

# A RARE PEDIATRIC CASE OF DELAYED PRESENTATION OF INTRAMURAL DUODENAL HAEMATOMA FROM BLUNT ABDOMINAL TRAUMA



Mohamad Sufian MB<sup>1</sup>, Adi Afiq Bin MA<sup>1</sup>, Erica YH<sup>2</sup>, Che Zubaidah CD<sup>1</sup>  
Hospital Tunku Azizah<sup>1</sup>, Hospital Canselor Taunku Muhriz<sup>2</sup>



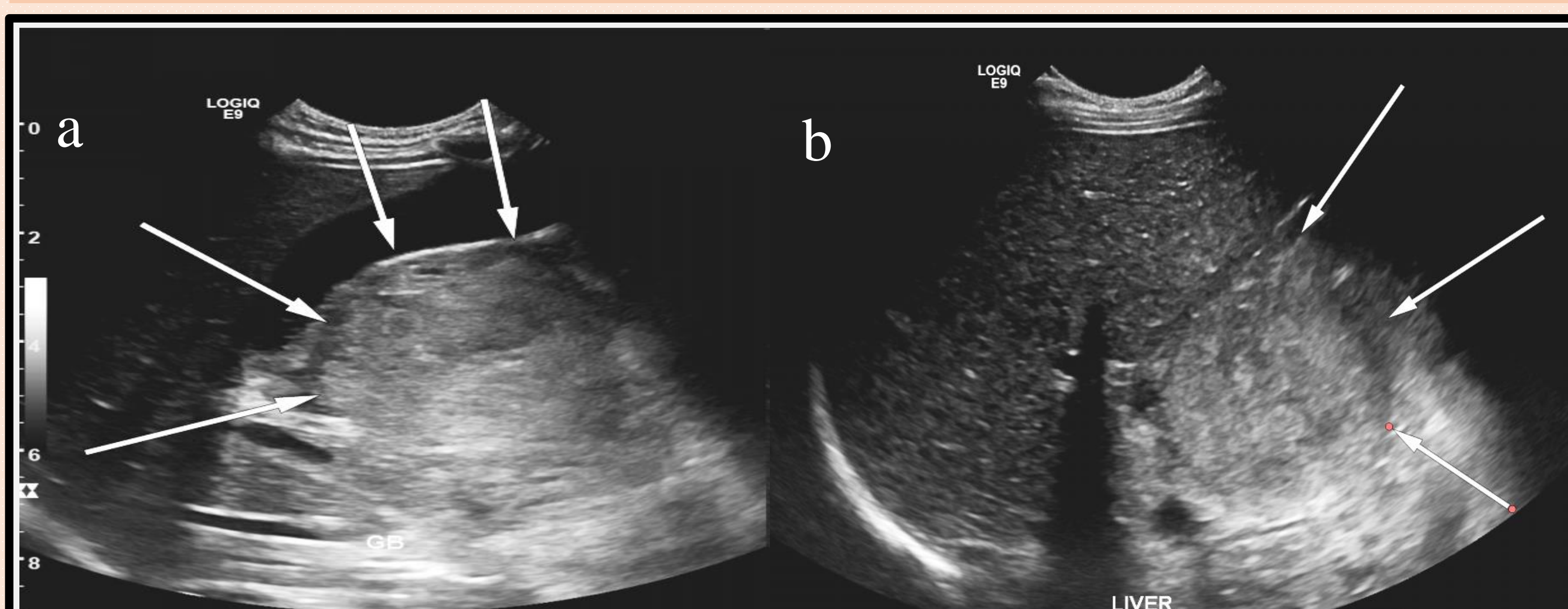
## INTRODUCTION

Intramural hematoma of the intestinal wall is a rare entity and can occur anywhere in the gastrointestinal tract [1, 2]. Case reports are the only data available with regards to this pathology. The first case was described as early as 1838 [2-4]. Intramural duodenal hematoma rarely occurs in the pediatric population [2, 6-8]. An intramural duodenal hematoma not only has significant dietary consequences for affected patients but may also lead to potentially fatal complications.

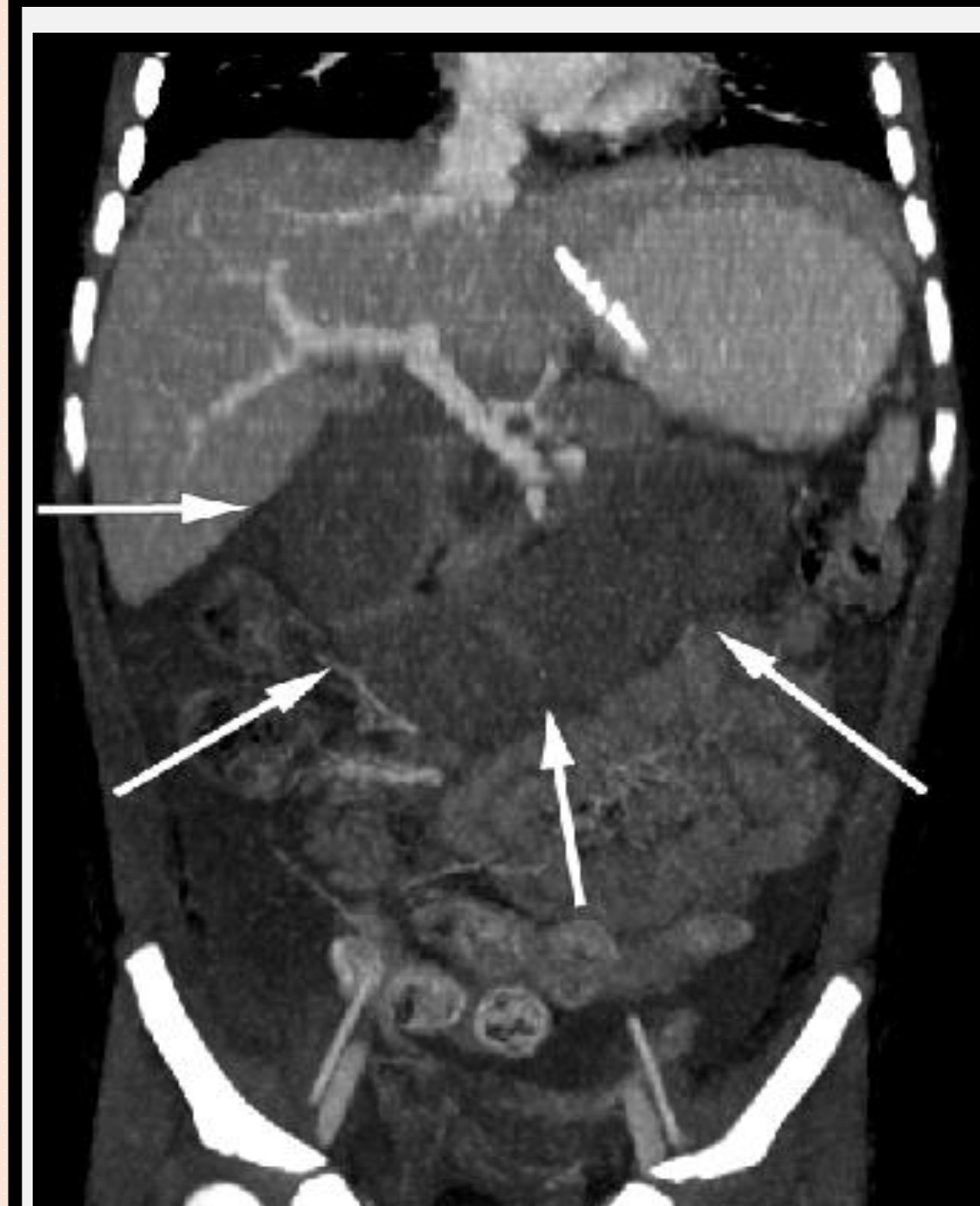
## CASE PRESENTATION

A 3 years old girl presented with abdominal pain, had preceding history of blunt abdominal trauma 4 days prior. Physical examination noted patient had bruises at right side of abdomen with symptomatic anemia (HB 7.1 g/dl) and coagulopathy (INR 1.8). Serum amylase is raised (138U/L) in keeping with pancreatitis.

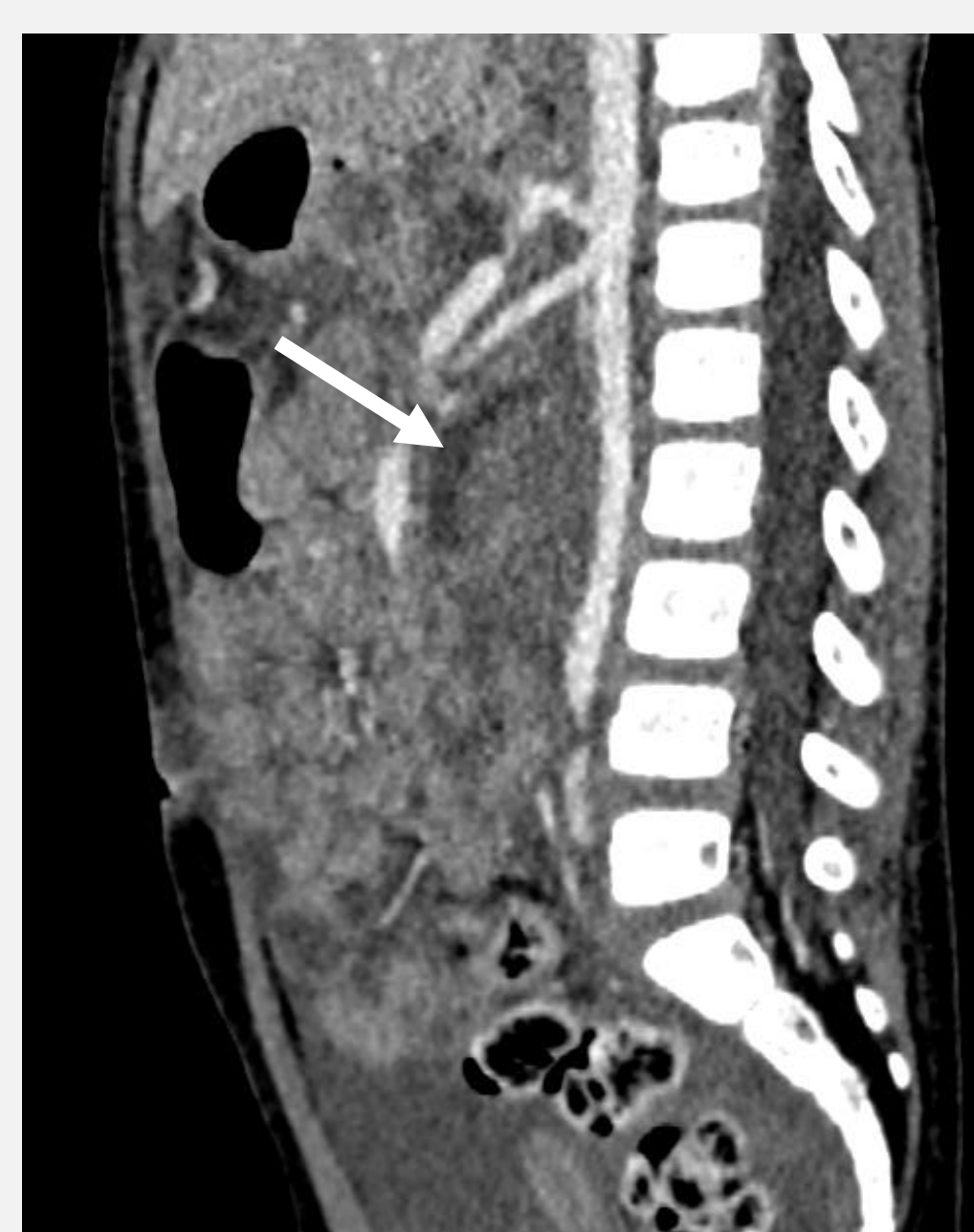
Ultrasound abdomen findings were suspicious of retroperitoneal hematoma and hence proceeded with CT abdomen.



**Figure 1:** Ultrasound images shows hyperechoic lesion (arrow) at the right upper quadrant with mass effect to the head of the pancreas (a). A similar hyperechoic lesion was seen at the right and left lumbar region (b).



**Figure 2:** The hyperechoic lesion seen on ultrasound is in fact intramural hematoma of the duodenum. Coronal image of the CT abdomen showed large duodenal wall hematoma along the wall of D1 to D4 of the duodenum (arrow). Note that the hematoma bear a resemblance to the configuration of the C-Loop of duodenum.



**Figure 3:** Sagittal image of CT abdomen showing significant narrowing of the duodenal lumen (arrow) with no intraluminal contrast noted in distal bowel loops.

**Figure 4:**

There is also discontinuity at the head and body of the pancreas (arrow) in keeping with pancreatic injury (AAST4). The body of the pancreas appears enlarged with no enhancement seen and surrounds by moderate non-enhancing ascites in keeping with pancreatitis.



The patient subsequently underwent laparotomy by which intraoperatively noted large duodenal wall hematoma extending from D1 of duodenum to duodenojejunal junction with small duodenal perforation. Total transection of neck of the pancreas.

Proceeded with

The HPE from this two-stage surgery showed extensive hemorrhage of the duodenum with hemorrhage and necrosis of the pancreas.

Patient was discharge home three weeks later once able to tolerate soft diet. Subsequent follow-up showed no sequele of complication.

## DISCUSSION

- Intestinal hematoma is a rare condition and is often associated with blunt abdominal trauma. It commonly affect the duodenum, followed by jejunum, and large bowels [8, 9].
- Blunt trauma accounts for approximately 60% of intestinal hematoma [8, 10, 11]. High external forces may damage blood vessels within the duodenal wall or surrounding structures. As a result, hematoma form in between intestinal layers (i.e. submucosal or serosal layers) and may lead to bowel obstruction in the retroperitoneal or both.
- Pancreatitis is a late sequele associated with intramural duodenal hematoma (estimated incidence 21%) due to the close anatomical duodenopancreatic relationship [12].
- In the paediatric population, ultrasound is often preferred as the first line of imaging due to the lack of radiation exposure to the patient. Ultrasound typically reveals an echogenic mass along the duodenal convexity, which initially has a uniform appearance [2].
- Computed tomography (CT) is the preferred tool in diagnosing intramural duodenal hematoma. It provides global information on all the duodenum structures [2, 8, 13]. The characteristic CT finding is a mass with a homogenous density of coagulated blood localized in the duodenal C loop [2, 13]. The use of an oral contrast agent can be helpful for evaluation luminal narrowing and localized any perforation if patient able to tolerate it [2, 13].
- Management of intramural duodenal hematoma is a challenging task and depends on the condition of the patient and the associated injuries. Conservative management has proven to be a successful and safe alternative in the absence of any life-threatening injuries. Despite conservative management, surgical intervention is usually reserved for patients with no clinical and biochemical signs of improvement. Laparotomy may be required to rule out other causes of duodenal obstruction, such as duodenal perforation or injury to the head of the pancreas. Complex duodenal injuries may need a diversion to allow duodenal repair healing and prevent complications [8, 11].

## CONCLUSION

Intramural hematoma is indeed a rare condition in paediatric population in which blunt trauma most commonly account for it. C-loop of duodenum is susceptible because of its normal anatomical position. A sound knowledge of its common association with pancreatitis, appearance on ultrasound and CT as well as its known complication are vital for us to able to pick up this condition so that appropriate treatment can be initiated promptly to avoid undesired complication.

## ACKNOWLEDGEMENT

We would like to express our special appreciation and thanks to the Paediatric Surgery team, HTA for their contribution on this case report.

## REFERENCE

1. Li, Y., et al., Prospective ECG-gated 320-row CT angiography of the whole aorta and coronary arteries. *Eur Radiol*, 2012. 22(11): p. 2432-40.
2. Niehues, S.M., et al., Intramural duodenal hematoma: clinical course and imaging findings. *Acta Radiologica Open*, 2019. 8(4): p. 2058460119836256.
3. Amankwa, A.T., et al., A case of spontaneous intramural duodenal hematoma in a young African man: Imaging findings. *Radiology case reports*, 2021. 16(7): p. 1675-1678.
4. Inouye, M.R. and L.M. Watanabe, Duodenal obstruction due to intramural hematoma; review of the literature and report of a case. *California medicine*, 1956. 85(4): p. 254-256.
5. Liverud, K., Hematoma of the Jejunum with Subileus. *Acta Radiologica*, 1948. os-30(1-2): p. 163-168.
6. Lorente-Ramos, R.M., et al., Sonographic diagnosis of intramural duodenal hematomas. *J Clin Ultrasound*, 1999. 27(4): p. 213-6.
7. Wang, J.Y., et al., Intramural duodenal hematoma and hemoperitoneum in anticoagulant therapy following upper gastrointestinal endoscopy. *Med Princ Pract*, 2006. 15(6): p. 453-5.
8. Deambrosio, K., et al., Delayed duodenal hematoma and pancreatitis from a seatbelt injury. *The western journal of emergency medicine*, 2011. 12(1): p. 128-130.
9. CZYRKO, C., et al., Blunt Abdominal Trauma Resulting in Intestinal Obstruction: When to Operate? *Journal of Trauma and Acute Care Surgery*, 1990. 30(12): p. 1567-1571.
10. Weigelt, J.A., Duodenal injuries. *Surg Clin North Am*, 1990. 70(3): p. 529-39.
11. Degiannis, E. and K. Boffard, Duodenal injuries. *Br J Surg*, 2000. 87(11): p. 1473-9.
12. Lukman, M., A. Jasmi, and S. Suhaimi, Massive Dissecting Intramural Duodenal Haematoma Following Endoscopic Haemostasis of a Bleeding Duodenal Ulcer. *Asian journal of surgery / Asian Surgical Association*, 2006. 29: p. 98-100.
13. Allen, G.S., et al., Delayed diagnosis of blunt duodenal injury: an avoidable complication. *J Am Coll Surg*, 1998. 187(4): p. 393-9.