

## Sigmoid colon injury due to blunt abdominal trauma. A case report

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**SUMMARY:** Sigmoid colon injury due to blunt abdominal trauma. A case report.

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*We present a case of sigmoid colon injury after blunt abdominal trauma. The patient was submitted to sigmoid resection with primary end-to-end colo-colic anastomosis. He died 22 days after operation with septic shock and acute respiratory failure. Post-mortem examination showed left lung generalized pneumonia with no signs of intra-abdominal pathology; colo-colic anastomosis was intact.*

*We reviewed the literature about the management of this rare trauma.*

**RIASSUNTO:** Lacerazione del colon da trauma addominale chiuso. Caso clinico.

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*Presentiamo un caso di lacerazione del sigma da trauma addominale chiuso. Il paziente è stato sottoposto ad intervento chirurgico di resezione del sigma con anastomosi colo-colica termino-terminale con stapler. Il paziente è deceduto 22 giorno dopo l'intervento chirurgico a causa di uno shock settico con insufficienza respiratoria acuta. All'autopsia è stata riscontrata una polmonite sinistra, mentre gli organi intra-addominali e l'anastomosi colo-colica erano intatti.*

*Abbiamo fatto una revisione della letteratura riguardo all'approccio clinico e terapeutico a questo rara lesione traumatica.*

KEY WORDS: Abdominal trauma - Colon injury - Colon surgery.  
Trauma addominale - Lacerazione del colon - Chirurgia del colon.

### Introduction

Colon injury rarely occurs after blunt abdominal trauma. Most colonic injuries are due to penetrating abdominal trauma and several reports are present in the literature dealing with diagnosis, treatment and outcome of these injuries (1, 2). Management algorithms for penetrating injuries of the colon were suggested and primary repair was proposed in selected patients (1).

The small reports of blunt colonic trauma do not allow to draw clear guidelines as to the management of these injuries (3-7).

We report a case of sigmoid injury secondary to blunt abdominal trauma, who underwent primary co-

lon resection without colostomy and a review of the literature with respect to the management of this rare trauma.

### Case report

A 71-year-old man was admitted with abdominal pain and multiple contusions after a car accident. Previous history of obstructive chronic bronchitis and cardiac ischaemia with hypertension was present. General conditions were poor with hypotension (blood pressure = 90/70 mmHg), tachycardia (pulse rate = 95 b/min), and tachypnoea (breathing rate = 34/min). Examination of the abdomen showed no sign of direct trauma and the presence of tenderness in the upper left and right quadrants. Blood cell count revealed signs of anaemia (red blood = 3,250,000/mm<sup>3</sup>, haemoglobin = 9.5 g/dL, haematocrit = 35%). After adequate volume replacement with parenteral saline solutions, haemodynamic stability was achieved (blood pressure = 110/75 mmHg, pulse rate = 75 b/min). The patient was submitted to ultrasonographic examination of the abdomen, which showed the presence of blood in the perihepatic and perisplenic regions. Angio-CT scan of the thorax and abdomen confirmed the presence of the fluid collection de-

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Fig. 1 - Intra-operative photograph showing the sigmoid colon with a 10 cm long tear and contiguous mesenteric haematoma.

scribed by the ultrasonographic examination with no evidence of intra-abdominal organ injuries.

Emergency laparotomy confirmed the presence of haemoperitoneum with the presence of a 10 cm-long linear tear of the sigmoid colon and contiguous mesenteric haematoma (Fig. 1). Sigmoid colon resection with end-to-end anastomosis with 28F circular stapler was performed.

In the fourth postoperative day continuous fever (38.5°C) occurred with hypoxia and hypercapnoea: the patient was intubated and admitted in the emergency care unit. Chest radiography showed the presence of pneumonia of the inferior lobe of the left lung. Blood culture and sputum culture were collected but no evidence of bacterial growth was detected. Antibiotic therapy directed to aerobic and anaerobic bacteria was administered, but fever did not subside. In the seventh postoperative day flatus was present. The patient died 22 days after operation because of septic shock and acute respiratory failure.

At post-mortem examination left lung generalized pneumonia was present; abdominal organs were normal and the colon anastomosis was intact (15).

## Discussion

Colon injury was reported in 1.1% of cases in a single institution retrospective series of 16,814 patients with blunt abdominal trauma (8). Most colon trauma are due to motor vehicle accidents and associated injuries are commonly present (4, 8). Several mechanisms of colon injury during 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; other mechanisms include sudden increase in intraluminal pressure and abrupt deceleration, producing mesenteric disruption and subsequent devascularization of the bowel. Transverse and sigmoid colon are particularly vulnerable to sudden deceleration injuries, because they are relatively fixed on a mesenteric stalk (9-11). Simple, isolated colon injuries are uncommon.

Associated intra-abdominal injuries are present in 74% of cases; extra-abdominal lesions occur in 90% of patients (11).

No physical findings or imaging modalities are able to discriminate colonic injury (12). In conscious patients abdominal pain and/or signs of peritoneal irritation are commonly present. The role of ultrasound is limited to detecting free intraperitoneal fluid, which may be an indirect sign of hollow viscus trauma. Computed tomographic findings of intestinal rupture include pneumoperitoneum, gas in the mesentery, bowel wall, or retroperitoneum, and extraluminal extravasation of contrast material. Other findings suggestive of bowel rupture include thickening of the bowel wall and free intraperitoneal fluid without signs of intra-abdominal parenchymatous organ injuries. The sensitivity and specificity of CT imaging was 95% and 99.6% in a recent prospective study (13). However, CT is considerably less reliable in detecting hollow organ injury than solid organ trauma.

Therapeutic options for colon injury are primary repair, primary resection with anastomosis, and repair or resection with diverting colostomy. In the past 20 years, there has been an increasing trend toward primary repair and primary resection. Advantages of primary repair are the avoidance of colostomy, with the subsequent reduction in the morbidity related to colostomy itself and the cost associated with colostomy care and the subsequent hospitalization for closure. Potential drawbacks of primary repair are the morbidity and mortality associated with failure of repair.

Carrillo et al. (4) found no difference in the incidence of abdominal complications after primary anastomosis with or without ostomy formation. The results of a large retrospective study on blunt colon trauma showed that colostomy formation did not confer any benefit to the patient and confirmed that it did not influence the rate of intra-abdominal complications (8). Although there is a vast literature dealing with factors predicting suture line failure in colon anastomosis, definitive conclusions has not drawn yet. At present colostomy is reserved for destructive colon injuries with haemodynamic instability and significant associated lesions (14).

Mortality and morbidity after blunt colon trauma is 18% and 51% in a series of 188 patients with colon blunt trauma. The multivariate analyses revealed that associated lesions of vital organs and older age were more likely to predict increased mortality and morbidity (8). Delay in operative intervention is still associated with serious morbidity (12).

In conclusion, colon injury after blunt abdominal trauma is rare and diagnosis is often difficult. Prompt surgery is mandatory to achieve good results, avoiding diverting colostomy in most cases.

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