

Case Report

Uncommon isolated near total small bowel mesenteric tear after blunt abdominal trauma and successful damage control surgery

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ABSTRACT

Isolated near total small bowel mesenteric tear after blunt abdominal trauma is rare. We reported here an uncommon case with isolated near total small bowel mesenteric tear after blunt abdominal trauma. Early diagnosis of mesenteric tear is important and enhanced computed tomography is more sensitive for that kind of injury. Damage control laparotomy should be considered if unstable vital signs occurred.

Keywords: Blunt abdominal trauma, Diffuse small bowel mesenteric tear, Damage control laparotomy

INTRODUCTION

Isolated near total small bowel mesenteric injury from blunt abdominal trauma is uncommon and can be difficult to diagnose. It is known that seat belt trauma from motor vehicle accidents is the most common mechanism of mesenteric tear and that the mesentery of small bowel is injured more frequently than that of the colon. Early diagnosis of mesenteric tear is important and contrast enhanced computed tomography is more sensitive for that kind of injury. We reported an uncommon case with isolated near total small bowel mesenteric tear after blunt abdominal trauma and the literatures are reviewed.

CASE REPORT

A 30 years old male brought to casualty in unstable condition met with road traffic accident. Transport time to our hospital was 5 hours. Physical examination demonstrated pallor, diffuse abdominal tenderness without obvious visible external injuries and blood pressure recorded as 90/70 mm of Hg and pulse rate

110/min. Laboratory findings were suggestive of decreased levels of haemoglobin (Hb 6 gm/dl). Bedside ultrasound abdomen revealed gross haemoperitoneum with rest of the intra-abdominal organs normal. Meanwhile the patient condition got worse not responding to resuscitative measures and planned for emergency laparotomy.

A midline laparotomy was performed under general anaesthesia. We found a diffuse horizontal mesenteric tear involving mesentery of distal jejunum and proximal ileum with active bleeding from mesenteric vessels, mild ischaemic changes in the small bowel and 2 litres of blood in peritoneal cavity. In our case it has been managed according to the trauma principles of the damage control surgery. Patient presented in unstable condition, so the decision making was oriented towards a less invasive step that is ligation of bleeding vessels instead of a more aggressive intervention such as resection and anastomosis of bowel. After bleeding has been controlled, the abdominal cavity was then cleaned and irrigated, and all organ injuries assessed in a careful

and systematic manner and confirmed as there is no other organ injuries and abdomen was closed such a manner second look laparotomy was planned after stabilisation of the patient general condition and patient was transferred to intensive care unit.

The goal of the second phase of DCS (DC-II) was physiological and biochemical restoration in the ICU. He received intensive therapy including: intravenous fluids; colloids; blood transfusion and antibiotics. During the second phase in the ICU, diuresis was restored and the hemodynamic parameters of the patient improved significantly.

Second-look laparotomy was performed after 48 hours for definitive procedure. We found gangrene of two-third of jejunum (1½ m) and one-third of ileum (1 m) then resection and anastomosis was done. Patient was recovered well and discharged after 15 days.



Figure 1: Showing small bowel mesenteric tear.



Figure 2: Mesentery of distal jejunum and proximal ileum with active bleeding from mesenteric vessels.

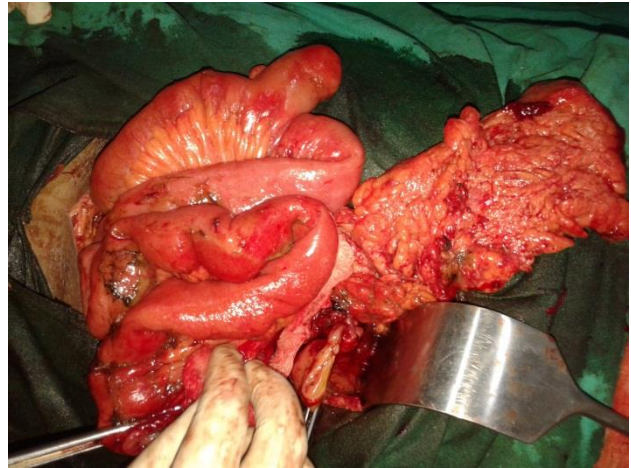


Figure 3: Mild ischaemic changes in the small bowel and 2 litres of blood in peritoneal cavity.



Figure 4: After bleeding has been controlled, the abdominal cavity was then cleaned.

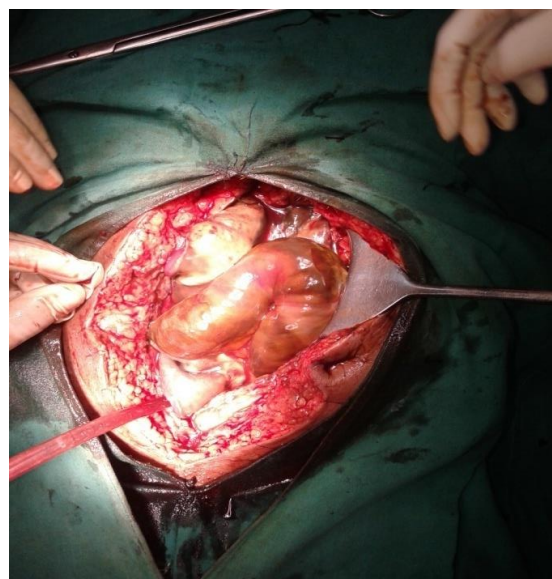


Figure 5: Showing extensive gangrenous changes in small bowel.

DISCUSSION

We presented the case of severe haemorrhagic shock and extensive mesenteric tear from blunt abdominal trauma, which was successfully treated by the principles of Damage Control Surgery (DCS).

It is well known that DCS represents a life-saving procedure for severely injured patients with abdominal injuries who have haemorrhagic shock associated with metabolic acidosis (pH <7.30), hypothermia (temperature <35.8°C), and coagulopathy.¹⁻³

In blunt abdominal trauma the damage control resuscitation strategy is one of the major therapeutic advances and its application is based on three pillars: Abbreviated surgery, haemostatic resuscitation and reversal of hypotension.

The identification of viable candidates to therapy is the critical point of damage control resuscitation. Stone, in the 1980s, introduced the concept of abbreviated laparotomy and intra-abdominal packing for exsanguinating hypothermic and coagulopathic trauma patients.⁴ Rotondo and Schwab in 1992 coined the term “damage control” and performing three phased approach (DC I-III). DC-I consists of immediate exploratory laparotomy with rapid control of exsanguinations haemorrhage and contamination, using simple quick surgical procedures to temporary control the damage until physiological derangements can be restored.⁵ In our case this included control of haemorrhage by ligation of mesenteric vessels and closure of the abdomen. The second phase of DCS (DC-II) consists of the ICU resuscitation; immediate end points include physiological and biochemical stabilisation. Finally step 3 (DC-III) consists of re-exploration, definitive repair of all injuries.

Although it is a life-saving procedure, DCS is accompanied by certain complications with potentially increased risks for wound infection, wound dehiscence, abscess formation, enterocutaneous fistula, and Abdominal Compartment Syndrome (ACS). Sutton et al., in a prospective study, found that the majority of the patients after damage control surgery required readmission, mostly for infectious complications.⁶

In the early 1990s the concept of damage control surgery revolutionised the world of trauma and dramatically changed how trauma surgeons operate. The concept focuses on abbreviated initial surgery, placing more emphasis on the body’s metabolic responses and less on restoring anatomy to the pre-injury state. The concept include minimising time in the operation theatre room, leaving the abdomen open and covered (laparostomy), early rewarming and resuscitation in the intensive care unit. This method is associated with significant survival advantages because it is directed toward the avoidance of hypothermia, coagulopathy and acidosis that interact to

produce a deteriorating metabolic situation and high mortality. Each of these life threatening abnormalities exacerbates the others, contributing to spiralling cycle with cellular hypoxia and failure of coagulation system.

Different surgical techniques allow the control of bleeding in the treatment of mesenteric tear as well as massive abdominal trauma such as pringle maneuver, selective vessel ligation and packing.

CONCLUSION

Damage control laparotomy with control of haemorrhage by ligation of vessels abbreviates surgical time before the development of critical and irreversible physiological end points and permits a more confident second look laparotomy. This surgical management concept helps to reduce the mortality rate and the incidence of complications.

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