Hepatic subcapsular hematoma post-ERCP: Case report and literature review

Luca Giovanni Antonio Pivetta\(^b,\)\(^*\), Caroline Petersen da Costa Ferreira\(^a\), João Paulo Venancio de Carvalho\(^b\), Renata Yumi Lima Konichi\(^c\), Victor Kenzo Fujikawa Kawamoto\(^c\), Jose Cesar Assef\(^a\), Mauricio Alves Ribeiro\(^a\)

\(^a\) Emergency Service of the Irmandade da Santa Casa de São Paulo (ISCMSP), São Paulo, SP, Brazil
\(^b\) Graduate in Surgery, Santa Casa de São Paulo School of Medical Sciences, São Paulo, SP, Brazil
\(^c\) Graduate in Medicine, Santa Casa de São Paulo School of Medical Sciences, São Paulo, SP, Brazil

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A B S T R A C T

INTRODUCTION: Endoscopic retrograde cholangiopancreatography (ERCP) is one of the most frequently performed minimally invasive procedures currently available for diagnosis and treatment of biliary and pancreatic diseases. Although considered a safe procedure, it has the highest rate of complications among the other endoscopic procedures, such as duodenal perforation and hepatic subcapsular hematoma (HSH). We are presenting a case report and review of the current literature.

METHOD: We report one case HSH rupture, in a 25 years old female patient, 15 cm in diameter, affecting liver segments VI, VII and VIII, who underwent surgical treatment and performed a systematic literature review with the descriptors: endoscopic retrograde cholangiopancreatography and hepatic subcapsular hematoma. All articles were reviewed and data on cases that presented rupture of the HSH analyzed separately.

RESULTS: Sixty one cases of HSH were described in the literature, fourteen of them ruptured.

When analyzing only the subgroup of patients who had ruptured subcapsular hematoma, we showed a significant increase in the mortality rate of patients when compared to non-ruptured (21.4% × 2.2%). We also report that patients with rupture required some type of intervention, of which 78.6% required surgery.

Conservative treatment may be the conduct and will suffice for most cases of non-ruptured hematomas. For patients who evolve with rupturing, surgical resolution, although non-mandatory, is necessary in most cases.

CONCLUSION: HSH ruptured is a rare and potentially fatal post-ERCP complication whose treatment is eminently surgical.

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1. Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is today one of the most commonly performed minimally invasive procedures for the diagnosis and treatment of biliary and pancreatic diseases. Although it is a safe method, ERCP has the highest incidence of complications among upper gastrointestinal endoscopic procedures [1,2], with complication rates ranging from 2.5%–8% when performed by experienced professionals [3–5].

Complications routinely described include acute pancreatitis (most common), acute cholangitis, hemorrhage, sepsis and cardiopulmonary changes [6–10]. However, there are some less common complications with high morbidity, such as duodenal perforation and hepatic subcapsular hematoma (HSH) [11–14].

Regarding HSH, a extraluminal hemorrhagic complication with potential morbidity and mortality, there are 53 reports in literature, with a combined mortality rate of 7.5%, being 10 of those ruptured. The aim of this study is to perform a systematic review of HSH, an uncommon and high morbidity complication, and to report the case of a patient who presented with HSH after ERCP for cholelithiasis treatment. The work has been reported in line with de SCARE criteria [15], and is approved by Santa Casa de São Paulo Research Ethics Committee number: 0897129.0.0000.5479.

2. Methods

A literature review was performed with the following descriptors: endoscopic retrograde cholangiopancreatography and hepatic...
subcapsular hematoma, in the following databases: PubMed, Scopus, BIREME.

Exclusion criteria was: articles that did not have at least an abstract available in one of the following languages: Italian, French, English and Portuguese. All articles were reviewed and data on cases with HSH rupture were analyzed separately.

The data was collected by two different authors, individually, and then analyzed, in case of any disagreement another author reviewed the original paper to minimize any error.

Of the initial 70 results, nine were excluded due to not being related to the research, 2 were excluded due to language and finally 5 were excluded due to not have at least an abstract available (Chart 1).

3. Case report

A 25-year-old female teacher, married, native to Argentina, with no comorbidities, BMI of 24, was admitted to with jaundice to the emergency department (Bilirubin 11.2 mg/dL), with secondary choledocholithiasis diagnosed by ultrasound (US) imaging. Abdominal US showed a normal-looking liver, dilated intra and extrahepatic biliary system, with 1.3 cm bile duct and 1.0 cm calculus inside, and ERCP was indicated for treatment. The procedure was successful, and calculus was removed with the help of guide wire and papillotomy, without complications. The gallbladder did not contrast during the exam.

The patient returned to the ward hemodynamically stable and asymptomatic. After 8 h of ERCP, she experienced sudden abdominal pain and pallor, laboratory tests and abdominal radiography showed significant gastric distension (Fig. 1) and raised the hypothesis of blocked duodenal perforation, without pneumoperitoneum or complicated acute cholecystitis.

Antibiotic therapy was initiated with ciprofloxacin 400 mg every 12 h and metronidazole 500 mg every 8 h, and a CT scan of the abdomen was performed and showed subcapsular hematoma of about 15 cm in diameter, affecting liver segments VI, VII and VIII, with air and a small amount of perihepatic free fluid (Fig. 2). At this time, the patient presented with diffuse peritonitis on physical examination, and exploratory laparotomy was indicated.

Intraoperatively, a minimal amount of hemoperitoneum, a gallbladder with thick and delaminated walls, and subcapsular hematoma affecting the right lobe of the liver with oozing bleeding
Fig. 2. Abdominal CT showing HSH of about 15 cm, affecting liver segments 6, 7 and 8 with permeate air and small amount of perihepatic free liquid.

Fig. 3. Intraoperative photography showing discrete hemoperitoneum, enlarged liver with HSH affecting right lobe with bleeding segment VI.
in segment VI were identified (Fig. 3). Patient was hemodynamically stable with 8.0 mg/dL hemoglobin (HB). Cholecystectomy and electrocautery hemostasis were performed in active bleeding, with apparent good final appearance, as well as a methylene blue test which ruled out duodenal perforation and cavity drainage. Postoperatively, after receiving 03 units of packed red blood cells, she maintained hemodynamic stability and was submitted to arteriography - in an attempt to identify the source of bleeding - with no signs of extravasation (Fig. 4).

On the fourth postoperative day (PO), she evolved with hemodynamic instability and 1500 mL of bloody outflow through the drain, and a new surgical approach was indicated. During the intraoperative period, moderate hemoperitoneum, subcapsular hematoma affecting the entire enlarged hepatic parenchyma, and hepatic bleeding in a laceration pattern were observed. Patient received 05 units of packed red blood cells and was submitted to argon-based hemostasis and tamponade with six compresses.

She remained intubated with ARDS (acute respiratory distress syndrome), maintaining a PaO2/Fio2 ratio of 60. Abdominal drainage was serosanguineous with an outflow rate of around 40 mL. After ventilatory improvement, a new laparotomy was performed, and compresses were removed. The liver was bruised on its entire surface, with no active bleeding, and enlarged (but smaller than in the previous approach). She was extubated on the 13th postoperative day and was discharged from the Intensive Care Unit (ICU) the following day, using antibiotics and pharmacologic venous thromboembolism prophylaxis.

In the ward, the patient had some isolated fever peaks, with no defined source, and maintained antibiotic therapy with ciprofloxacin and metronidazole. On the 20th postoperative day, the patient was asymptomatic, with normal leukogram and sustained hemoglobin levels (Table 1). She underwent control a CT scan (Fig. 5) on the 22nd postoperative day, which still showed hepatic hematoma, without free fluid, and with no signs of thrombosis. The abdominal drain was removed, and the hospital discharge was scheduled to the following day. At night, the patient was asymptomatic in the ward when she experienced sudden dyspnea and died. At necropsy, the findings were pulmonary embolism and venous thrombosis in the pelvic plexus.

### Table 1

| Hemoglobin controls during hospitalization. |
|-------------------------------------------|
| Hemoglobin (mg/dL) | OR | 1' PO | 4' PO | 5' PO | 13' PO | 18' PO | 22' PO |
|---------------------|----|-------|-------|-------|--------|--------|--------|
|                     |    | 13.8  | 7.9   | 5.0   | 10.0   | 9.6    | 10.2   | 10.1   |

4. Discussion

ERCP is an endoscopic procedure commonly performed since its introduction in 1968 [17] with established therapeutic and diagnostic utility. Its main indications are cholecodolithiasis, biliary malignancies and benign or malignant pancreatic disorders [17–19].

The overall mortality rate of this procedure after diagnostic intervention is 0.2% [20] and after therapeutic procedure, 0.4–0.5% [14,20,21] and with complication rates ranging from 2.5–8%, with pancreatitis being the most common complication (1–7%), followed by acute cholangitis (1.4%), hemorrhage (1%), duodenal perfora-
tion (<1%) [22] and cardiopulmonary complications (1%), such as arrhythmia, hypoxemia and asperiration [23]. Other less reported complications are: hepatic abscess formation, paralytic ileus, pneumothorax and pneumomediastinum [24,25], HSH, among others.

Hepatic subcapsular hematoma is an extraluminal hemorrhagic complication secondary to ERCP, whose pathology is poorly understood and potentially life-threatening, requiring early identification and treatment. HSH after ERCP is a rare complication, but may be more frequent than previously thought [14,26]. So far, 61 cases of HSH have been described in the literature, with 14 of them ruptured (Table 5).

The incidence of this complication may be underestimated, since most patients have no symptoms and post-ERCP monitoring is uncommon [27,28]. The first case was described in 2000 by Ortega et al. [29] and since then only a few isolated cases have been reported, including four (7.5%) death outcomes among them, demonstrating the potential severity of this condition.

The etiology of these hematomas is still unclear, and two hypotheses have been raised. The first one suggests that liver damage is secondary to the traction force exerted by the biliary duct extractor balloon when trying to remove a retained calculus. This force would cause the rupture of biliary vessels and branches, with subsequent bleeding [11,30]. The second hypothesis, more commonly reported in the literature, suggests that the guidewire – commonly used to cannulate the common bile duct – would perforate it [26,27,31–34], thus damaging the juxtaposed hepatic parenchyma, causing rupture of small intrahepatic vessels. Blood filtration through the hepatic parenchyma, which follow a centrifugal pattern and the presence of a solid capsule would justify the presence of air in the hematoma and thus the pathophysiology. The high frequency of infection would be justified by the use of a guide wire without sterilization [35].

In the literature review conducted in this study, of the 61 cases analyzed, 49 reported the use of guidewire in the procedure (80.3%), while 12 of them made no mention of its use or not (19.7%).

Clinical manifestations of HSH are varied, including abdominal pain, shoulder pain, anemia, fever, and signs of hypotension. The literature review of this study showed that the most frequent clinical manifestation is abdominal pain (82.0%) followed by anemia (55.7%), hypotension (27.9%), fever (18.0%), and shoulder pain (13.1%) (Table 2) which corroborates the data obtained by Zizzo et al. [35] and Zappa [36].

The onset of these symptoms, associated with subsequent or immediate hypotension, is suggestive of the presence of HSH. Their manifestation may occur from hours to days after the procedure [5,37]. Our study revealed that 77.8% of clinical manifestations begin within 48 h (42 cases), 53.7% within 24 h (29 cases) and 40.7% within 12 h (22 cases), with a peak incidence 48 h after the procedure (12 cases, corresponding to 22.2%).

When analyzing the time of onset the HSH rupture cases shows a significant reduction in the median time 12 h (1–96 h) compared to 27 h (2 h – 15 days) in the HSH and average time, as in the average time 25.5 h HSH rupture group and 69.4 h HSH (Table 3).

The most predominant diagnostic methods for HSH are CT (91.4%) and US (22.4%). In the reported case, the patient experienced abdominal pain, the most frequently described symptom, and anemia 8 h after ERCP, with abdominal CT.

By analyzing only the subgroup of patients who had HSH rupture, we detected a significant increase in the mortality rate compared to non-ruptured (21.4% × 2.2%), even though the rupture subgroup was only 23.7% of the total number of cases reported in the literature. We also detected that patients with rupture required some type of intervention, of which 78.6% required surgery (Table 3).

The predominance HSH in right the lobe (87.3%) with 5.5% of the cases affecting both lobes; we also perform a statistic analyze, using Fisher’s exact test, and no associations between death and the affected liver lobe side (p = 0.256) were verified.

Treatment should be customized on a case-by-case basis, but antibiotic therapy is always recommended due to the high risk of infection [12,26]. Hemodynamically stable patients with limited, non-compressive superficial hematoma can be managed conservatively [12]. Glisson’s capsule of the liver maintains hematoma stability and limits bleeding. In this approach, patient management consists of intravenous fluid infusion and replacement of blood derivatives, serial monitoring of hemoglobin concentration, serial hepatic function tests, repeated physical examination, rest and intensive care unit observation [3,26,29,38].

In addition, monitoring hematoma progression with imaging such as CT and US is the optimal approach. Whenever there is hemodynamic instability with active bleeding and contrast extravasation, immediate surgical or radiological approach should be considered [36].

Surgical treatment should be considered when patient’s general conditions becomes deteriorated, when there is hemodynamic instability, signs of peritoneal irritation, infected hematoma, findings of abdominal free fluid on CT [3] and complications, such as hematoma rupture [35,39–41]. In this case, the procedure consists of hematoma drainage, hemostasis with electrocauterization or hemostatic devices – if possible – and follow-up with imaging exams.

Should active bleeding and hemodynamic instability insue, it is reported in the literature that arteriography with bleeding source embolization has been used to control bleeding with satisfactory results [11,26,28,30]. Embolization by percutaneous angiography of a branch of the hepatic artery also proved to be an effective non-surgical treatment option [41].

A review of the literature revealed the predominance of conservative treatment (39.3%), followed by surgical approach (27.9%), percutaneous hematoma drainage (22.9%), and, finally, embolization treatment (8.2%) (Table 4).
| Author (Year)      | ERCP Indication       | Guidewire  | Symptoms Onset Time | Sings and Symptoms                        | Rupture | Diagnosis Method                      | Hematoma Location | Treatment                  | Death |
|-------------------|-----------------------|------------|--------------------|------------------------------------------|---------|--------------------------------------|-------------------|---------------------------|-------|
| Ortega et al. [29] (2000) | Choledocolitiasis    | Yes        | —                 | Abdominal Pain                           | —       | —                                    | —                 | Percutaneous Drainage     | No    |
| Bhandarkar et al. [43] (2004) | Choledocolitiasis    | Yes        | 10 days           | Abdominal Pain, Anemia, Nausea and Pyrexia | No      | Computed Tomography                  | Right Lobe (Segment V and VI) | Percutaneous Drainage     | No    |
| Chi et al. [26] (2004) | Choledocolitiasis    | Yes        | 5 h               | Abdominal Pain and Anemia                | Yes     | Computed Tomography                  | Right Lobe        | Embolization               | No    |
| Horn et al. [27] (2004) | Pancreatic Adenocarcinoma | Yes       | 48 h              | Abdominal Pain and Anemia                | No      | Computed Tomography                  | Right Lobe        | Conservative              | No    |
| Ertugrul et al. [13] (2006) | Hilar Cholangiocarcinoma | Yes     | 48 h              | Abdominal Pain, Anemia and Pyrexia       | —       | Computed Tomography and Ultrasoundography | Right Lobe (Segment V) | Conservative              | No    |
| Bhati et al. [34] (2007) | Choledocolitiasis    | Yes        | —                 | Abdominal Pain and Hypotension           | Yes     | Computed Tomography                  | Right Lobe        | Percutaneous Drainage     | No    |
| Del Rossi et al. [44] (2007) | Choledocolitiasis    | Yes        | 48 h              | Abdominal Pain, Anemia and Hypotension   | No      | Computed Tomography                  | Right Lobe        | Conservative              | No    |
| Papachristou et al. [45] (2007) | Hilar Cholangiocarcinoma | Yes     | 48 h              | Abdominal Pain, Anemia and Shoulder Pain | —       | Computed Tomography                  | Right Lobe        | Conservative              | —     |
| Petit-Laurant et al. [46] (2007) | Choledocolitiasis    | Yes        | 48 h              | Abdominal Pain, Asthenia and Pyrexia     | No      | Computed Tomography and Ultrasoundography | Right Lobe (Segment VIII) | Percutaneous Drainage     | No    |
| Priego et al. [41] (2007) | Choledocolitiasis    | Yes        | —                 | Abdominal Pain, Hypotension, Nausea, Shoulder Pain and Tachypnea | No      | Computed Tomography                  | Right Lobe        | Surgery                  | No    |
| Cárdenas et al. [32] (2008) | Biliary Fistula after Liver Transplant | Yes | 24 h              | Abdominal Pain and Anemia                | No      | Computed Tomography and Ultrasoundography | Left Lobe         | Conservative              | No    |
| De La Serna - Higuera et al. [47] (2008) | Choledocolitiasis    | Yes        | 48 h              | Abdominal Pain and Leukocytosis          | No      | Computed Tomography                  | Right Lobe        | Percutaneous Drainage     | No    |
| De Mayo et al. [48] (2008) | Ampullary Tumor      | Yes        | 4 h               | Shoulder Pain                             | No      | Computed Tomography                  | Right Lobe        | Conservative              | No    |
| McArthur et al. [33] (2008) | Choledocolitiasis    | Yes        | 12 h              | Abdominal Pain and Leukocytosis          | No      | Computed Tomography                  | Right Lobe        | Conservative              | No    |
| Nari et al. [49] (2009) | Acute Biliary Pancreatitis | Yes     | —                 | Abdominal Pain, Anemia, Nausea Pyrexia, Tachycardia, Tachypnea and Vomits | No      | Computed Tomography and Ultrasoundography | Right Lobe        | Conservative              | No    |
| Yriberry Urena et al. [50] (2009) | Choledocolitiasis    | Yes        | 48 h              | Abdominal Pain, Anemia, Nausea Pyrexia, Tachycardia, Tachypnea and Vomits | No      | Computed Tomography                  | Right Lobe        | Surgery                  | No    |
| Revuelto Rey et al. [51] (2010) | Choledocolitiasis    | Yes        | 6 h               | Anemia                                   | Yes     | Computed Tomography                  | Right Lobe        | Conservative              | No    |
| Saa et al. [52] (2010) | Choledocolitiasis    | Yes        | 24 h              | Hypotension and Upper Gastrointestinal Bleeding | No      | Computed Tomography                  | Left Lobe         | Surgery                  | Yes   |
| Baudet et al. [30] (2011) | Choledocolitiasis    | Yes        | 48 h              | Abdominal Pain, Anemia, Hypotension and Pyrexia | Yes      | Computed Tomography and Ultrasoundography | Right Lobe (Segments VI, VII e VIII) | Embolization and Surgery | No    |
| Del Pozo et al. [12] (2011) | Choledocolitiasis    | Yes        | 5 days            | Abdominal Pain and Anemia                | No      | Computed Tomography                  | Right Lobe (Segment VIII) | Percutaneous Drainage     | No    |
| Manikam et al. [53] (2011) | Choledocolitiasis    | Yes        | 14 h              | Abdominal Pain, Pyrexia and Thoracic Pain | No      | Computed Tomography                  | Right Lobe (Segments V e VI) | Percutaneous Drainage     | No    |
| Pérez - Legaz et al. [40] (2011) | Choledocolitiasis    | Yes        | 2 h               | Abdominal Pain, Anemia, Hypotension, Tachycardia and Tachypnea | No      | Computed Tomography                  | Right Lobe (Segment VIII) | Percutaneous Drainage     | No    |
| Author (Year)                  | ERCP Indication        | Guidewire | Symptoms Onset Time | Sings and Symptoms                  | Rupture | Diagnosis Method                  | Hematoma Location | Treatment                                    | Death |
|-------------------------------|------------------------|-----------|--------------------|-------------------------------------|---------|-----------------------------------|-------------------|---------------------------------------------|-------|
| Shah et al. [54] (2011)       | Benign Anastomotic Stenosis | Yes       | —                  | —                                   | No      | —                                | —                | Conservative                                | No    |
| Weilert et al. [55] (2011)    | Choledocolithiasis     | Yes       | 24 h               | Abdominal Pain                      | No      | Computed Tomography              | —                | Conservative                                | No    |
| Bartolo Rangel et al. [56] (2012) | Choledocolithiasis    | —         | 24 h               | Acute Abdomen and Shock             | Yes     | Thoracic Radiography and Intraoperative Computed Tomography | —                | Surgery                                     | Yes   |
| Orellana et al. [11] (2012)  | Ampullary Tumor        | —         | 4 h                | Shoulder Pain                       | No      | Computed Tomography              | Right Lobe        | Conservative                                | No    |
|                               | Biliary Stent Exchange | —         | 2 h                | Abdominal Pain, Hypotension and Tachycardia | Yes     | Computed Tomography              | Right Lobe        | Embolization and Percutaneous Drainage      | No    |
| Fei et al. [4] (2013)         | Choledocolithiasis     | Yes       | 2 h                | Pyrexia                             | No      | Computed Tomography              | Right Lobe        | Percutaneous Drainage                       | No    |
| Klimová et al. [28] (2013)   | Choledocolithiasis     | Yes       | 6 h                | Abdominal Pain and Anemia           | No      | Computed Tomography              | Right Lobe        | Percutaneous Drainage                       | No    |
| Oliveira Ferreira et al. [57] (2013) | Choledocolithiasis | Yes       | 10 days            | Abdominal Pain and Anemia           | No      | Computed Tomography and Ultrasonography | Right Lobe        | Percutaneous Drainage                       | No    |
| Patil et al. [58] (2013)      | Choledocolithiasis     | Yes       | 48 h               | Abdominal Pain                      | No      | Computed Tomography and Ultrasonography | Right Lobe        | Percutaneous Drainage                       | No    |
| Carrica et al. [59] (2014)   | Choledocolithiasis     | Yes       | 72 h               | Abdominal Pain and Anemia           | No      | Magnetic Resonance Imaging and Ultrasound Computed Tomography | Right Lobe (Segments VII and VIII) | Percutaneous Drainage                       | No    |
| Yoshi et al. [60] (2014)      | Choledocolithiasis     | —         | 30 h               | Abdominal Pain                      | No      | Computed Tomography              | Right Lobe        | Conservative                                | No    |
| González-López et al. [61] (2015) | Benign Choledocotransfer | Yes       | 72 h               | Abdominal Pain, Anemia, Hypotension and Peritonitis | Yes     | Computed Tomography              | Right Lobe        | Surgery                                     | Yes   |
| Zizzo et al. [35] (2015)      | Choledocolithiasis     | Yes       | 24 h               | Abdominal Pain, Anemia, Hypotension and Shoulder Pain | No      | Angiography and Computed Tomography | Right Lobe        | Embolization                                | No    |
| Curvale et al. [62] (2016)    | Papillary Adenoma      | Yes       | 1 h                | Abdominal Pain, Anemia, Chills, Hypotension and Shoulder Pain | Yes     | Computed Tomography              | Right Lobe        | Surgery                                     | No    |
| Ding Shi et al. [63] (2016)   | Choledocolithiasis     | Yes       | 16 h               | Abdominal Pain and Anemia           | No      | Computed Tomography              | Right Lobe        | Conservative                                | No    |
| Fiorini et al. [64] (2016)    | Choledocolithiasis     | Yes       | 8 h                | Abdominal Pain and Pyrexia          | No      | Computed Tomography              | Left Lobe         | Percutaneous Drainage                       | No    |
| Kilic et al. [65] (2016)      | Choledocolithiasis     | Yes       | 12 h               | Abdominal Pain, Anemia, Fatigue and Hypotension | Yes     | Computed Tomography and Ultrasonography | Right Lobe and Left Lobe | Percutaneous Drainage                       | No    |
| Kisaoglu et al. [66] (2016)   | Choledocolithiasis     | Yes       | 2 h                | Abdominal Pain and Right Pleural Effusion | No      | Thoracic Computed Tomography     | Right Lobe        | Surgery                                     | No    |
| Author (Year) | ERCP Indication | Guidewire | Symptoms Onset Time | Signs and Symptoms | Rupture | Diagnosis Method | Hematoma Location | Treatment | Death |
|--------------|-----------------|-----------|---------------------|--------------------|---------|-----------------|-------------------|-----------|-------|
| Servide et al. [37] (2016) | Choledocolitiasis | – | 15 days | Abdominal Pain | No | Computed Tomography | Right Lobe (Segments IV to VIII) | Conservative | No |
| Solmaz et al. [67] (2016) | Choledocolitiasis | Yes | 6 h | Abdominal Pain, Back Pain, Breathing Acidosis, Pyrexia and Shoulder Pain | No | Computed Tomography | Right Lobe | Conservative | No |
| Tamez et al. [68] (2016) | Choledocolitiasis | Yes | 12 h | Abdominal Pain and Anemia | Yes | Ultrasound and Upper Digestive Endoscopy Computed Tomography | Right Lobe | Embolization | No |
| Zappa et al. [36] (2016) | Choledocolitiasis | Yes | 12 h | Abdominal Pain, Anemia, Hypotension and Tachycardia | No | Ultrasoundography Computed Tomography | Right Lobe | Conservative | No |
| Zela et al. [69] (2016) | Choledocolitiasis | – | 10 days | Abdominal Pain | No | Ultrasoundography Computed Tomography | Right Lobe | Conservative | No |
| Corazza et al. [14] (2017) | Choledocolitiasis | Yes | 2 h | Abdominal Pain and Anemia | No | Ultrasoundography Computed Tomography | Right Lobe | Conservative | No |
| Del-Moral-Martinez et al. [5] (2017) | Choledocolitiasis | – | 6 h | Abdominal Pain, Anemia, Hypotension and Tachycardia | No | Computed Tomography | Left Lobe and Right Lobe (Segment III) | Conservative | No |
| De La Maza et al. [70] (2018) | Choledocolitiasis | – | 7 days | Abdominal Pain, Anemia and Hypotension | No | Ultrasoundography Computed Tomography | Right Lobe | Conservative | No |
| Imperatore et al. [71] (2018) | Benign Biliary Stenosis and Biliary Stent Exchange | Yes | 2 h | Abdominal Pain, Pyrexia and Thoracic Pain | Yes | Computed Tomography | Right Lobe | Surgery | No |
| Soler Huanes et al. [72] (2018) | Choledocolitiasis | – | – | Abdominal Pain and Anemia | No | Computed Tomography | Right Lobe | Percutaneous Drainage | No |
| Yang et al. [73] (2018) | Choledocolitiasis | Yes | 96 h | Abdominal Distension, Abdominal Pain, Anemia and Pyrexia | Yes | Computed Tomography | Right Lobe | Percutaneous Drainage and Surgery | Conservative | No |
| Lavall da Silva et al. [74] (2019) | Duodenal Papilla Stenosis | – | 9 days | Abdominal Pain, Anemia and Jaundice | No | Computed Tomography | Right Lobe (Segments V, VI, VII and VIII) | Conservative | No |
| Sommariva et al. [75] (2019) | Choledocolitiasis | Yes | 48 h | Abdominal Pain and Anemia | No | Computed Tomography | Right Lobe (Segments VI, VII and VIII) | Conservative | No |
| Sotelo et al. [76] (2019) | Choledocolitiasis | Yes | 96 h | Abdominal Pain and Dyspnea | No | Computed Tomography | Right Lobe (Segments IV and VII) | Percutaneous Drainage | No |
| Villavicencio et al. [77] (2019) | – | Yes | 48 h | Abdominal Pain, Anemia and Hypotension | No | Computed Tomography | Right Lobe (Segments IV and VII) | Percutaneous Drainage | No |
| Case Report | – | – | 15 days | Abdominal Pain and Anemia | No | Yes | CT | Right Lobe (Segments VI, VII and VIII) | Conservative | No |

**Legend:**
- ERCP: Endoscopic Retrograde Cholangiopancreatography
- CT: Computed Tomography
5. Conclusion

Hepatic subcapsular hematoma is a potentially fatal post-ERCP complication and should be considered as differential diagnosis of symptomatic post-procedure cases.

Declaration of Competing Interest

No conflicts of interest relevant to this article.

Sources of funding

At our own expenses.

Ethical Approval

Ethics approval: Santa Casa de São Paulo Ethics and Research Committee in Reference number: 0897129.0.0000.5479.

Consent

Written informed consent was not obtained from the patient. The head of our medical team has taken responsibility that exhaustive attempts have been made to contact the family and that the paper has been statistically anonymised not to cause harm to the patient or their family. A copy of a signed document stating this is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Luca G A Rivetta, conceptualization, Validation, Writing - Original Draft : Caroline P C Ferreira, Methodology, Validation ; João F V Carvalho, Formal analysis, Data Curation ; Renata Y L Komiichi, Data Curation, Software, Writing - Review & Editing, Supervision ; Victor K F Kawamoto, Data Curation, Software ; Jose C Assef, Writing - Review & Editing, Supervision ; Mauricio A Ribeiro, Methodology, Writing - Review & Editing, Supervision, Project administration.

Registration of Research Studies

Case reports that are not first-in-man study already approved in Ethics Committee.

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