis establishment of colonic injury following blunt abdominal injury is difficult because of associated multiple organ system injury. Moreover, clinical assessment can be unreliable in patients following blunt trauma due to distracting injuries, head and spinal cord injuries, and shock. Less than 50% of gastrointestinal tract injuries resulting from blunt trauma are reported to have sufficient clinical findings to indicate the need for laparotomy.<sup>[6,7]</sup> Sometimes as in present case, blunt abdominal trauma leads to full-thickness contusion of the bowel. Devitalization of the areas of contusion may subsequently result in late perforation. In a patient thought to have a colon injury caused by blunt abdominal trauma, the time between emergency department admission and surgery is of particular importance. A shorter duration minimizes the morbidity and mortality that would be encountered in the postoperative period. The rate of complications associated with colon injury is significantly higher if the duration is longer than 24 h after the injury

At present, there is no single test or investigation to accurately diagnose colon injuries caused by blunt abdominal trauma. There are some studies suggesting the efficacy of repetitive physical examination and observation in diagnosing colon injury caused by blunt abdominal trauma in the first six hours, during which the signs of peritoneal irritation appear.<sup>[7]</sup> Tenderness, guarding, distension and abdominal wall contusion are valuable findings on physical examination. However, the absence of these findings does not rule out intra-abdominal pathology. The presence of leukocytosis becomes significant when interpreted together with the findings from physical examinations and the results of other diagnostic methods.<sup>[8]</sup> Plain radiographs are not reliable in detecting the presence of a significant injury; the results appear normal in most cases.<sup>[9]</sup> Ultrasonography has been widely used to evaluate blunt abdominal trauma.<sup>[10]</sup> Ultrasonographic findings of free fluid in the abdomen, particularly between the intestinal loops without the presence of solid organ injury, may indicate a bowel injury. Computed tomography is the most appropriate diagnostic tool to document abdominal injury; however, its diagnostic value for patients with colon injury remains controversial. On

computed tomography, presence of free air in the abdomen and extravasation of the contrast agent are significant findings.<sup>[10]</sup>

Treatment options include primary closure, resection with anastomosis, and colostomy. Primary closure is performed for injuries involving less than 50% of the colonic wall, whereas resection with anastomosis is performed when the tissue loss is more than 50% or when there is extensive mesenteric injury impairing the blood supply.<sup>[11]</sup> Colostomy should be performed when there are more than two abdominal organ injuries, when the amount of intraabdominal bleeding is above 1000 mL, when there is gross fecal contamination within the abdomen, and when the time between the injury and treatment exceeds eight hours

## CONCLUSION

Isolated colon injury after blunt abdominal trauma is rare and difficult to diagnose because of delayed and atypical clinical presentation. Delay in diagnosis increases the morbidity and mortality rates. Unfortunately, there are no specific diagnostic modalities or combination of diagnostic methods currently available to detect colonic perforation. Therefore it is important for the trauma surgeon to keep high index of suspicion colonic perforation, to facilitate its timely diagnosis and management.

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Nil.

## CONFLICT OF INTEREST

Nil.

## ABBREVIATION USED

Nil.

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