

An Extraordinary Case of Isolated Duodenal Injury after Blunt Abdominal Trauma

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ABSTRACT

Duodenal injuries are rare due to their preserved retroperitoneal location. They are mostly observed after deep penetration or high-impact blunt trauma. They are difficult to diagnose and treat. Our purpose was to report a case of duodenal injury after blunt trauma with the review of the literature. A 20-year male patient was brought to Emergency Department with abdominal pain after an accident, in which he was stuck between a reversing truck and a pole. Rigidity in all abdominal quadrants was detected. Free pelvic fluid was observed in computed tomography (CT). There was a grade II laceration at the fourth part of the duodenum. The laceration was primarily sutured, and a naso-jejunal tube was placed. The patient was discharged on postoperative day-8 with uneventful recovery.

In suspicion of duodenal trauma, a meticulous anamnesis, careful physical examination, proper imaging technique at appropriate timing, and surgical exploration are important to reduce morbidity and mortality. Imaging findings of retroperitoneal organ injuries can be non-specific. We suggest that surgical exploration should be the first choice of treatment in cases with acute abdomen findings.

Key Words: Blunt trauma, Acute abdomen, Duodenum, Retroperitoneum.

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INTRODUCTION

Duodenal injuries are common in penetrating abdominal traumas, but are rare after blunt trauma. Due to its retroperitoneal location, the injury presents with relatively mild clinical symptoms and on physical examination, the diagnostic findings are usually conflicting. For these reasons, duodenal injuries, due to blunt trauma, have been associated with increased morbidity and mortality. The surgeons remain in a challenging dilemma as to when choosing between primary repair or complex procedures in these injuries, which are quite difficult to manage.¹ Hereby, we present a case of a 20-year male with duodenal injury presenting after blunt trauma.

CASE REPORT

A 20-year male presented with history of getting squeezed between a pole and a reversing truck. He was brought to the Emergency Department by ambulance about half an hour after the trauma. He was complaining of abdominal pain.

There was abdominal rigidity on palpation of all abdominal quadrants. Laboratory results were unremarkable. Intravenous contrast-enhanced abdominal computer tomography (CT) scan showed some para-aortic soft tissue density and free fluid in pelvis (Figure 1). With the suspicion on physical examination and radiological findings, the patient underwent surgery for explorative laparotomy. There were 600cc intraperitoneal biliary fluid collection. After the dissection of ligament of Treitz and mobilisation of duodenum, laceration on the posterior wall of the fourth part of duodenum involving less than 50% of duodenal wall circumference with a 4 cm hematoma (Grade II duodenal injury according to American Association for the Surgery of Trauma) was found (Figure 2). There was no additional injury. Primary closure of perforation was performed and a naso-jejunal feeding tube was placed in distal part of the repaired section. On the postoperative fifth day, naso-jejunal tube was removed and the patient was allowed to take clear liquids. Aside from a mild atelectasis, the postoperative course was uneventful. The patient was discharged on the postoperative eighth day with an uneventful recovery.

DISCUSSION

Duodenal injuries constitute a small portion of all abdominal injuries, with only 20% of them occurring as a result of blunt trauma.¹ The most common injured part is the second part of the duodenum, according to a case series reported by Girgin et al.² It occurs as a result of crushing of duodenum between the

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spine and usually a steering wheel or other impacts to the abdomen.² In this case, the patient got stuck between a pole and a reversing truck. Many of the duodenal injuries are difficult to diagnose because they sometimes do not cause peritonitis because of their anatomic location.^{1,3}



Figure 1: Para-aortic soft tissue density on abdominal computed tomography.

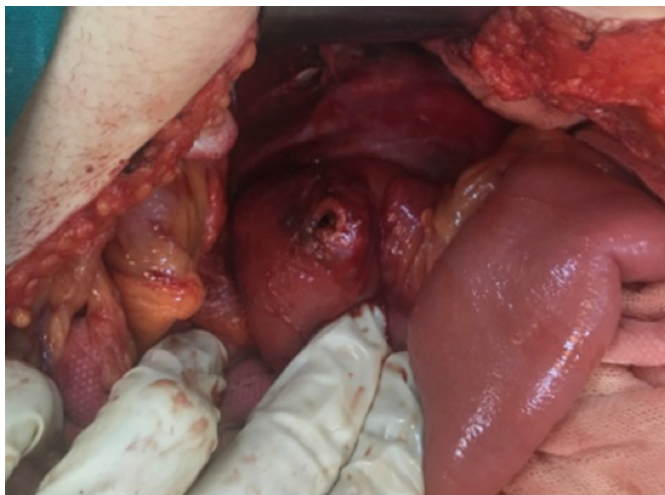


Figure 2: Discrete perforation in fourth part of the duodenum on surgical exploration.

The diagnostic accuracy of laboratory findings is not significant in these injuries. In a study conducted by Bradley *et al.*, it was shown that serum amylase levels had low sensitivity and specificity in abdominal injuries, but lactate levels were significantly higher in patients who needed immediate surgery.⁴ But this increase was thought to be the result of shock and hypoperfusion in trauma patients.⁴ Abdominal ultrasonography can be useful for visualising intrabdominal cavity for free fluids in blunt trauma; but it is not a sensitive method for demonstrating retroperitoneal structures. CT is commonly used in stable patients with blunt trauma to assess retroperitoneum; and it has become the primary imaging modality. Oral and intravenous contrast-enhanced CT series are usually helpful for showing the direct signs of duodenal injuries like free air and contrast extralumination. However, sometimes CT may reveal indirect signs like periduodenal fluid and periduodenal hematoma that do not necessitate emergency laparotomy.^{1,4}

There is still no consensus on how to manage duodenal injuries. It is difficult to determine an optimal treatment method because of the high complication rates due to its anatomy and the need for surgical experience, according to the injured area. Majority of duodenal injuries are treated with debridement and primary repair. It would be a reasonable option to perform end-to-end anastomosis in order not to narrow the lumen, if an injury involving more than 50% of the lumen is present.^{1,5} Injuries involving the second part of duodenum might require more complicated surgeries such as, antrectomy, duodenal stump closure, and gastrojejunostomy. Duodenal repair leak is an important cause of morbidity and mortality in duodenal injuries. Diversion of gastric flows is the main purpose in order to protect the anastomosis. Decompression tubes are also useful for preventing leaks.⁶

Patients without acute abdomen findings with indirect CT signs are a clinical dilemma for surgeons. There are studies that reported increased morbidity and mortality after a delayed laparotomy.⁷

In conclusion, isolated duodenal injury after blunt trauma is a rare entity. Clinical suspicion in hemodynamically stable patients is important. Most of the injuries can be managed with primary repairs and decompression tubes. In our case, there were indirect signs on CT scans, but physical examination suggested a high clinical suspicion. Therefore, in those patients with lack of correlation among laboratory result, imaging, and physical examination, early surgical intervention is imperative.

CONFLICT OF INTEREST:

The authors declared no conflict of interest.

PATIENT'S CONSENT:

Informed consent was obtained from the patient for publishing his details and data.

AUTHORS' CONTRIBUTION:

MZB: Conception and design, interpretation, and drafting.

NC: Interpretation, and drafting.

OY, IAO: Critical revision.

All authors approved the manuscript for publication.

REFERENCES

1. Ferrada P, Wolfe L, Duchesne J, Fraga GP, Benjamin E, Alvarez A, *et al.* Management of duodenal trauma: A retrospective review from the panamerican trauma society. *J Trauma Acute Care Surg* 2019; **86**(3):392-6. doi: 10.1097/TA.0000000000002157.
2. Girgin S, Gedik E, Yagmur Y, Uysal E, Bac B. Management of duodenal injury: Our experience and the value of tube duodenostomy. *Ulus Travma Acil Cerrahi Derg* 2009; **15**(5): 467-72.
3. Sari R, Yabanoglu H, Kus M, Arer IM. Management and clinical outcomes of iatrogenic injury secondary to endoscopic retrograde cholangiopancreatography. *Istanbul Med J* 2020; **21**:28-32.
4. Bradley M, Bonds B, Dreizin D, Colton K, Shanmuganathan K, Scalea TM, *et al.* Indirect signs of blunt duodenal injury

- on computed tomography: Is non-operative management safe? *Injury* 2016; **47**(1):53-8. doi: 10.1016/j.injury.2015.10.003.
5. Mendoza-Moreno F, Furtado-Lobo I, Pérez-González M, Díez-Gago MDR, Medina-Reinoso C, Díez-Alonso M, *et al.* Duodenal rupture after blunt abdominal trauma by bicycle handlebar: Case report and literature review. *Niger J Surg* 2019; **25**(2):213-6. doi: 10.4103/njs.NJS_31_18.
6. Singh B, Kaur A, Singla AL, Kumar A, Yadav M. Combined gastric and duodenal perforation through blunt abdominal trauma. *J Clin Diagn Res* 2015; **9**(1):30-2. doi: 10.7860/JCDR/2015/11206.5499.
7. Malinoski DJ, Patel MS, Yakar DO, Green D, Qureshi F, Inaba K, *et al.* A diagnostic delay of 5 hours increases the risk of death after blunt hollow viscus injury. *J Trauma* 2010; **69**(1):84-7. doi: 10.1097/TA.0b013e3181db37f5.

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