



Case Reports

Endoscopic Management of Post-Traumatic Transmural Duodenal Hematoma in a Pediatric Patient: Case Report.

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Abstract: Intramural duodenal hematoma, first described in 1838, is a rare condition associated with blunt abdominal trauma, coagulopathy, anticoagulants, pancreatic disease or aneurysm, and endoscopic procedures. It usually presents with abdominal pain, nausea, and vomiting, and is diagnosed by imaging, mainly computed tomography and ultrasonography. Management is conservative or surgical depending on severity: hematomas without perforation usually resolve within a few weeks, whereas cases with perforation require surgery. Endoscopic ultrasound helps distinguish the lesion from malignant masses, and the diagnosis is often delayed because the symptoms are insidious. We report a 14-year-old boy with a persistent post-traumatic transmural duodenal hematoma that caused duodenal obstruction and was successfully treated with serial endoscopic balloon dilation after conservative management, offering a safe alternative in selected patients.

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INTRODUCTION

Intramural duodenal hematoma is an uncommon lesion first described by McLauchlan in 1838 (1). It arises most often after blunt abdominal trauma, but it is also linked to coagulopathy, anticoagulant therapy, pancreatic disease, and endoscopic procedures (2,3,4,6,8). Because the duodenum is retroperitoneal, physical examination is usually unrevealing, and the diagnosis rests on cross-sectional imaging, chiefly computed tomography and ultrasonography (5,7).

Most hematomas without perforation resolve with conservative management within about three weeks (12), whereas perforation or persistent duodenal obstruction requires intervention. We describe a 14-year-old boy in whom a post-traumatic transmural duodenal hematoma caused persistent obstruction and was successfully

managed with serial endoscopic balloon dilation, and we review the literature on this rare entity.

CASE REPORT

A 14-year-old boy with no relevant medical history presented after blunt abdominal trauma from direct impact of an all-terrain vehicle handlebar to the abdomen. He reported transfixing mesogastric pain (5/10 on a visual analog scale) and bilious vomiting.

On examination he was hemodynamically stable, with no respiratory compromise. Bowel sounds were present. There was dullness to percussion in the right upper quadrant; the abdomen was depressible with voluntary guarding and tender to moderate and deep palpation in the mesogastrium and hypogastrium. A mass was

delimited in the right hemiabdomen. The remainder of the examination was unremarkable.

Laboratory Findings: Hemoglobin 13.9 g/dL, hematocrit 36.5%, platelets $196 \times 10^3/\mu\text{L}$, leukocytes $12.12 \times 10^3/\mu\text{L}$, glucose 120 mg/dL, blood urea nitrogen 14 mg/dL, urea 30 mg/dL, creatinine 0.6 mg/dL, lipase 38 U/L, amylase 60 U/L, prothrombin time 14.0 s, partial thromboplastin time 27.8 s, and INR 1.3.

Imaging Findings: A FAST ultrasound (Figure 1) showed a smooth-bordered, retroperitoneal, paravertebral, heterogeneous, avascular mass that displaced adjacent structures, measuring $9 \times 5.7 \times 7.6$ cm with a volume of 214 cc. The pediatric surgery service was consulted and an abdominal trauma protocol was started. Extension studies were obtained with abdominal computed tomography (Figure 2) and an upper gastrointestinal series (Figure 3).

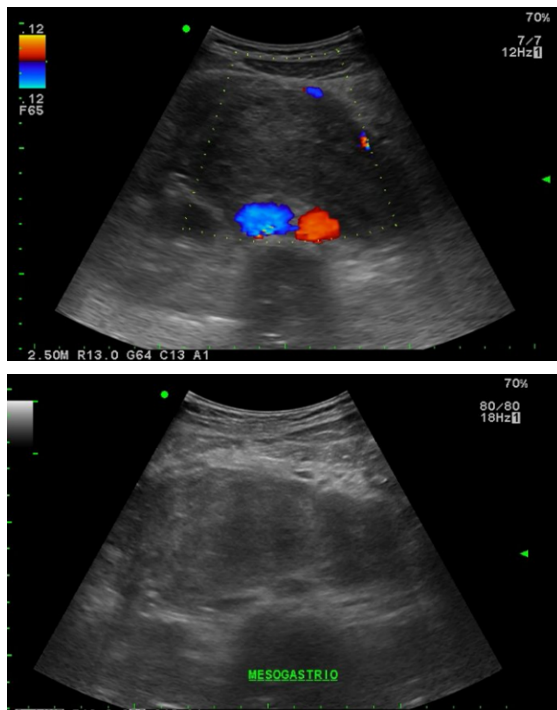


Figure 1. FAST ultrasound. Smooth-bordered, retroperitoneal, paravertebral, heterogeneous, avascular mass ($9 \times 5.7 \times 7.6$ cm; volume 214 cc) displacing adjacent structures.

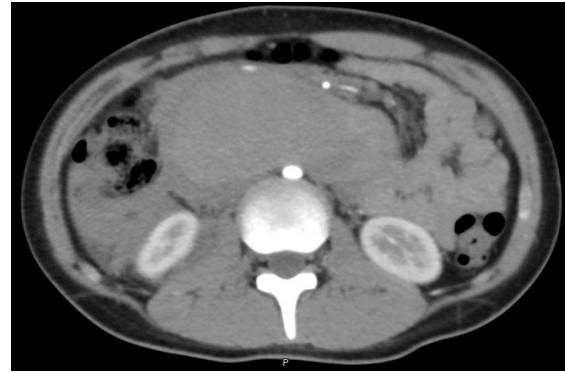


Figure 2. Non-contrast and arterial-phase abdominal CT. Hematoma of the duodenal wall of the third and fourth portions with associated retroperitoneal blood.

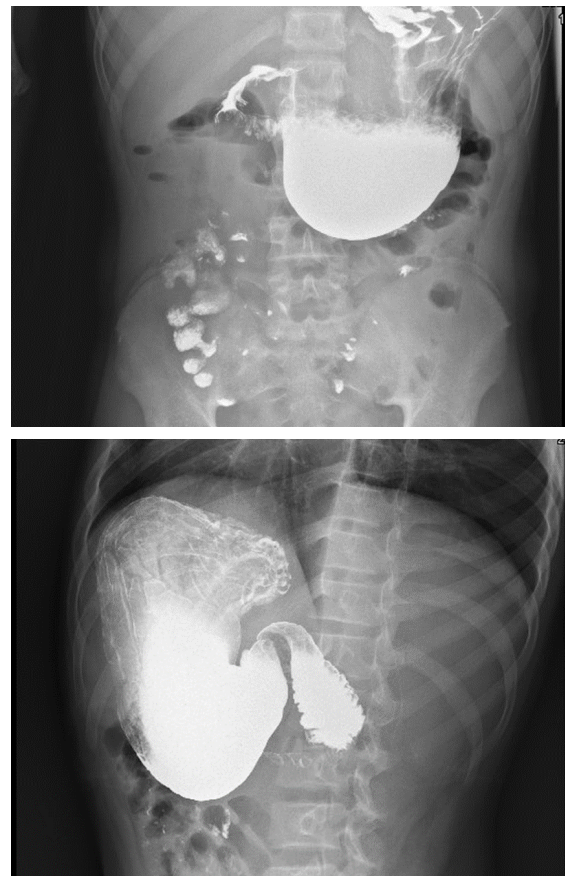


Figure 3. Upper gastrointestinal series (07/06/23). Gastric dilation with poor passage of contrast into the duodenum and duodenal occlusion.

Endoscopic Management: Endoscopy was requested. The first study (Figure 4) showed extrinsic compression of the second and third portions of the duodenum. An 8-Fr nasojejunal tube was placed, and serial endoscopic balloon dilations were planned. The first dilation (Figure 4) reached 8 mm; at 48 hours it was advanced to 12 mm

(Figure 5), and at one week (Figure 6) complete passage of the endoscope was achieved. The patient was discharged asymptomatic, with clinical resolution. No complications were reported at subsequent follow-up.



Figure 4. Endoscopy (12/06/23). Extrinsic compression of the second and third duodenal portions; therapeutic hydropneumatic balloon dilation to 8 mm.

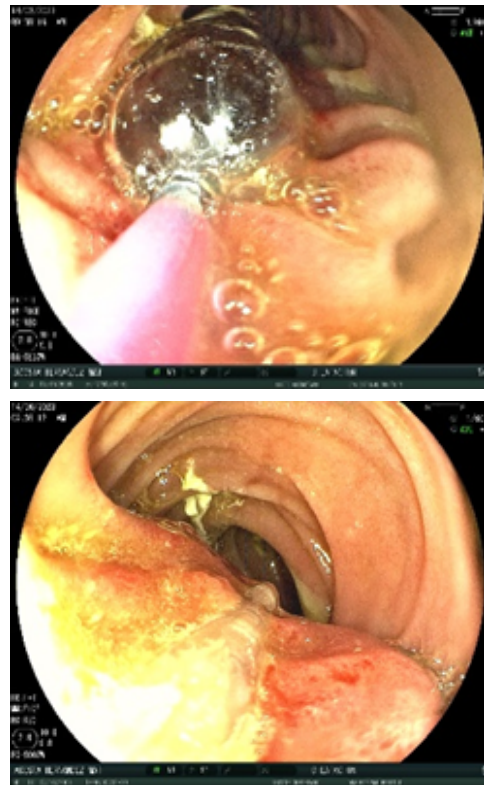


Figure 5. Endoscopy (14/06/23). Persistent extrinsic compression; balloon dilation to 12 mm.





Figure 6. Endoscopy (19/06/23). Residual 40% extrinsic compression of the second and third duodenal portions, now passable to the endoscope.

DISCUSSION

Intramural duodenal hematoma poses several clinical challenges because of its low incidence and nonspecific symptoms (2). Although blunt abdominal trauma is a leading cause, the lesion also occurs in non-traumatic settings such as coagulopathy and certain medical procedures, particularly endoscopy (3,4,6,8). These varied etiologies make it difficult to define a single mechanism of formation, especially in cases associated with pancreatitis, in which the pathophysiology is not fully understood.

Physical examination is usually of little help because the duodenum is retroperitoneal, which limits detection by conventional clinical assessment. Imaging is therefore central: computed tomography and ultrasonography identify most intramural hematomas. Each has limits. Ultrasonography is useful in children but can be confused with other masses such as pseudocysts or neoplasms (5). Magnetic resonance imaging can add detail on the extent of the hematoma and help identify complications such as duodenal perforation (7).

Treatment varies with severity. In young patients and those without perforation, conservative management is effective, with resolution in about three weeks (12). Surgery becomes necessary when there is perforation or when the hematoma obstructs the duodenal lumen and compromises gastrointestinal function. Complications such as pancreaticoduodenal artery aneurysm, which may rupture, call for aggressive endovascular treatment to avoid fatal outcomes (13).

Intramural duodenal hematoma after procedures such as biopsy is rare but clinically important. It may reflect the anatomy of the duodenum together with underlying coagulation disorders. In these cases, early diagnosis and appropriate intervention are key to avoiding serious complications such as acute pancreatitis from compression of the pancreas (8).

In our patient, conservative management did not resolve a transmural hematoma that caused persistent duodenal obstruction. Serial endoscopic balloon dilation achieved complete resolution without complications, offering a safe alternative in selected patients (11).

CONCLUSIONS

Intramural duodenal hematoma is uncommon and demands a high index of suspicion and appropriate imaging for accurate diagnosis. Treatment should be tailored to the severity of the injury, conservative in mild cases and surgical in complicated ones. Early detection and appropriate management can prevent serious complications and improve the prognosis. In this pediatric patient, serial endoscopic balloon dilation was a safe and effective option for a transmural hematoma that persisted despite conservative management.

DECLARATIONS

This case report was conducted in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from the patient's parent or legal guardian for publication of this case report and the accompanying images. The patient's identity remains confidential, and the case is used for academic and scientific purposes only.

The authors declare that they have no competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. This research received no specific grant from any public, commercial, or not-for-profit funding agency.

AUTHOR CONTRIBUTIONS

All authors participated in the clinical management and follow-up of the patient, the literature review, and the drafting and critical revision of the manuscript. All authors read and approved the final manuscript.

REFERENCES

1. McLauchlan J. Fatal false aneurysmal tumour occupying nearly the whole of the duodenum. *Lancet*. 1838;30(766):203-205.
2. Pérez-Rubio Á, Sebastián-Tomás JC, Navarro-Martínez S, Córcoles MC, Del Pozo CD. Intramural duodenal hematoma: diagnosis and management of a rare entity. *Cir Esp (Engl Ed)*. 2023;101(7):515-518.
3. Kang EA, Han SJ, Chun J, Lee HJ, Chung H, Im JP, et al. Clinical features and outcomes in spontaneous intramural small bowel hematoma: cohort study and literature review. *Intest Res*. 2019;17(1):135-143.
4. Wang JY, Ma CJ, Tsai HL, Wu DC, Chen CY, Huang TJ, et al. Intramural duodenal hematoma and hemoperitoneum in anticoagulant therapy following



- upper gastrointestinal endoscopy. *Med Princ Pract.* 2006;15(6):453-455.
5. Niehues SM, Denecke T, Bassir C, Hamm B, Haas M. Intramural duodenal hematoma: clinical course and imaging findings. *Acta Radiol Open.* 2019;8(4):2058460119842631.
6. Makazu M, Koizumi K, Masuda S, Jinushi R, Shionoya K, Tsukiyama T, et al. Spontaneous retroperitoneal hematoma with duodenal obstruction with diagnostic use of endoscopic ultrasound: a case series and literature review. *Clin J Gastroenterol.* 2023;16(3):377-386.
7. Kunin JR, Korobkin M, Ellis JH, Francis IR, Kane NM, Siegel SE. Duodenal injuries caused by blunt abdominal trauma: value of CT in differentiating perforation from hematoma. *AJR Am J Roentgenol.* 1993;160(6):1221-1223.
8. Oliveira JHB de, Esper RS, Ocariz RC, Sartori FS, Freire LMD, Chaim EA, et al. Intramural duodenal hematoma secondary to pancreatitis: case report and review of the literature. *Sao Paulo Med J.* 2018;136(6):597-601.
9. Butano V, Napolitano MA, Pat V, Wahrenbrock T, Lin P, Quintana MT, et al. Contemporary management of traumatic duodenal injuries. *Am Surg.* 2023;89(4):1254-1257.
10. Kim SJ, Lee JH, Park SM, Kwon KH. Conservative management of traumatic acute intramural hematoma of the duodenal 2nd and 3rd portion: a case report and review of literature. *Ann Hepatobiliary Pancreat Surg.* 2020;24(1):109-113.
11. Valerii G, Ormando VM, Cellini C, Sacco L, Barbera C. Endoscopic management of intramural spontaneous duodenal hematoma: a case report. *World J Gastroenterol.* 2022;28(20):2243-2247.
12. Brillantino C, Rossi E, Baldari D, Minelli R, Bignardi E, Paviglianiti G, et al. Duodenal hematoma in pediatric age: a rare case report. *J Ultrasound.* 2022;25(2):349-354.
13. Zhou YY, Wang SC, Seak CJ, Huang SW, Cheng HT. Duodenal obstruction caused by gastroduodenal artery pseudoaneurysm with hematoma: an unusual case and literature review. *Front Med (Lausanne).* 2023;10.