

# Subcapsular hepatic hematoma. is it still an unusual complication post ERC? case report and literature review

## Abstract

**Background and Aims:** Subcapsular hepatic hematoma is a rare and little reported complication post ERCP resulting in significant morbidity. The literature review highlights the low but not exceptional incidence of this complication.

**Methods:** Case report.

**Results:** A 55 years-old woman cholecystectomy years before was admitted to our hospital with right upper abdominal discomfort. She had pathologic laboratories rates of hepatic cytolysis, not jaundice. CT scan showed common bile duct stones with intra-and-extrahepatic bile duct not dilated. ERCP was performed with sphincterotomy on wire guide and small stones removal from common-bile-duct with Dormia basket. Not immediate post ERCP complications. Two hours after onset of intense abdominal pain with loss of haemoglobin of 2.5 gr. CT scan showed a large subcapsular right hepatic lobe hematoma and right lung pleural effusion. Not hemoperitoneum or intra-abdominal free air. It was Initial conservative treatment with antibiotics and intravenous fluids, but then she had fever and surgical drainage of hematoma was performed. Good postoperative with recovery.

**Conclusion:** Subcapsular hepatic hematoma pathogenesis post ERCP is not clear, but probably due to the trauma of the guidewire on liver parenchyma with rupture of small blood vessels. This would explain the presence of air in the hematoma and the high frequency of bacterial contamination with the risk of abscess formation. The wireguide endoscopic maneuvers should be conducted with caution avoiding to push the wire guide in the hepatic bile ducts. The management of this complication depends to the dimension of hematoma, the patient's hemodynamic stability, the anaemia degree, the presence of infection. Conservative management is usually effective if identified and treated rapidly with a multidisciplinary approach of medical or interventional radiology and surgical input. Literature reports forty-five cases of subcapsular hepatic hematoma as complication post ERCP. It represents probably a most frequent complication if considering unrecognized cases of small subcapsular hepatic hematoma.

**Keywords:** endoscopic retrograde cholangiography, subcapsular hepatic hematoma, arterial embolization, percutaneous drainage surgical treatment

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## Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is a common performed endoscopic procedure for the diagnosis and management of choledocholithiasis, biliary malignancies, benign and malignant disease of the pancreas. Other diagnostic and therapeutic modalities: MRI/MRCP, laparoscopic cholecistectomy with intraoperative cholangiography, EUS and interventional radiology, have changed the appropriate use of ERCP in relation to complications of this procedure. ERCP has a greater incidence of procedure-related complications than all endoscopic procedures in the upper gastrointestinal tract.<sup>1-3</sup> It is basic to understand its potential complications, theirs expected rates and contributing factors for the adverse events. The case reports a subcapsular hepatic hematoma, a rare and little reported complication post ERCP resulting in significant morbidity. The literature review highlights the very low incidence of this complication, but not so exceptional.

## Case report

A 45 years-old woman was admitted to our hospital with right upper abdominal discomfort. She had undergone cholecystectomy

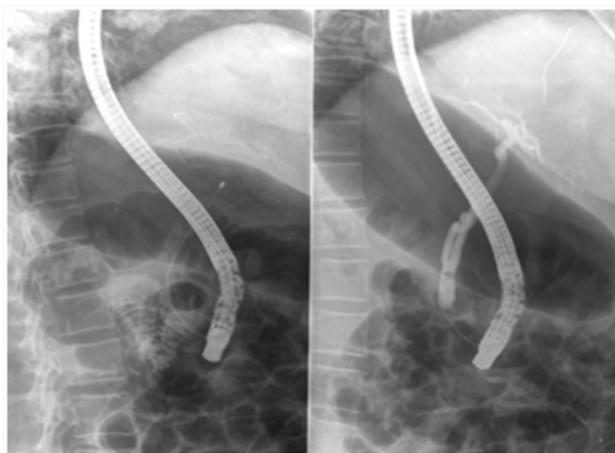
a few years before and the laboratory findings evidenced: GOT 30 UI/l (n.v.<37), GPT 78 UI/l (n.v.<40), gammaglutamyltransferase, GGT 330 UI/l (n.v. 537), alkalinephosphatase 220 UI/l (n.v. 53-128), total bilirubine 0.6 mg/dl (n.v. 0.2-1.2), RBC 4.64 10<sup>6</sup>/L (nv 4.40-5.60), Hb 11.9g/dl (n.v. 12.8-16.5), HCT 36.6 % (n.v. 40-50), WBC 7.64 193u/L, PT 107% ( n.v. 70-130), PT INR 0.95 (n.v. 0.90-1.30), PTT 30.0 sec(26.0 40.0), amylase 64, lipase normal value. Good general conditions with clinical history of hernia lumbar with NSAIDs irregular treatment and epilepsy in effective drug treatment. She was use of analgesics for headache. Indication for ERCP was placed for detection of biliary sludges in common bile duct (CBD) without dilatation of extrahepatic and intrahepatic bile ducts. Sphincterectomy was performed over a hydrophilic guide, without immediate complications with clearance of sludges from common bile duct by Dormia basket (Figure 1). Two hours later she developed severe right upper abdominal pain not being susceptible to common analgesics. She was not hyperpiretic with normal laboratory tests and no free air to Rx-ray abdomen carried out after about 4 hours of the procedure. There was no signs of peritoneal involvement to clinic examination. Since the abdominal persisted with a drop of 2.5 grams of haemoglobin, RBC 3.67 and HCT 29.5, WBC 12.08, amylase

57,GOT 57,GPT 130, GGT 213,alkaline phosphatase 178 and total bilirubin 0.5, a CT abdomen was performed. It highlighted a wide collection heterogeneously hypo-isodense with densitometric values of fluid type blood in the subcapsular right liver, between the posterior and anterior-medial area, without signs of active bleeding or capsular leak. No hemoperitoneum, no pneumoperitoneum, no dilated the intra and extrahepatic bile ducts (Figure 2). Large pleural effusion with hypoventilation lower lobe and posterior segment of right upper lobe (Figure 3). The patient still presented without fever with abdominal pain attenuation. On the surgeon input, conservative management was performed with intravenous fluid replacement and broad-spectrum antibiotics. After five days she presented fever and abdominal CT was unchanged from the previous control, except relief of subcapsular

tiny gas bubbles. On this relation and the pulmonary compromise, she was under surgical treatment for hematoma and pleural effusion drainage. At surgery it was a massive subcapsular hematoma, partially coagulated, which covered the entire liver right and partially the fourth segment with intimate adherence to the diaphragm and lateral shower right. Pleural effusion was clear without bacterial infection. She was symptoms free with excellent postoperative course and was discharged after about 10 days after surgery with normality at laboratory parameters and abdominal ultrasound scan. Serial ultrasonographic and rx-ray examinations were performed with complete resolution of pleural effusion and pulmonary ventilation with persistently normal liver morphology at the end of 30<sup>th</sup> day. She remained asymptomatic at subsequent follow up.

**Table 1** Literature highlight and case report

Author case report year of publication	Pazient, Sex, Age	Indication for ERCP	Wireguide	Complication	Management	Outcome
Ortega D et al. <sup>17</sup>	81-years old man	Common bile duct stones	Yes	Subcapsular hepatic hematoma	Percutaneous drainage	Recovery
Horn TL et al. <sup>18</sup>	71 years-old woman	Obstructive jaundice from cholangiocarcinoma	Yes	Subcapsular hepatic hematoma	Conservative	Recovery
Bhandarkar et al. <sup>19</sup>	64-year-old woman	CBD stone	Yes	Subcapsular hepatic hematoma	Percutaneous drainage	Recovery
Chi KD et al. <sup>20</sup>	43 years-old woman	Obstructive jaundice from metastatic pancreatic cancer	Yes	Subcapsular hepatic hematoma	Conservative	Recovery
Ertugrul I et al. <sup>21</sup>	41 years-old man	Obstructive jaundice hilar cholangiocarcinoma	Yes	Subcapsular hepatic hematoma	Conservative	Recovery
Bhati CS et al. <sup>22</sup>	51 years-old woman	CBD stones	Yes	Subcapsular hepatic hematoma	Percutaneous drainage	Recovery
Priego P et al. <sup>23</sup>	30 years-old woman	CBD stones	Yes	Subcapsular hepatic hematoma	Surgical treatment	Recovery

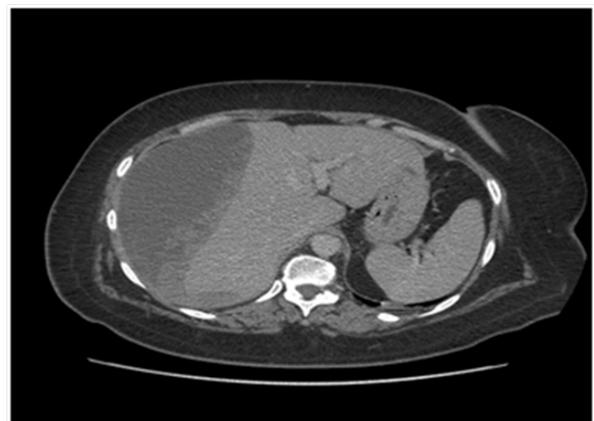


**Figure 1** ERCP cholangiography with Dormia basket in CBD and the tip of guide wire in the hepatic bile duct (arrow).

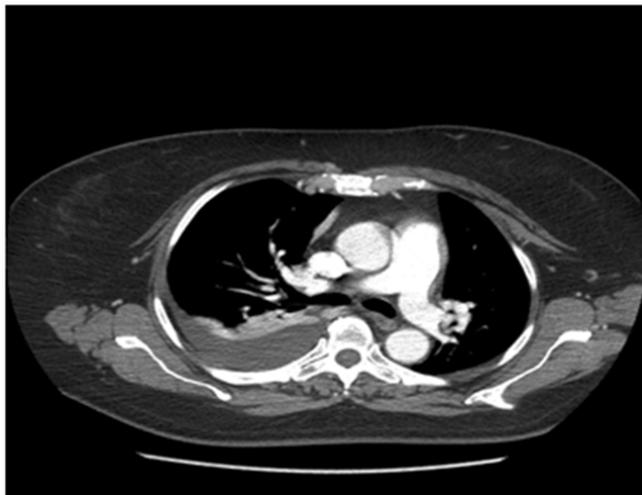
## Discussion

Reported complication rates after ERCP vary widely. Pancreatitis is the most common ERCP complication (1% to 7%). Haemorrhage intraluminal related sphincterotomy ranges from 0.7 % to 2%. The risk of severe haemorrhage requiring two or more unit of blood, surgery or interventional radiology ranges from 0.1 % to 0.4%. Perforation rates from 0.3 % to 0.5 %. Cholangitis represents 1% or less and cholecystitis rates 0.2% to 0.5%. The overall mortality rate after diagnostic ERCP is 0.2 % and after therapeutic ERCP it is 0.4%. Miscellaneous complications have been reported i.e., spleen rupture, ileus, hepatic

abscess, pneumothorax or Pneumo-mediastinum, perforation of colonic diverticula, duodenal hematoma, infection of pseudocysts and impaction of therapeutic devices have been reported. Post ERCP bleeding complications are rare and mainly post-sphincterotomy. Additional bleeding complications result from lesions of the spleen or the duodenal wall or colon caused by unusual movements of the endoscope with traction on the abdominal vessels.<sup>4-16</sup> Subcapsular hepatic hematoma, an extraluminal hemorrhagic complication post ERCP, is an unusual and relatively rare event, whose pathogenesis is poorly understood, but potentially life threatening requiring identify and treatment rapidly. The review of the literature (Table 1) highlight that only forty-six cases of this complication have been described so far.



**Figure 2** CT scan of upper abdomen showing the subcapsular hematoma of the right lobe of liver.



**Figure 3** CT scan chest showing the pleural effusion of the right lung.

Two cases report pleural involvement, whose pathogenesis should be depended presumably from the inflammatory reaction resulting by the anatomical relationships between the pleural and the walls of the hematoma. In Almost all cases endoscopic procedures were performed by using a wire guide; however the type of wire guide is not specified. Bleeding disorders or special medical conditions or liver disease at risk for bleeding were not described. In nineteen cases the management of hematoma was conservative with a medical therapy with antibiotic and fluid infusion while in thirteen cases a percutaneous drainage was performed. Embolization is recorded in five cases. Surgical treatments were performed in eleven cases. There were recovery in forty-three patients; three patients deceased. The pathogenesis of subcapsular hepatic hematoma is not clear. It is most likely due to the trauma of the tip of the guidewire resulting in puncture of liver parenchyma with rupture of small blood vessels, when it is pushed-on in the intrahepatic biliary tree in association with injection pressure of contrast medium. This might explain both the presence of air in the hematoma and the high frequency of bacterial contamination with the risk of abscess formation, as the procedure was performed under not sterile conditions. The endoscopic maneuvers with the guide wire should be conducted with caution and avoid to push the guide wire in the bile ducts higher than necessary, in not dilated biliary tree especially (Figure 1). By keeping in mind this complication, the careful management of the guide by endoscopist or his/her assistant is essential for avoiding its excessive manipulation and the loss of the edge of the fluoroscopic distal image. The management of the complication depends to the size of hematoma, the patient's hemodynamic stability, the anemia degree, the presence of infection and the patient's general conditions. Its conservative management is usually effective if identified and treated rapidly with a multidisciplinary approach of medical or interventional radiology and surgical input.<sup>17-59</sup>

Subcapsular hepatic hematoma is an unusual complication after ERCP, but the literature review shows that it is not so rare (thirty cases described from 2011 to date, eleven cases only in 2016) and probably represents a most frequent complication when considering unrecognized cases of small sub-capsular hematoma. This complication should rightly be included in the differential diagnosis of post-ERCP complications.

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