



ISOLATED SIGMOID COLON INJURY FOLLOWING BLUNT TRAUMA ABDOMEN - AN UNUSUAL OCCURRENCE.

General Surgery

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ABSTRACT

Colon injury is far more common in penetrating injury than blunt trauma. Blunt trauma to the abdomen is more likely to damage solid organs such as the liver, spleen, pancreas and kidneys. Colon injury in blunt trauma is severe and is associated with other organ injuries, making its diagnosis difficult. However, isolated sigmoid colon injury in blunt trauma is rare.

We report a case of 42 year old male who presented to us with blunt trauma to abdomen following a fall on iron Jaal (Grid) with slipping of one lower limb between two iron bars. The patient presented 4 days after injury with tenderness and guarding all over abdomen. X-ray abdomen was normal, ultrasonogram of abdomen showed presence of free fluid. Patient was operated on clinical basis.

A single perforation of size 2 cm×1 cm was present in proximal sigmoid colon and there was no other injury. The perforated colon loop was mobilized and brought to anterior abdominal wall as colostomy. Isolated sigmoid colon injury is rare presentation. Initial radiologic investigations and clinical presentation may be misleading.

KEYWORDS

Blunt trauma abdomen, isolated sigmoid colon injury, sigmoid loop colostomy

Introduction:

The most common mechanism of colonic injury is penetrating trauma (1). The low incidence of colon injury due to blunt abdominal trauma and delay in diagnosis and timely treatment results in high morbidity and mortality in all age groups.

Intestinal disruptions can be due to a variety of types of blunt trauma, with automobile being the most common etiologic agent (2,3). Mechanism of perforation is either due to compression or deceleration. Transverse colon and sigmoid colon are more vulnerable due to deceleration injury (4).

Herein we report a case of blunt trauma abdomen due to fall with slip of left lower limb between two iron rods leading to isolated proximal sigmoid colon injury.

Case Report:

A 25 year male patient presented to the emergency department with pain lower abdomen since 4 days and vomiting 1 day duration. Further there was history of fall 4 days back on iron Jaal (Grid) with slip of left lower limb between two iron bars leading to main impact of injury in left iliac fossa. The pain abdomen was initially localized to left iliac fossa but since morning it has spread to all over abdomen. At time of presentation patient was conscious, pulse 104 beats/min., BP was 120/70 mm Hg, SpO₂ was maintained at room air. On examination, the patient had distended abdomen with features of peritonitis. USG detected moderate amount of free fluid in peritoneal cavity-? Hemoperitoneum. Erect X ray abdomen showed no air under the diaphragm.

In view of peritonitis, emergency laparotomy was undertaken. Peroperatively peritoneal cavity was contaminated with fecal matter. A perforation of size 2 cm x 1 cm was found in proximal sigmoid colon on anterior wall with macerated edges (photo 1), which was exteriorized as loop sigmoid colostomy. Post operative period was stormy with development of pneumonitis with effusion right lung base and wound infection.

Later, 3 months after reversal of diverted fecal stream done by resection and anastomosis of bowel.

Discussion

Colon injuries generally occur after penetrating abdominal trauma, whereas they are rarely encountered after blunt abdominal trauma. In a retrospective study, the incidence of colon injuries due to blunt abdominal trauma has been reported to be 1.1% [2]. Motor vehicle accidents are the most common reason of colon injuries due to blunt

abdominal trauma [3]. Other common causes include impacts to the abdomen (a direct blow, occupational accidents) and falls [4]. In the present case our patient had injured his left lower abdominal region in blunt trauma (direct blow) sustained due to a fall on Jaal (Grid) with slipping of lower limb between two iron bars.

Several mechanisms have been described for colon injuries occurring after blunt abdominal trauma. Crushing of the colonic segment between two objects results in local lacerations of the bowel wall, mural and mesenteric hematomas, transaction, localized devascularization and full-thickness contusions. Devitalization of the areas of contusion may subsequently result in late perforation. Rapid deceleration is the second mechanism. This creates shearing forces between the natural fixed points, which are the Treitz ligament, both ends of the sigmoid colon, and ileocecal junction, and the mobile portions of the colon. The third mechanism is a burst injury, which occurs by the closure of the colonic segments during trauma. The bowel ruptures or bursts when the intra-luminal pressure exceeds the tensile strength of the bowel wall. The transverse colon is the most vulnerable colonic segment to blunt trauma due to its unprotected location [3]. The sigmoid colon is relatively less vulnerable and is generally exposed to closed-loop perforations [3].

Plain radiographs are not reliable in detecting the presence of a significant injury, they appear normal in most cases (5). Ultrasonographic findings of free fluid in the abdomen, particularly between the intestinal loops without the presence of solid organ injury, may indicate bowel injury (6).

Large bowel injury is misleading in majority of cases hence associated with high mortality and morbidity. Unprepared bowel, sepsis, anemia and electrolytes disturbances are the factors associated with poor prognosis.

Table 1: colonic injuries grades

Grade	Characteristics of injury
1	Contusion or hematoma
2	Small (<50% circumference)
3	Large (>50% circumference)
4	Transaction
5	Transaction with tissue loss; devitalized segment

Colonic injuries are broadly divided surgically in 5 Grades (table 1). The primary modalities of treatment of colonic perforation are – proximal diversion and repair, colostomy, primary closure and

resection and anastomosis (7). Resection and anastomosis is advised if the patient is hemodynamically stable, with well vascularized bowel and if there is not much of contamination(8). Many of the perforations can be closed with primary closure, only rarely resection and anastomosis is required. Grade 4 and 5 are treated with ileostomy or colostomy.

Colon trauma management has evolved dramatically over the past century. Eastern Association for the Surgery of Trauma (EAST) practice management guidelines (9) advocate that patients with destructive colon wounds with a Penetrating Abdominal Trauma Index (PATI score) >25, significant co morbidities, or hemodynamic instability, benefit from diversion.(10) A Cochrane Review from five prospective randomized trials from 1966-2001 found that overall there was no difference in mortality between primary repair versus diversion.(11)

CONCLUSION

Isolated sigmoid colon injury is rare presentation. Initial radiologic investigations may not show any finding and close watch on patient is the necessary prerequisite. Most of the injuries can be managed with primary repair in absence of gross contamination and shock. however, due to delay in presentation and contamination diversion is required.



Photo 1: Showing isolated injury at upper sigmoid colon

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