



Segment 3 Bile Duct Injury, During Endoscopic Retrograde Cholangiography: A Rare Case Report

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Abstract

Injury to duodenum and common bile duct is a potentially life-threatening complication of endoscopic retrograde cholangiography (ERC) and sphincterotomy. Here we report, segment 3 bile duct of liver during therapeutic ERC, that we diagnosed by peroperative trans-cystic cholangiogram. This was successfully managed by CBD exploration, duct repair and T tube drainage. A 28-year female with antecedent history of intermittent biliary colic for one year and jaundice for 7 days, she evaluated in local centre with ultrasonography abdomen which revealed cholelithiasis with choledocholithiasis for that she underwent ERCP which was unsuccessful to retrieve the stone, post ERCP she started upper abdomen pain which was associated with fever, frequent vomiting and multiorgan failure, in view of perforation peritonitis she underwent exploratory laparotomy, Lavage and air cholangiogram via cystic duct after cholecystectomy which revealed bile leak from segment 3 duct on liver surface which was managed with CBD exploration, T-tube drainage and repair of bile leak on liver surface with prolene 3-0. Patient tolerated oral sips on 1st postoperative day and discharge on second postoperative day, he has no complained or sequel at 3,6,12 months in postoperative follow up. As number of endoscopic intervention increased for hepatobiliary diseases the unusual hepatobiliary sites injury also occurs and these injury easily missed, so that high degree of suspicion is paramount important for diagnosis and successful treatment.

Keywords: Post ERCP bile duct injury, Choledocholithiasis, Bile duct injury.

Introduction

Recently the indications for endoscopic retrograde cholangiopancreatography (ERCP) have decreased significantly; however, endoscopic biliary sphincterotomy (ES) has become a common procedure worldwide, reported complication rates are ranging from 7.0% to 11% [1, 2, 3]. According to one Italian study the most common complications of ERC and endoscopic sphincterotomy were pancreatitis, cholangitis, hemorrhage and duodenal perforation, study also

shown major complications in 4.0% of all procedures and incidence of moderate to severe pancreatitis in about 1.3%. Complications were mostly associated with the therapeutic procedures (5.4% vs 1.38%)^[4]. Here we report peripheral segment 3 duct injury of left lobe of liver which has never been reported before, occurred at very unusual site. This was diagnosed preoperative with cholangiogram and treated successfully by exploratory laparotomy and T-tube drainage.

Case Report

A 28 year old female presented to us with antecedent history of biliary colic for one year and jaundice for 7 days, no other symptoms like fever, pruritus, melena, gastrointestinal bleed. For above symptoms she was evaluated at local centre with abdominal ultrasonography and found to have cholelithiasis with choledocholithiasis. She underwent for therapeutic ERC which revealed normal papilla, selective CBD cannulation followed sphincterotomy done and ~10-12 mm balloon sweep, however, stone could not be retrieved. Post ERC she started pain in upper abdomen, which was continuous, pricking type with left shoulder radiation, progressive in intensity, not relieved by analgesics. Pain was also associated with frequent episodes of bilious vomiting and high grade fever with chills for 2 days, she was also had features of multiorgan failure like respiratory distress and decreased urine output. She was referred to us on 6th postoperative day of procedure. On admission she was dehydrated, febrile with tachypnoea (RR-32), tachycardia (P-140/min), however, blood pressure was well maintained (BP-130/70 mm Hg) without any inotropic support. On abdominal examination: there was diffuse tenderness with guarding in whole of upper abdomen with presence of shifting dullness. On blood evaluation there was leukocytosis. USG Abdomen suggestive of mild bilobar IHBRD and moderate ascites with presence of septations. USG guided fluid was aspirated which was bilious and in view of biliary peritonitis she was not subjected to any cross sectional imaging and directly taken up for emergency surgery. She underwent exploratory laparotomy, peritoneal lavage done about 2 litres of bile was sucked out and after cholecystectomy, air cholangiogram done via cystic duct which reveal air leak on surface of left lobe liver findings segment 3 duct leak was confirmed by conventional cholangiogram (**Fig 1**). Injury was managed by CBD exploration and by pushing palpable single CBD stone in to the duodenum and followed by T-tube drainage and repair of bile

leak by on segment 3 surface of liver with prolen 3-0. On 7th postoperative day she has mild bile leak from T-tube insertion site (**Fig 2**) which was managed conservatively by IV antibiotics and wound manager application. In last 1 year follow up she has no complains.

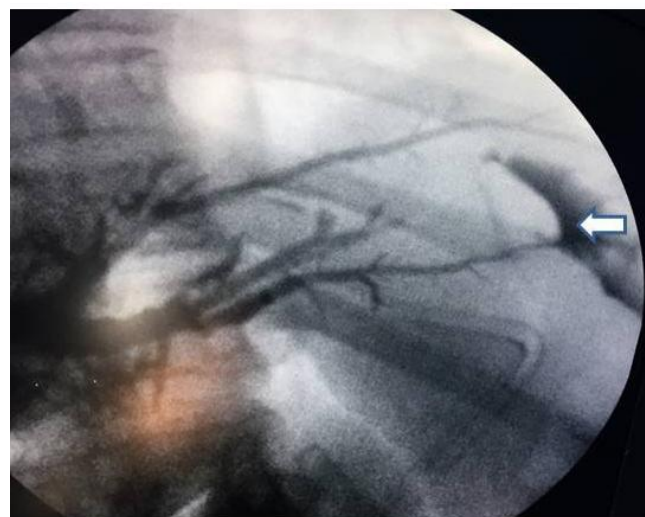


Fig 1 Per-operative cholangiography showing leak dye on surface of left lobe of liver, corresponding to segment 3, indicated with white arrow.



Fig 2 Showing 7th postoperative day mild bile leak from T-tube insertion site.

Discussion

In present era endoscopic intervention in form of ERC and ES have important role in management of benign and malignant hepatobiliary diseases, however, this also related with moderate to severe complications which leads to life threatening

complications, reported rate of complication is about 7%-11%. Most common complications are bleeding, cholangitis, pancreatitis, bile duct and duodenal injuries. Few study shown complications were more commonly seen in therapeutic indications (>90%). A risk factor for post-ERCP perforation is sphincterotomy, specially in patients with papillary stenosis, as well as precut papillotomy, old age, dilated CBD, long duration of procedure have higher risk of injury . Multicentric prospective study which has shown overall complication rate 4.95% of cases, pancreatitis was most common complication followed by hemorrhage (1.13%), cholangitis (0.57%), perforation during 0.57% ES procedure and death occurred in 0.12% of cases. The reported rate of injury to bile duct, pancreatic duct, and duodenum was less 1% of patients undergoing to ERCP/ES^[5,6,7]. Mostly these injury were associated with therapeutic procedure (>90%),^[7] and usually occurred during manipulation of guide wire or sphincterotome. Post ERCP intraperitoneal free air, could observed in 13%-29% cases due to insufflation of compressed gas during procedure^[8,9]. Complications related to these procedure are classified as mild if hospital stay is less than or equal to 3 nights, moderate if hospital stay is between 4 to 10 night and sever if hospital stay is for 10 or more than days^[10]. A significant injuries which occurred during ERC, leads to development of an collection of bile (biloma) and patients usually present with abdominal pain, nausea, vomiting, sepsis and multiorgan failure. Nearly two decades ago, mortality of patients with endoscopic sphincterotomies associated perforation approached 16%, however, more recent literature suggests that mortality is now much lower in between 5% and 10%, this may due, recently peoples adopted a more conservative approach towards retroperitoneal perforations by keeping patients nil per oral, per-cutaneous drainage of collection and broad spectrum antibiotics. To achieved the success of conservative management regarding these injury,

it is advisable that the all patient should be evaluated with CECT with positive oral contrast in right lateral position (to delineate duodenum better) specially. Major principle for management of ERC perforation as any other perforation are control of sepsis and source control with repair of primary site with or without diversion. In our case, patient present to us with biliary peritonitis could be classified as Howard type 1 or Stapfer type 3 perforation (guide wire related injury in the hepatic parenchyma) with biliary peritonitis, patient was taken for emergency exploratory laparotomy after suction of all bile, lavage and complete kocherization we could not be found site injury, to know the site cholecystectomy and air cholangiogram was performed as a part of procedure, which make the perception of air leak somewhere near between GE junction or left lobe of liver just below the diaphragm, however, air leak could not seen on air insufflation by Ryle tube which excluded any associated oesophageal and stomach injury and segment 3 bile duct injury confirmed with conventional cholangiogram. Patient was managed by distal clearance and closure of CBD over T Tube and primary closure of site of leak. Author also advocate preoperative air leak test in all those patient in whom exact source of leak could not be found even after kocherisation, so air leak test should be done through cystic duct stump to demonstrate the site of leak. we also advocate a repeat dose of antibiotic during this procedure, as there is cholangio-venous reflux, which may cause sepsis also.

Conclusion

As number of endoscopic intervention increased for hepatobiliary diseases the injuries of unusual site of hepatobiliary system also increased in frequency, most of time these injuries missed preoperatively even difficult to diagnosed during exploration, so that high degree of suspicion is paramount important for diagnosis and successful treatment and preoperative transcystic duct air

cholangiogram found to be useful tool in this situation.

Acknowledgment

I wish to thank Prof V.K Kapoor, Department of Surgical Gastroenterology, Sanjay Gandhi Postgraduate Institute of Medical Science, Lucknow, India, guiding us for preparing case report manuscript.

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Abbreviations

ERCP- Endoscopic Retrograde Cholangiopancreatography, **ES**- Endoscopic Biliary Sphincterotomy, **CBD**- Common Bile Duct.