

## Case Report

# Incidental small bowel perforation in an isolated head injury

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## ABSTRACT

Spontaneous gastrointestinal perforation is a rare occurrence, most associated with an infectious cause precipitated by an underlying co-morbidity. This case report discusses a 39-year-old trauma patient that sustained an isolated gunshot to his face. The patient subsequently developed spontaneous bowel perforations of the duodenum and ileum while intubated in ICU. Despite extensive laboratory and histopathological testing, no definitive etiology was identified. This case report highlights the importance of suspecting and recognizing bowel perforation and abdominal compartment syndrome promptly in an intubated ICU patient. The report emphasizes the necessity of early surgical source control and the role histopathology plays in diagnosis of underlying pathologies. This case contributes to the limited literature surrounding spontaneous gastrointestinal perforation where the etiology is inconspicuous.

**Keywords:** Spontaneous Gastrointestinal perforation, Abdominal compartment syndrome, Histopathology

## INTRODUCTION

Non-traumatic small bowel perforations are a serious and uncommon occurrence that carries high morbidity and mortality. Generally, diagnosis of bowel perforation is made prior to surgery, with definitive etiology weighing heavily on histopathology feedback from intraoperative specimens.<sup>1</sup> The following case report is of a male patient who developed a spontaneous perforation during ICU stay, days after isolated trauma to his face. His case was complex, involving multiple surgeries and warranted further discussion.

## CASE REPORT

A 39-year-old male was brought to Charlotte Maxeke Academic Hospital Trauma unit after sustaining a gunshot to his face. He was assessed as per ATLS principles. His airway was patent and self-maintained. He had good air entry bilaterally and normal saturation. He was hemodynamically stable. He was conscious and alert

with a Glasgow Coma Scale of 15 and the only external injuries noted were two gunshot wounds to his face. One gunshot wound was observed at the right maxilla and the other located at his right mandible. The patient was assessed as stable, and a CT brain and CT angiogram of the neck was done. He subsequently became edematous and was intubated due to concern for his airway. The CT imaging revealed bullet fragments lodged in soft tissue with soft tissue partial airway attenuation. A right mandible fracture with no intracranial injuries was noted. The Maxillofacial Department was consulted, and the patient was booked for debridement and closed reduction and internal fixation of the mandible along with a tracheostomy. The patient was admitted to ICU where he was started on enteral feeds and ventilation was weaned. A few days post maxillo-facial surgery- he was noted to have high aspirates from the NGT of 3 litres with a distended abdomen, as well as worsening renal function. There was a concern for abdominal compartment syndrome and the patient was taken to theatre for a laparotomy. An emergency laparotomy was done which

showed a perforated duodenal ulcer of 1.5 cm and four quadrant sepsis. An omental patch was performed for the perforation. Subsequently a week after his initial laparotomy, feculent fluid was draining from the laparotomy site, and he was taken for a relook laparotomy. There was breakdown of the previously repaired duodenal ulcer with four quadrant sepsis and multiple small bowel perforations (X3) and ulcerations 20 cm from the ileocecal valve. A Graham patch was performed for the duodenal breakdown and 30 cm of small bowel was clip and dropped. The bowel sample was sent for histology. Upon the second re-look, the patient had ongoing leakage from the friable duodenum, and no ongoing ulceration or perforations were noted on the small bowel. An end ileostomy was fashioned, and the duodenum was managed as a fistula with large pencil drains placed. His histology showed suppurative inflammation with extensive neutrophilic infiltrate, microbial colonies, and cellular debris. There was no indication of CMV or mucormycosis infection. The patient demised secondary to septic shock.



**Figure 1: Gunshot wounds to right side of face.**



**Figure 2. Bowel perforation from the first relook.**

## DISCUSSION

Non-traumatic small bowel perforation encompasses a wide variety of etiologies. While the underlying pathology may not be apparent on initial presentation, early recognition of and rapid response to bowel perforation is imperative in early management of local and systemic sequelae of contamination and peritonitis.<sup>2,3</sup> In an ICU setting, due to lack of symptoms and presence of additional infections, there may be a delay in intervention and source control.<sup>4</sup>

Spontaneous bowel perforation has been seen in many infectious diseases including bacterial (*Salmonella paratyphi*, *Mycobacterium tuberculosis*), viral (Cytomegalovirus), parasitic (*Ascaris lumbricoides*) and protozoan causes (*Entamoeba histolytica*).<sup>5-7</sup> Previously, Mucormycosis and CMV infections were thought to occur chiefly in immunocompromised patients (HIV, diabetes, transplant, chemotherapy patients). However, recent cases of immunocompetent patients presenting with these infections are increasingly reported.<sup>8,9</sup> Gastrointestinal mucormycosis is an opportunistic fungal infection causing 43.2% large bowel and 28.4% small bowel perforation and hemorrhage.<sup>8</sup>

Histology shows evidence of mycosis and granulomas. Cytomegalovirus is part of the herpes virus group. It is most prevalent in patients with a CD4 count of <50 cell/IU. The pathogenesis of CMV is believed to be submucosal vasculitis resulting with thrombosis with ischemia.<sup>10</sup> Histology reveals inclusion bodies characteristic of CMV infection. New infectivity or reactivation of CMV is associated with extended ICU stay, prolonged mechanical ventilation and increased morbidity within the ICU.<sup>9</sup> non-infective causes of small bowel perforation include immune mediated/inflammatory or neoplastic causes. Crohn's disease is a transmural inflammatory process in which perforation may be the initial presenting clinical feature. Malignant disorders include T-cell lymphoma, adenocarcinomas, and carcinoid tumors.<sup>5</sup>

## CONCLUSION

This case report presents a male patient with an isolated face injury who developed multiple spontaneous bowel perforations while admitted to ICU. He had undergone multiple abdominal surgeries for which a cause was not apparent. The histology from specimens obtained intraoperatively did not allude to any etiology.

This case demonstrates the imperativeness of a rapid diagnosis of bowel perforation and early source control. Intraabdominal specimens (fluid, tissue) for cultures and histopathology are essential to surgeons with regards to gaining more information on underlying pathologies. Although histopathological examinations may be non-informative, it is an important factor for thorough workup and management of surgical patients.

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