

## CASE REPORT

# “Countre-coupe injury of the gut”; isolated traumatic mesenteric border jejunal perforation

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### ABSTRACT

Blunt trauma abdomen leads to gut perforations commonly on the anti-mesenteric border due to shearing forces. We report a case of a 23-year male who presented to surgical history with a history of blunt trauma to the abdomen. On further evaluation, an isolated perforation of the mesenteric border of jejunum was documented. The perforation was managed by a wedge resection and the patient recuperated well. This case illustrates that traumatic perforations of the gut can also occur on the mesenteric border and may remain clinically silent. We discuss this case in the context of relevant literature.

**Key words:** blunt trauma, peritonitis, perforation, countre-coupe, gut.

### INTRODUCTION

Traumatic gut perforations following blunt abdominal trauma, have been reported extensively in literature, with the common mechanism of injury being that of deceleration, causing injuries of the gut, at regions, where the mobile and fixed parts of the gut meet i.e. at the duodeno-jejunal flexure and the ileo-caecal region.<sup>1</sup> However, as the impact becomes localized to particular regions in the abdomen, isolated visceral injuries become common. Thus, isolated gut perforations are less commonly reported and the mechanism is believed to be that of a blowout caused by a localized increase in the pressure within the gut lumen.<sup>2</sup> Gut transections have also been reported, possibly caused by direct compression against the lumbar spine.<sup>3</sup> At the other end of this spectrum, lie delayed perforations because of ischemia, secondary to contusion of the gut at the time of initial injury.<sup>4</sup> Most of the perforations following blunt trauma abdomen occur on the anti-mesenteric border of the gut as it lacks any support.<sup>1,2</sup> To the best of our knowledge, traumatic perforation of the mesenteric border of jejunum has not been reported previously in the English literature. We present our unique experience of dealing with a case of perforation of the mesenteric border of jejunum following blunt trauma abdomen.

### CASE REPORT

A young male of 23 years presented to the surgical emergency with an antecedent history of fall on a lead plumbing with impact on the abdomen. The patient

had minimal clinical signs and the examination of abdomen and other systems was essentially normal but as he was having tachycardia, a decision was taken to admit him in the surgical emergency for observation. The complete blood count (CBC) was within the normal range. No free gas was visible on the abdominal radiogram. No free fluid was seen on an ultrasonogram (USG) of the abdomen that was performed at the time of presentation. However, as the tachycardia persisted a repeat USG was done at 12 hours after injury that revealed minimal fluid in the Morrison's pouch, which when aspirated was bilious in nature. An abdominal computed tomogram (CT) with oral and intravenous contrast was ordered subsequently, which revealed contrast extravasation from a jejunal loop with pockets of free air suggesting a jejunal perforation (Fig. 1).



**Figure 1,** CT Scan showing thickened jejunal loop with free interloop air and fluid.

The patient was explored to find a stained mesentery with minimal free fluid in the peritoneal cavity. The gut was followed, just to reveal yellowish staining of

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the mesentery of jejunum (Fig. 2).



**Figure 2,** Yellowish staining of mesentery adjoining the perforation.

The superficial leaf of mesentery was opened and the mesentery probed towards the gut wall, and to our surprise it revealed a perforation on the mesenteric border of the jejunum (Fig. 3).



**Figure 3,** Forceps probed through mesenteric leaves into the gut via mesenteric border perforation.

A wedge shaped resection of the involved segment was carried out and a primary anastomosis was obtained. After giving thorough peritoneal washes, the abdomen was closed in layers. The patient had an uneventful postoperative period. Orals were started on the 4th postoperative day and the patient was discharged on the 6th post-operative day. The patient is doing well on follow-up.

## DISCUSSION

The first case of perforation of gut was reported from America by Annan in 1837. Either compressive or deceleration forces lead to these perforations. Compressive forces may result from direct blows or external compression against a fixed object. These forces may deform hollow organs and transiently increase intraluminal pressure, resulting in perforation due to blow out leading to the classical pouting mucosa of a traumatic perforation. Deceleration forces can cause stretching and shearing between relatively fixed and free objects. As bowel loops traverse such areas, perforations are liable to occur on the unsupported an-

ti-mesenteric border.<sup>5</sup> Despite extensive search, we could not come across a single case documenting a perforation on the “mesenteric border” of the gut in the English literature. This might owe, to a peculiar precise strike on the anti-mesenteric border of the gut generating a pressure wave, through the gut contents, onto the mesenteric border of the gut leading to this rare entity.

Gut perforations following trauma, are usually accompanied by other injuries. In such situations the gut perforation per se does not pose a problem, as the person gets operated for these organ injuries and the gut perforation presents as an incidental finding. Moreover in such cases the associated injuries determine the final outcome and survival.<sup>5</sup> It is uncommon to find a small bowel injury requiring surgery, associated with visceral trauma, which can be managed non operatively.<sup>6</sup> Isolated gut perforations following blunt trauma are usually difficult to diagnose, as there are minimal signs and symptoms, and this diagnostic delay can increase the overall morbidity and mortality.<sup>7</sup> This was observed in our patient, who was operated more than 12 hours after injury. The patient had localized pus flakes over the serosal surface of the gut, making us believe that early diagnosis and surgery is the best option in such cases. This can be achieved with a high degree of suspicion, repeated clinical examination and a proper and thorough CT and USG examination of the patient.<sup>8</sup> Though, ultrasound and CT form the mainstay of imaging, a laparotomy in a patient with equivocal signs with blunt abdominal trauma can be justified in a developing country with limited resources.<sup>9</sup>

It has not escaped our mind that such a perforation could have occurred in a pre-existing jejunal diverticulum, but grossly no such diverticulum was visible. For the same reason, we offered patient a wedge resection at the site of perforation. Histopathology failed to detect any evidence of a diverticular disease and confirmed that the perforation was solely due to blunt trauma.

The presence of gut perforations on the mesenteric border adds to the clinical dilemma in a patient with isolated gut perforation, by further masking the signs as the gut contents do not find an easy pathway to the general peritoneal cavity. Thus on the operative table, staining of the mesentery in cases of blunt abdominal trauma should always be looked upon as a case of adjoining gut perforation. Preoperatively, one cannot underestimate the usefulness of a simple method of aspirating the free fluid under ultrasound guidance, in a patient following blunt abdominal trauma, especially when there is no associated solid organ injury on an ultrasound scan. The bilious fluid aspiration can allow us to pick up cases with traumatic gut perforations, saving precious time and money. Moreover this report highlights the importance of picking up these perforations which might even be missed on the operating table, as these perforations are hidden within

the leaves of the mesentery, and on a cursory look, only a small localized stain on the mesenteric border of the gut is seen.

### CONCLUSION

This case illustrates that, though previously un-reported, perforation of the mesenteric border of the jejunum can occur and that it usually remains clinically silent. Thus, on table the operating surgeon should closely observe for mesenteric stains in addition to the intestine while operating for gut perforations. Wedge resection offers the best possible management in such a scenario.

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