

## Case Report

# Complete gastroduodenal transaction in a blunt abdominal trauma patient: a rare case report

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**Received:** 24 October 2023

**Accepted:** 18 November 2023

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### ABSTRACT

Complete gastroduodenal transaction following blunt abdominal trauma in a road side accident is a rare and potentially life-threatening condition. The course of management and choice of surgical intervention depends on clinical presentation; site, size, nature of defect; amount of tissue and blood loss. In this case report, the clinical presentation, diagnostic evaluation, surgical management and postoperative course of an 18-year adult male patient who presented to the emergency room with complaints of generalized abdominal pain, vomiting and signs of peritonitis following a road side accident suggesting bowel injury. The patient was diagnosed with complete gastroduodenal transaction following blunt abdominal trauma based on radiological imaging and intraoperative findings. The patient underwent emergency laparotomy and primary repair of gastroduodenal transaction with Witzel jejunostomy for better outcome. This case report underscores the early recognition, diagnosis and prompt surgical intervention in cases of complete gastroduodenal transaction following blunt abdominal trauma to achieve favourable patient outcomes.

**Keywords:** Blunt abdominal trauma, Complete gastroduodenal transaction, Bowel injury, Primary repair, Exploratory laparotomy

### INTRODUCTION

Trauma is the leading cause of morbidity and mortality worldwide and road side accidents often result in complex and life-threatening conditions. Traumatic complete gastroduodenal transaction is a rare but potentially life-threatening condition resulting from severe blunt abdominal trauma. The incidence of duodenal injuries is less following blunt trauma abdomen.<sup>1</sup> Complete gastroduodenal transaction involves a complete disruption of the anatomical continuity between the stomach and duodenum. Prompt diagnosis and surgical intervention are crucial for better prognosis. This case report describes the clinical presentation, timely diagnosis, prompt surgical management and postoperative course of an 18 year old male patient with

traumatic gastroduodenal transaction following a road side accident.

### CASE REPORT

An 18 year young male patient presented to the emergency department with complaints of generalized abdominal pain and multiple episodes of vomiting following a road side accident involving a high collision between a bike and a car. On examination, patients' vital signs were stable; abdomen was tense with generalized tenderness, guarding and rigidity suggestive signs of peritonitis. X-ray abdomen revealed air under the right dome of diaphragm indicative of pneumoperitoneum (Figure 1) and ultrasound abdomen was done suggestive of free fluid with echoes in abdomen indicating bowel injury.



**Figure 1: X-ray abdomen revealed air under right hemidiaphragm indicative of pneumoperitoneum.**

Computed tomography (CT) scan was done suggestive of pneumoperitoneum and discontinuity of stomach with air pockets surrounding it (Figure 2).



**Figure 2: CT scan suggestive of pneumoperitoneum and discontinuity of stomach with air pockets surrounding it.**

Patient was resuscitated and planned for an emergency exploratory laparotomy after routine investigations were performed to assess extent of injury and provide appropriate surgical management. Intraop, approximately 1000 ml of biliohaemorrhagic fluid was found in peritoneal cavity and complete transection of the gastroduodenal junction was identified (Figure 3).



**Figure 3: Intraoperative picture showing complete transection of gastroduodenal junction.**

Rest of gut and viscera appeared normal. Proceeded with peritoneal lavage, to remove any contaminants and primary repair of gastroduodenal transection was performed. A Witzel feeding jejunostomy was done to ensure adequate and early post operative nutrition and promote healing during postop period, operative procedure was completed without any complications. Patient's postoperative course was uneventful with resolution of abdominal gain and no further episodes of vomiting. Regular monitoring of vital, laboratory investigations and serial abdominal examinations were performed during the hospital stay. Patient was started on external nutrition through the Witzel feeding jejunostomy on 3<sup>rd</sup> postop day (POD), oral intake was gradually introduced after barium meal follow through suggestive of no spillage of dye from gastroduodenal junction into peritoneal cavity (Figure 4) on POD 7, and patient tolerated a normal diet well.



**Figure 4: Barium meal follow through suggestive there is no spillage of dye in peritoneal cavity.**

The patient was discharged on post operative day 10 with appropriate instructions for follow up care.

## DISCUSSION

Complete gastroduodenal transaction following blunt abdominal trauma is a rare and extremely challenging injury that requires prompt recognition and appropriate surgical management for better outcomes. The incidence rate of gastrointestinal, stomach, and duodenal injuries following blunt abdominal injuries are 0.81-3.1%, 0.1 and 0.4% respectively as per previous literature.<sup>2</sup>

In this case report, the clinical presentation of patients with generalized abdominal pain, vomiting and physical examination findings of tense abdomen, generalized tenderness, guarding, and rigidity were indicative of significant intra-abdominal injury and peritonitis.<sup>3</sup> Radiological modalities including Abdominal X-ray, ultrasonography and contrast enhanced computed tomography (CECT), along with intraoperative findings played a vital role in confirming the diagnosis of complete gastroduodenal transaction.<sup>2,4</sup>

Abdominal X-ray in supine and erect position indicative of air under right hemidiaphragm suggestive of bowel injury. Ultrasonography plays vital role in the initial assessment of patients with blunt abdominal trauma. Focused assessment with sonography in trauma (FAST) plays major role is to detect free fluid either blood or other traumatic fluids including bowel contents. It has modest sensitivity during primary survey in trauma following blunt abdominal trauma. During secondary survey or after admission, it may be used to detect pneumoperitoneum, bowel wall thickening, and mesenteric hematoma etc., after initial stabilization of patient. The standard radiology modality for evaluating hemodynamically stable patients with blunt abdominal trauma is CT scan. It has high specificity but modest sensitivity for detecting bowel/visceral injury which can require therapeutic laparotomy.<sup>5,6</sup>

Explorative laparotomy is the gold standard for evaluating and managing traumatic abdominal injuries, allowing direct visualization of the extent of the injury to abdominal viscera or bowel and facilitating appropriate surgical intervention.<sup>7</sup> In this case report, the surgical findings of complete transaction at gastroduodenal junction were confirmed. Choice of surgical intervention depends on the site of injury, amount of tissue loss, circumference of the duodenum involved and any associated injuries. Surgical repair was essential to restore the continuity of bowel and prevent further complications such as peritonitis, sepsis and gastrointestinal leakage.<sup>8</sup> Primary repair of the transaction using absorbable sutures is a viable option for stable patients without much tissue loss or contamination.<sup>9</sup> Peritoneal lavage was performed to remove any contaminants and reduce the risk of infection. This technique involves thorough irrigation of the peritoneal

cavity with a warm sterile saline solution effectively removing blood clots, debris and potentially harmful microorganisms.<sup>10</sup> A Witzel feeding jejunostomy was created to ensure adequate nutritional support during the postoperative period while the injured gastroduodenal junction heals.<sup>11</sup> Appropriate instructions for follow up care, including wound care, dietary guidelines and scheduled clinic visits, were provided to ensure optimal recovery.

Patients with traumatic gastrointestinal injury have been associated with misdiagnosis, severe intra-abdominal infection, and sepsis influences high morbidity and mortality rates. In some cases, we could easily be distracted by one injury and overlook the other when it was associated with multiple organ involvement.<sup>12</sup>

## CONCLUSION

In this case report, we have highlighted successful multimodality management of an 18 year adult male with complete traumatic gastroduodenal transaction following a roadside accident. It also highlights early diagnosis of such rare and life threatening condition using several radiological modalities and prompt surgical management, which necessitates primary repair of the complete gastroduodenal transaction with Witzel jejunostomy after blunt abdominal trauma. The time interval from injury to early recognition and its management with careful postoperative care influences patients morbidity and mortality.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

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**Cite this article as:** Vidit, Ranga HR, Verma S, Yadav D, Mahipal, Arora BK. Complete gastroduodenal transaction in a blunt abdominal trauma patient: a rare case report. *Int Surg J* 2023;10:2013-6.