Hepatic Subcapsular Hematoma After Endoscopic Retrograde Cholangiopancreatography: A Case Report

Ghaita Al Mahruqi[1]*, Humaid Al Adawi[2], Sheikha Al Hashemi[3] and Omaima Al Mamari[3]

[1]General Surgery Specialist, Sultan Qaboos University Hospital

[2]Senior Consultant, Colorectal Surgery, Sultan Qaboos University Hospital

[3]Intern, Sultan Qaboos University Hospital

Received: 27 March 2025

Accepted: 20 July 2025

*Corresponding author: almahruqighaitha@gmail.com

DOI 10.5001/omj.2029.05

Abstract

Endoscopic Retrograde Cholangiopancreatography (ERCP) remains a crucial cornerstone in the management of pancreaticobiliary disorders. However, like any other invasive procedure, ERCP is associated with common reported complications like post ERCP pancreatitis, cholangitis, and cholecystitis. Subcapsular hepatic hematoma is rare but a possible complication following ERCP, with fewer than 50 reported cases in the literature [(1)] . Here, we report a case of post ERCP subcapsular hepatic hematoma which initially presented with right upper quadrant pain and was admitted under the impression of calculus cholecystitis with dilated CBD . We report this case to emphasise the need of thoroughly investigating rare complications of ERCP procedure as they can be life-threatening if not managed appropriately.

Keywords: ERCP; Cholecystitis; Gallbladder; Liver; Hematoma.

Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is one of the most commonly performed minimally invasive procedures for diagnosing and treating biliary-pancreatic diseases. While generally regarded as a safe procedure, it carries the risk of potential complications. The primary adverse events following ERCP are well known, with reported incidence rates varying significantly across studies: 5% to 10% for pancreatitis, 1% to 4% for haemorrhage, 1% to 5% for cholangitis, and 1% to 2% for perforation.[1] We present a case report of hepatic subcapsular hematoma (HSH), a rare complication of ERCP that was first documented in the year 2000.[1] It is a serious condition, with mortality rates reaching up to 75% if the hematoma ruptures into the peritoneal cavity.[2]

Case Report

75-year-old female patient with background of hypertension, dyslipidemia, hypothyroidism, depression and chronic spinal stenosis, presented to the emergency department with five days history of right upper quadrant abdominal pain . On examination, she was alert and conscious with normal vitals. She had tenderness over the right upper quadrant region; negative Murphy's sign. Lab investigation revealed haemoglobin of 11.4, WBC of 9, ALP of 138, AST of 54, ALT of 47 and Bilirubin of 19mg/dl .Abdominal ultrasound showed distended gallbladder, increased wall thickness measuring around 6 mm with intraluminal mobile echogenic calculi and mild pericholecystic fluid, CBD measuring 4.9 mm.

She was admitted under the impression of calculous cholecystitis and managed with intravenous hydration, analgesics, and antibiotics. The patient continued to complain of severe generalised abdominal pain, therefore the decision was made to proceed with CT abdomen [Figure 1] to rule out any element of complicated cholecystitis, which showed features of acute cholecystitis with focal dilatation of the CBD at the head of pancreas measuring about 9mm without obvious obstructing lesion or calculus, hence, MRCP was done which revealed a CBD diameter of 11 mm with a smooth tapering end that could resemble a stricture but no calculi, therefore ERCP was planned accordingly.

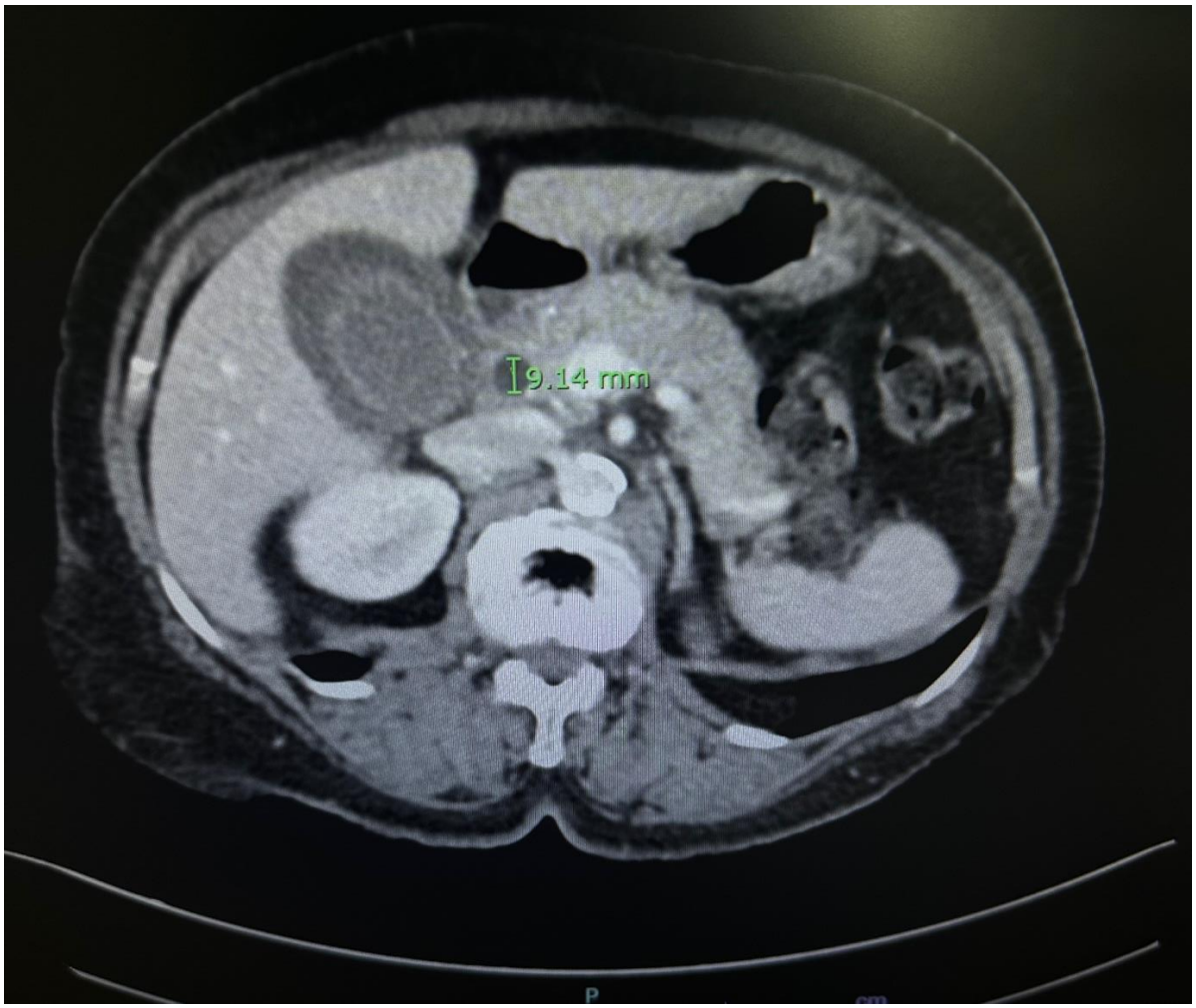

Figure 1: CT abdomen showed features of acute cholecystitis with focal dilatation of the CBD at the head of pancreas measuring about 9mm.

ERCP was done the next morning, it didn't reveal any abnormality, however, sphincterotomy was done prophylactically . 48 hours post ERCP, her haemoglobin dropped from 11 to 7.0 g/dL, her vitals were normal and she didn't manifest any evidence of upper nor lower gastrointestinal bleeding . She was transfused one unit of PRBC, her Hb post transfusion was 8g/dl, her repeated Hb the next morning was 7, therefore CT angiography of the abdomen was arranged, and it revealed large hepatic subcapsular hematoma, The hematoma spans approximately 12–14 cm in length (craniocaudal in axial plane), with maximum thickness of around 4 cm, displacing liver parenchyma inward, with no active extravasation, this was not present in the previous CT scan [Figure 2]. Two units of PRBC were transfused to the patient, she remained hemodynamically normal, was treated conservatively, her Hb was stable through out her admission and was discharged home with an outpatient follow up appointment . One month later she was seen in clinic, asymptomatic with stable Hb . She was advised to present to the emergency department promptly if she developed abdominal pain, at which point repeat imaging would be performed as clinically indicated.

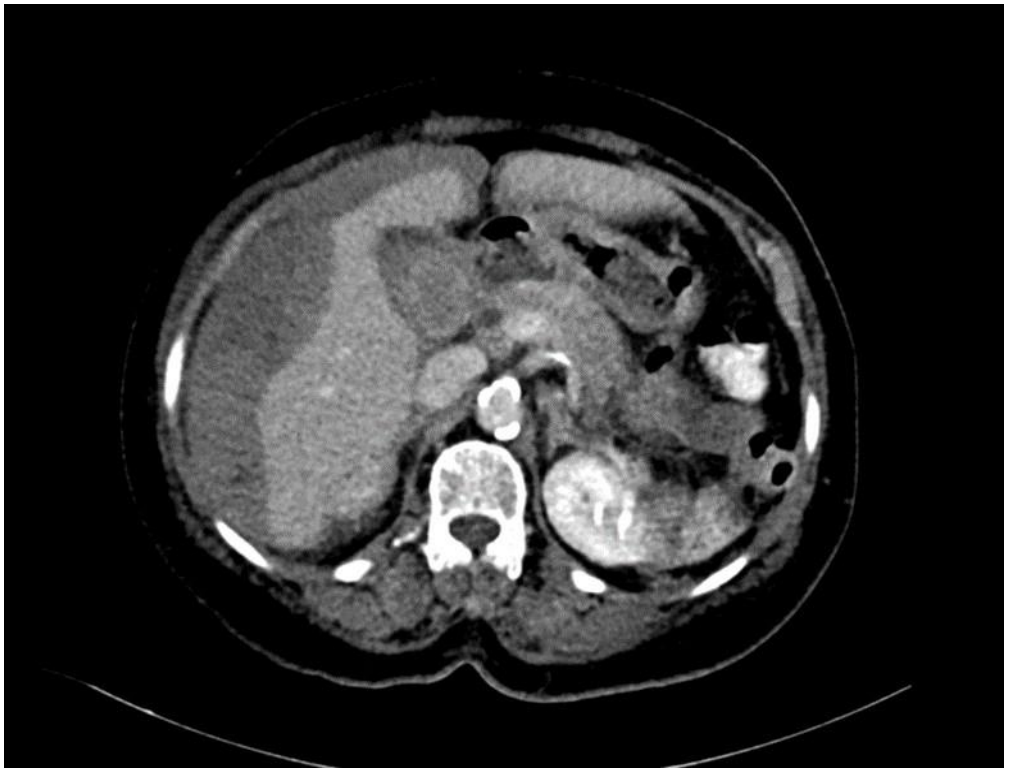

Figure 2: CT abdomen angiography venous phase , showing large subcapsular hematoma with no evidence of active extravasation.

Discussion

The development of hepatic subcapsular hematoma (HSH) following endoscopic retrograde cholangiopancreatography (ERCP) is a rare but serious complication. Its incidence remains unclear due to the limited available data, which primarily originates from case reports. One study reported three cases of HSH following ERCP out of 796 procedures over five years, yielding an incidence rate of 0.37% and a mortality rate of approximately 8–10% in large reviews.[3] This low incidence may be attributed to the fact that such complications are often missed unless post-ERCP imaging is performed. A review of published articles revealed that 89.6% of patients with HSH presented with right upper quadrant pain as the initial symptom, while a subset experienced right shoulder pain associated with acute anemia (24.1%).[4] A recent systematic review of 48 cases noted that typical presenting symptoms included abdominal pain (91.7%), anemia (43.8%), hypotension (29.2%), and fever (20.8%), with symptom onset averaging 47 hours post-ERCP. Diagnoses were typically confirmed via CT imaging, revealing large right-lobe hematomas with mean dimensions of 116 × 93 mm.[5]

Clinical manifestations typically emerge within the first 48 hours post-procedure and include right upper quadrant pain, anemia, hypotension, and occasionally right shoulder pain due to diaphragmatic irritation.[4,5] In our patient, signs of hemoglobin drop appeared 48 hours post-ERCP, which aligns with literature findings indicating that approximately 77.8% of HSHs are detected within 48 hours.[4,5]

The exact pathophysiology of post-ERCP HSH remains poorly understood. Two main hypotheses have been proposed. The first suggests that excessive traction applied by a biliary duct extractor balloon during stone retrieval may rupture small intrahepatic vessels.[5] The second and more widely accepted hypothesis posits that guidewire-induced perforation of the bile duct may lead to injury of adjacent hepatic parenchyma, causing bleeding from intrahepatic vessels.[6] A multicenter cohort study conducted across 11 Norwegian hospitals found that older age, existing comorbidities, and higher American Society of Anesthesiologists (ASA) scores significantly increased the risk of post-ERCP complications, including HSH.[7]

Management of HSH depends on the patient's clinical condition. Hemodynamically stable patients without signs of rupture or infection are typically managed conservatively through close monitoring, transfusion support, broad-spectrum intravenous antibiotics, and serial imaging. Broad-spectrum antibiotics have been shown to significantly reduce mortality, even in patients who are stable.[4,8] In contrast, hemodynamically unstable patients or those with ruptured or infected hematomas may require more aggressive intervention.

A systematic review of 61 cases revealed that ruptured hematomas carried a significantly higher mortality rate (21.4%) compared to non-ruptured ones (2.2%) and often required surgical intervention.[9] One analysis identified anemia and the need for surgery as independent predictors of mortality, further emphasizing the need for individualized management based on early risk stratification.[10] Approximately 38% of patients with non-ruptured HSH can be managed conservatively, while the remaining cases may require percutaneous drainage (25–32%), angiographic embolization (~15%), or surgical evacuation particularly in ruptured or infected cases.[11-14] Early antibiotic administration was also significantly associated with improved outcomes (OR 0.06, $p < 0.001$).[11]

This case highlights the importance of considering HSH in patients presenting with abdominal pain, melena, hemodynamic instability, or a drop in hemoglobin following ERCP. Early recognition and risk stratification are critical to improving outcomes given the potentially severe consequences.

Conclusion

HSH is a rare but potentially life-threatening complication of ERCP. It should be considered in patients presenting with signs and symptoms of bleeding post ERCP . The prognosis is generally favourable if diagnosed early and managed appropriately.

Disclosure

No conflicts of interest relevant to this article.

References

1. Lee HJ, Cho CM, Heo J, Jung MK, Kim TN, Kim KH, et al. Impact of Hospital Volume and the Experience of Endoscopist on Adverse Events Related to Endoscopic Retrograde Cholangiopancreatography: A Prospective Observational Study. Gut Liver 2020 Mar;14(2):257-264.

2. Minhas S, Minhas A, Malik M, et al. Large subcapsular hematoma of the liver due to faja corset: a rare case report. Egypt Liver J 2020;10:32.

3. Ortega Deballon P, Fernández Lobato R, García Septiem J, Nieves Vázquez MA, Martínez Santos C, Moreno Azcoita M. Liver hematoma following endoscopic retrograde cholangiopancreatography (ERCP). Surg Endosc 2000 Aug;14(8):767.

4. Sommariva C, Lauro A, Pagano N, Vaccari S, D'Andrea V, Marino IR, et al. Subcapsular hepatic hematoma post-ERCP: Case report and review of the literature. Dig Dis Sci 2019 Aug;64(8):2114-2119.

5. Pivetta LG, da Costa Ferreira CP, de Carvalho JP, Konichi RY, Kawamoto VK, Assef JC, et al. Hepatic subcapsular hematoma post-ERCP: Case report and literature review. Int J Surg Case Rep 2020;72:219-228.

6. Pivetta LG, da Costa Ferreira CP, de Carvalho JP, Konichi RY, Kawamoto VK, Assef JC, et al. Hepatic subcapsular hematoma post-ERCP: Case report and literature review. Int J Surg Case Rep 2020;72:219-228.

7. Glomsaker T, Hoff G, Kvaløy JT, Søreide K, Aabakken L, Søreide JA; Norwegian Gastronet ERCP Group. Patterns and predictive factors of complications after endoscopic retrograde cholangiopancreatography. Br J Surg 2013 Feb;100(3):373-380.

8. Imperatore N, Micheletto G, Manes G, Redaelli DG, Reitano E, de Nucci G. Systematic review: Features, diagnosis, management and prognosis of hepatic hematoma, a rare complication of ERCP. Dig Liver Dis 2018 Oct;50(10):997-1003.

9. Imperatore N, Micheletto G, Manes G, Redaelli DG, Reitano E, de Nucci G. Systematic review: Features, diagnosis, management and prognosis of hepatic hematoma, a rare complication of ERCP. Dig Liver Dis 2018 Oct;50(10):997-1003

10. Ortega Deballon P, Fernández Lobato R, García Septiem J, Nieves Vázquez MA, Martínez Santos C, Moreno Azcoita M. Liver hematoma following endoscopic retrograde cholangiopancreatography (ERCP). Surg Endosc 2000 Aug;14(8):767.

11. Giurazza F, Contegiacomo A, Corvino F, de Magistris G, Ierardi AM, Lucatelli P, et al. Imaging-guided treatment of spontaneous and post-traumatic hepatic subcapsular hematomas: Review of techniques and outcomes. Radiol Med 2021;126(5):663-673.

12. Lee DW, Lee SH, Lee JK, Lee KH, Rhee JC, Kim YH. A case of massive hepatic subcapsular hematoma after ERCP: treatment with embolization. Korean J Gastrointest Endosc. 2009;38(1):48-52.

13. Ryu H, Lim C, Han S, et al. Management of hepatic subcapsular hematoma after ERCP: a single-center experience. Korean J Hepatobiliary Pancreat Surg 2016;20(3):117-122.

14. Choi JW, Kim HC, Jae HJ, et al. Percutaneous treatment of subcapsular hepatic hematoma: a case series. Diagn Interv Radiol 2015;21(1):51-55.