

Case Report

Isolated intramural hematoma of the duodenum following trivial blunt trauma – A case report with review of literature from ED physician's perspective

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ABSTRACT

Duodenal injuries occurring in isolation following trauma are rare. In the abdomen, blunt trauma usually results in isolated duodenal injuries than penetrating injuries. The signs and symptoms of such injuries are subtle which results in delay in seeking medical consultation and subsequent diagnosis. To diagnose these cases, high index of clinical suspicion and early request for contrast enhanced CT scan of the abdomen is needed. This report explores a case of isolated long segment intra mural hematoma of the duodenum following trivial blunt trauma to the abdomen.

Introduction

Duodenum being the retroperitoneal structure is less commonly injured in the abdominal trauma. Duodenal injuries usually occur in combination with the other abdominal organ injuries. Isolated injuries of the duodenum are rare and isolated intramural hematoma of the duodenum is even rarer [1]. Routine abdominal X-rays and ultrasound will not be helpful in spotting these injuries.

Case report

A 27-year-old gentleman with no significant illness in the past visited the emergency department (ED) twelve hours after a mild blunt trauma to his abdomen. He accidentally hit the edge of a wooden table while getting up from a sitting position. Initially, he did not seek medical attention as he did not have any acute symptoms. He experienced mild upper abdominal pain after the trauma, but was able to continue his routine work. Nearly 10 h later, he vomited twice.

On arrival to the ED, he complained of mild upper abdominal pain and two episodes of vomiting. His vital parameters were normal. Per abdominal examination revealed tenderness over the epigastric area with mild guarding. There were no external signs of injury. Examinations of other quadrants of the abdomen were unremarkable. Other system examination did not reveal any findings. Initial work up with routine blood tests including pancreatic enzymes, liver function tests, and coagulation profile were normal. Plain abdominal X-ray and ultrasound of the abdomen were also normal. In view of his ongoing upper abdominal pain and minimal

Abbreviations: ED, emergency department; CT scan, computerized tomography

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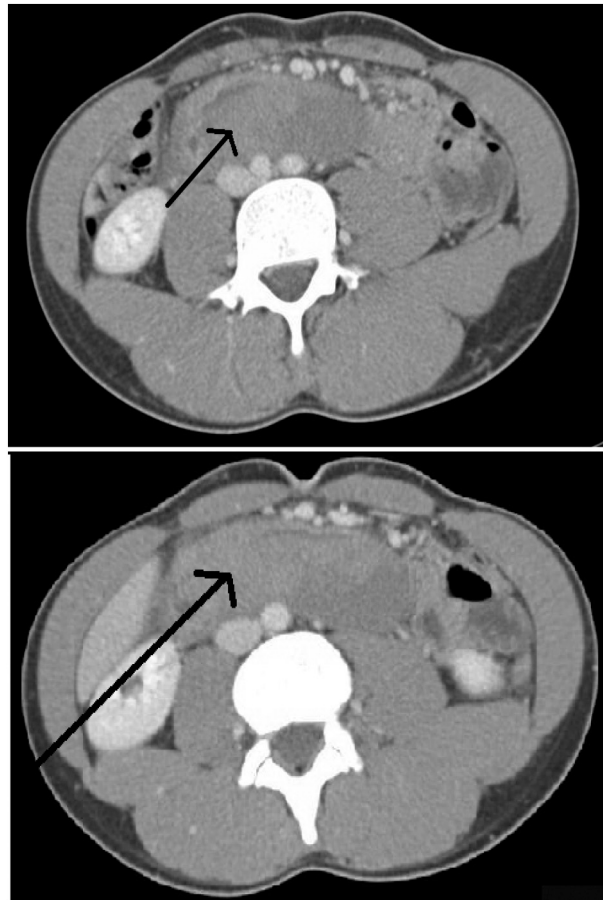


Fig. 1. Contrast enhanced CT Axial view images showing duodenal hematoma.

guarding, CT scan of the abdomen with oral and intravenous contrast was requested. The scan revealed a 10 cm long intramural hematoma of the duodenum involving second, third, and fourth part of the duodenum. The hematoma was almost totally compressing the lumen of the duodenum with hardly any oral contrast entering the distal part of duodenum (Figs. 1–3). No other intra abdominal trauma related injuries were noted.

Patient was admitted to the hospital and was conservatively managed with intravenous fluids and parenteral pain medications. He was kept nil per oral for 48 h. Clear fluids followed by soft diet was started after 48 h. His symptoms improved gradually and he was discharged after 3 days. At the time of his discharge, he was tolerating soft diet without any pain or vomiting. He was followed up in the outpatient clinic two weeks later and was doing fine without any symptoms. To assess the delayed complication of duodenal injury like stricture, oesophago gastro duodenoscopy (OGD) was planned. However, the patient did not show up for the endoscopy.

Discussion

The reported incidence of duodenal injuries ranged from 3.5 to 7%. Of these, the majority are due to penetrating injuries (80%) and a small percentage are due to blunt trauma (20%). Isolated duodenal injuries are highly exceptional and they occur in the form of duodenal hematoma [1]. The liver (17%), colon (13%), pancreas (12%), small bowel (11%) and vascular structures (15%) are the commonly injured organs in these type of cases [2,3].

The most common cause of blunt trauma causing duodenal injuries is motor vehicle crash at 85% and in children, significant causes are bicycle handle bar accidents, falling from a height, and violent sports trauma [4]. In blunt injuries, the disruption of the duodenum occurs as a result of crushing forces in case of steering wheel injuries and shearing forces in cases of injuries due to seatbelt. In penetrating injuries, the mechanism of duodenal injuries is direct violation of duodenum by the object. In these scenarios, second part of the duodenum is most commonly involved (35%) followed by third and fourth part [3].

Isolated blunt injuries of the duodenum pose a risk of delay in diagnosis because of vague symptoms and delay in having a medical consultation. Clinical findings may not be obvious, like the present case, due to retroperitoneal location of the duodenum. Routine blood tests, abdominal X-ray and ultrasound of the abdomen are of no help in identifying duodenal injuries [4]. According to CT scan findings, the duodenal injuries are classified from grade I to V (Table 1) [3]. The patient in question falls into the grade II according to

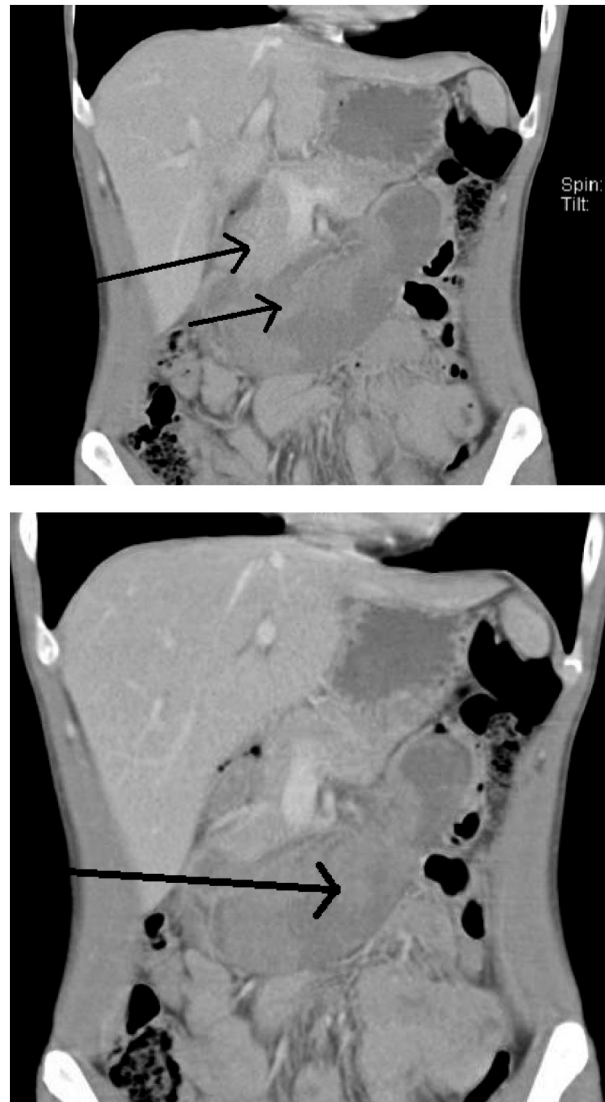


Fig. 2. Contrast enhanced CT Coronal view image demonstrating the extent of hematoma.

this injury scale. Elevated amylase levels may give clue to the possible duodeno-pancreatic injuries, but it is neither sensitive nor specific. Plain X-ray abdomen will be undiagnostic in such cases unless there is a retroperitoneal gas shadow indicative of duodenal perforation. Hence, high index of clinical suspicion is needed to obtain CT scan of the abdomen. Contrast enhanced CT scan of the abdomen is the investigation of choice which has a very high sensitivity and specificity [5].

Non operative approach is the initial preferred line of treatment in isolated duodenal hematoma. It consists of nasogastric decompression and parenteral nutrition. Majority of them will successfully respond to this approach [5]. Surgical treatment is indicated in those who do not respond to conservative treatments and in those who have complete obstruction [6]. Associated intra abdominal injuries need to be managed accordingly. Variety of surgical procedures have been described and the procedure has to be tailored and individualised.

Conclusion

Post traumatic isolated duodenal injuries in the form of isolated intramural hematoma of the duodenum are rare. Majority of the duodenal injuries are associated with other intra abdominal organ injuries. The inciting trauma can range from mild to severe. There

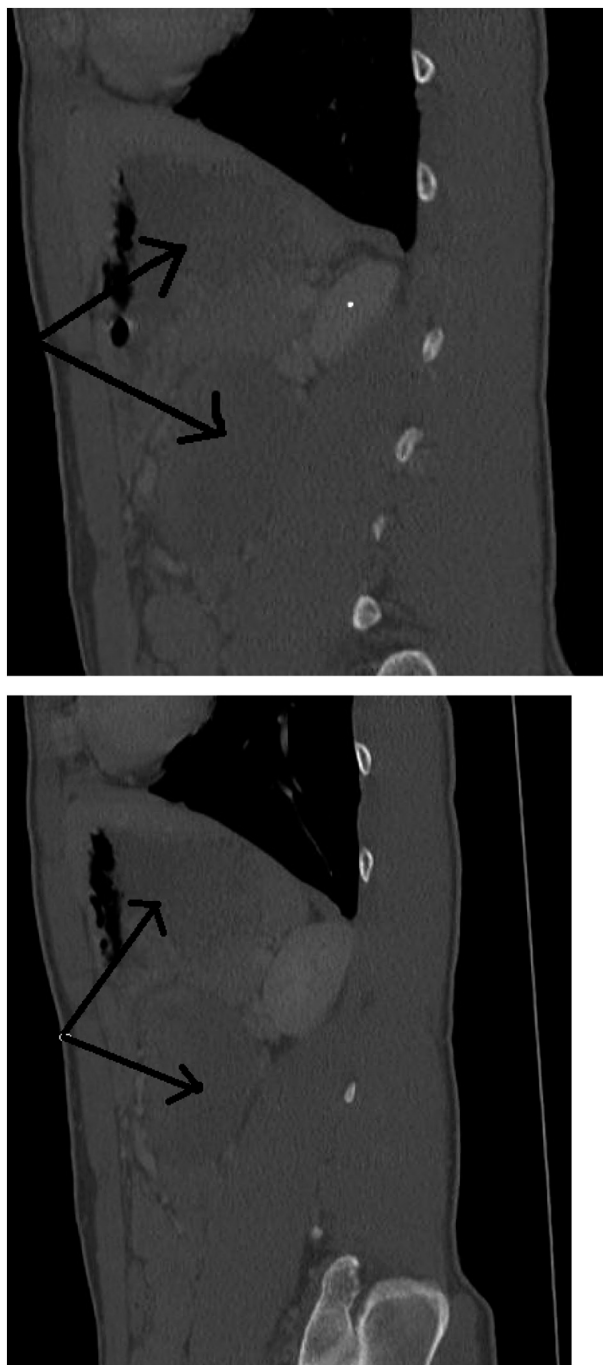


Fig. 3. Contrast enhanced CT sagittal view images demonstrating duodenal hematoma.

is a high chance of missing or delay in diagnoses of such cases due to the retroperitoneal location of the duodenum and also because of the minimal signs and symptoms it produces. High index of clinical suspicion is needed to request contrast enhanced CT scan of the abdomen to diagnose these injuries and to minimize the morbidity and mortality.

Table 1
Duodenum injury scale.

Grade*	Type of injury	Description of injury
I	Hematoma Laceration	Involving single portion of duodenum Partial thickness, no perforation
II	Hematoma Laceration	Involving more than one portion Disruption < 50% of circumference
III	Laceration	Disruption 50%–75% of circumference of D2
IV	Laceration	Disruption 50%–100% of circumference of D1,D3,D4 Disruption > 75% of circumference of D2
V	Laceration Vascular	Involving ampulla or distal common bile duct Massive disruption of duodenopancreatic complex Devascularization of duodenum

Advance one grade for multiple injuries up to grade III. D1-first portion of duodenum; D2-second portion of duodenum; D3-third portion of duodenum; D4-fourth portion of duodenum. From: Moore EE, Cogbill TH, Malangoni MA, et al. Organ injury scaling, II: Pancreas, duodenum, small bowel, colon, and rectum. *J Trauma*. 1990;30(11):1427–1429. American Association for the Surgery of Trauma –Duodenum.

References

- [1] T.C. Jewett Jr., V. Caldarola, M.P. Karp, J.E. Allen, D.R. Cooney, Intramural hematoma of the duodenum, *Arch. Surg.* 123 (1) (1988) 54–58, <https://doi.org/10.1001/archsurg.1988.01400250064011>.
- [2] E. García Santos, A. Soto Sánchez, J.M. Verde, C.P. Marini, J.A. Asensio, P. Petrone, Duodenal injuries due to trauma: review of the literature, *Cir Esp* 93 (2) (2015) 68–74, <https://doi.org/10.1016/j.ciresp.2014.08.004>.
- [3] E.E. Moore, T.H. Cogbill, M.A. Malangoni, et al., Organ injury scaling, II: pancreas, duodenum, small bowel, colon, and rectum, *J. Trauma* 30 (11) (1990) 1427–1429.
- [4] J.P. Lam, G.J. Eunson, F.D. Munro, J.D. Orr, Delayed presentation of handlebar injuries in children, *BMJ* 322 (7297) (2001) 1288–1289, <https://doi.org/10.1136/bmj.322.7297.1288>.
- [5] Y.Y. Chen, W.W. Su, M.S. Soon, H.H. Yen, Gastrointestinal: intramural hematoma of the duodenum, *J. Gastroenterol. Hepatol.* 21 (6) (2006) 1071, <https://doi.org/10.1111/j.1440-1746.2006.04522.x>.
- [6] F. D'Arpa, G. Orlando, R. Tutino, G. Salamone, E.O. Battaglia, G. Gulotta, Traumatic isolated intramural duodenal hematoma causing intestinal obstruction, *ACG Case Rep. J.* 2 (4) (2015) 198–199 Published 2015 Jul 9 [10.14309/crj.2015.55](https://doi.org/10.14309/crj.2015.55).