

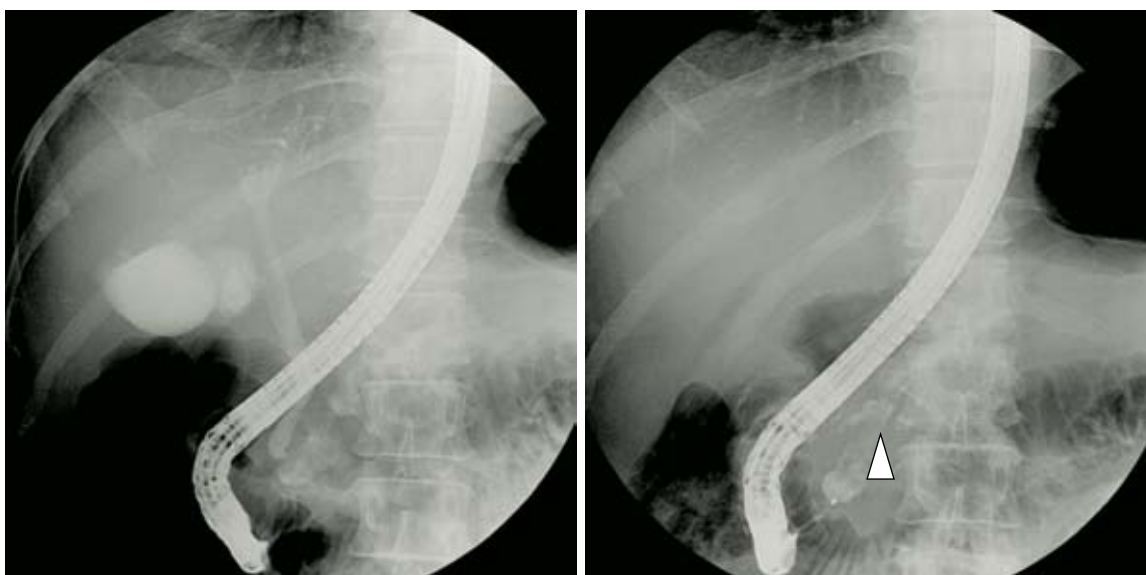
## Case 17

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 59-year-old male with alcoholic cirrhosis was found to have a pancreatic head mass during preoperative evaluation for cataract surgery.

ERCP was done as shown.

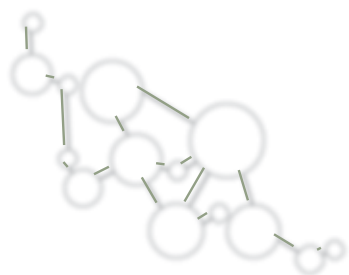
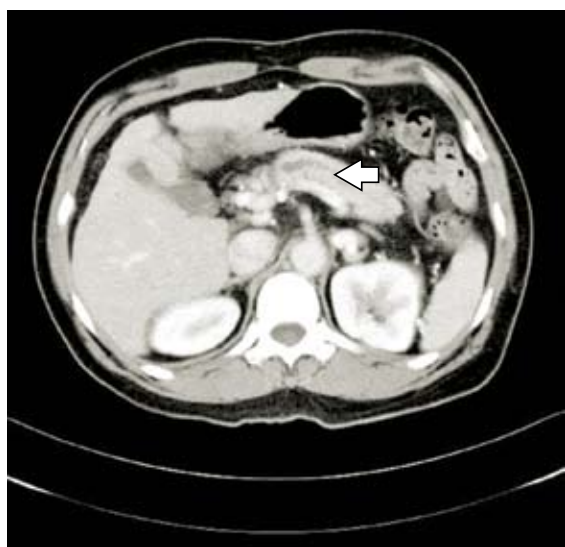


CT upper abdomen was done as shown.

CT abdomen revealed multiloculated cystic lesion at pancreatic head (arrow head) with no enhancement and significant dilatation of main pancreatic duct (arrow). The endoscopic view showed mucin plugged at the papillary orifice.

The ERCP showed dilated pancreatic duct from head to genu of pancreas. There was some amorphous material in the main pancreatic duct at the head region. Body and tail of main pancreatic duct were normal. The diagnosis of intraductal mucinous neoplasm of pancreas (IPMN) was made.

The differential diagnoses are chronic pancreatitis with pancreatic duct stricture and mucinous cystic neoplasm of pancreas (MCN) with intruding lesion into the main pancreatic duct.



## Discussion

Intraductal papillary mucinous neoplasm (IPMN) is a spectrum of neoplasia in the pancreatic duct epithelium characterized by cystic dilation of the main and/or branch pancreatic duct<sup>1</sup>. IPMN is usually located in the head of pancreas, and often multifocal or diffuse. The risk of malignancy increases with age, presence of symptoms, involvement of the main pancreatic duct, dilation of the main pancreatic duct over 10 mm, the presence of mural nodules<sup>2</sup>. Current recommendation is to resect all main duct and mixed variant IPMN as long as the patient is a good surgical candidate with a reasonable life expectancy<sup>3</sup>.

## References

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2. Khalid A, Brugge W. ACG practice guidelines for the diagnosis and management of neoplastic pancreatic cysts. *Am J Gastroenterol* 2007;102:2339-49.
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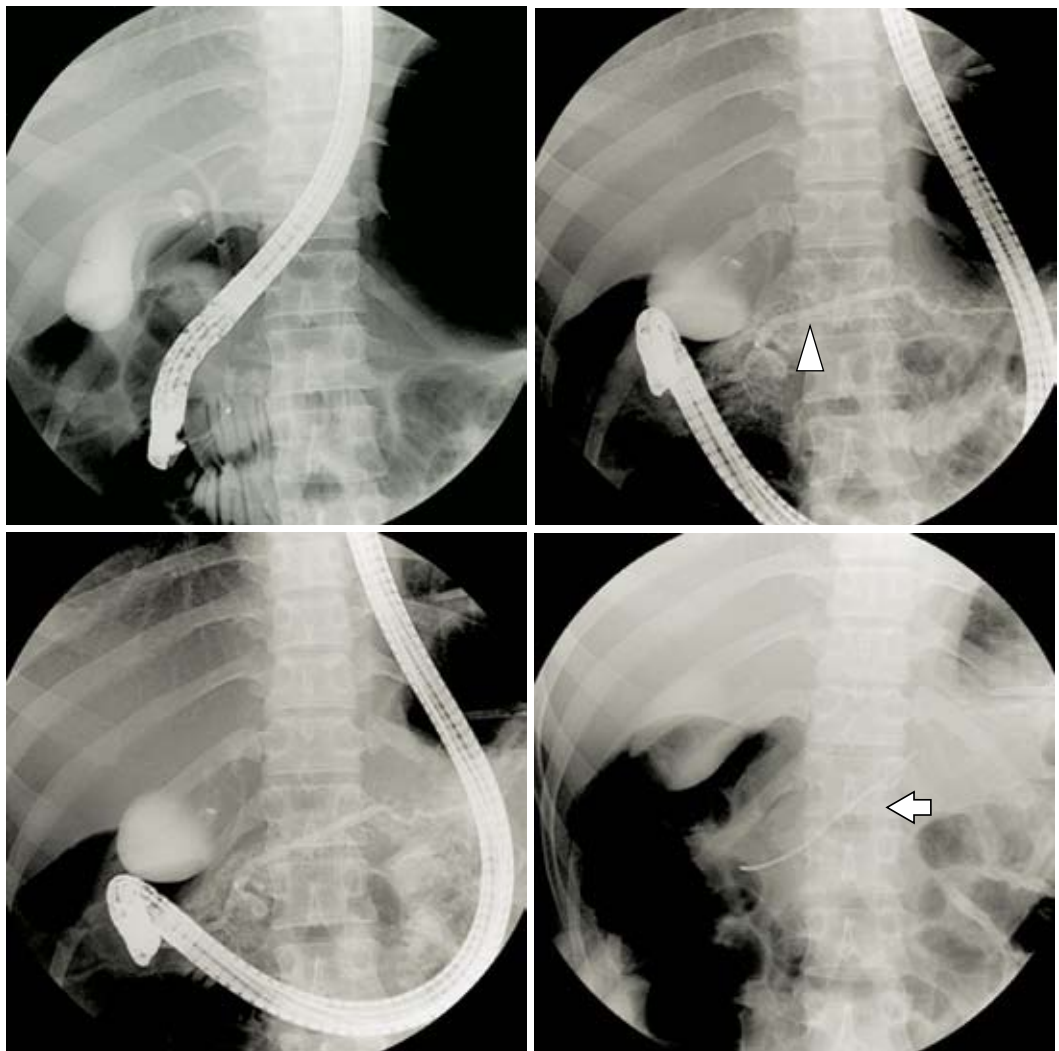
## Case 18

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 20 years old female presented with severe epigastric discomfort for 2 days. She had a history of recurrent pancreatitis.

ERCP was done as shown.



The ERCP showed prominent minor papilla through the endoscopic view and pancreatogram via minor papilla revealed mild dilatation with tortuosity (arrow head). The major papilla was cannulated but failed to demonstrate the ventral pancreatic duct. The cholangiogram was normal. Pancreas divisum was the diagnosis.

The differential diagnoses are other cause of chronic pancreatitis such as hereditary pancreatitis or pancreatic duct obstruction from cancer.

The patient underwent minor papilla sphincterotomy and temporary plastic stent placement (white arrow).

## Discussion

Pancreas divisum presents in approximately 7% of the population, occurs when there is a failure of fusion of the dorsal and ventral pancreatic ducts<sup>1</sup>.

This failure makes the accessory pancreatic duct (Santorini's duct) to become the major drainage channel for the pancreas. ERCP is recommended in patients with pancreas divisum and recurrent pancreatobiliary type pain or at least two or more episodes of idiopathic acute pancreatitis or one episode of severe pancreatitis<sup>2</sup>.

Endoscopic therapy for symptomatic patient consists of minor papilla sphincterotomy with or without dorsal duct pancreatic stenting or stone extraction. Endoscopic stenting is a safe and effective first treatment. Surgery is effective as an adjunctive treatment when endoscopic stenting failure occurs<sup>3</sup>.

## References

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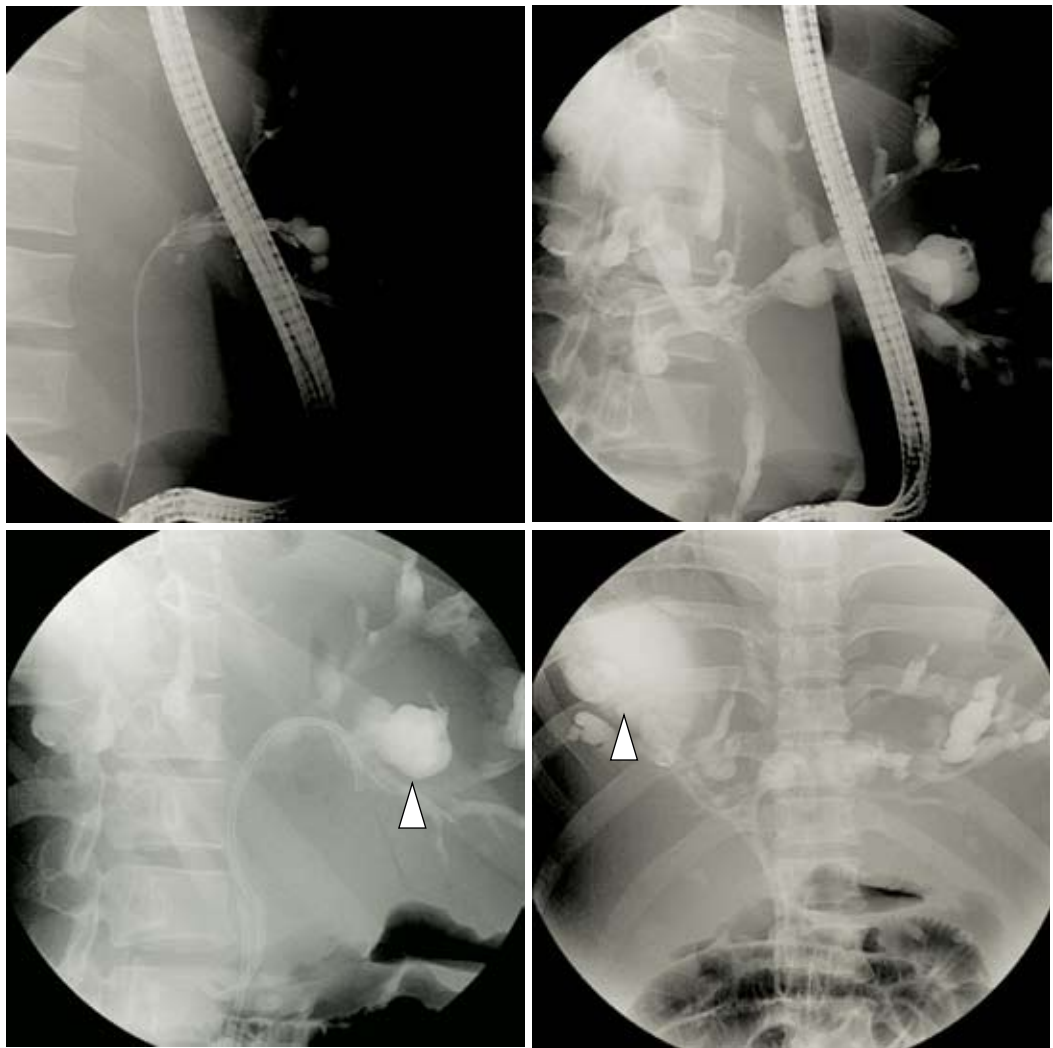
## Case 19

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 25 years old male presented with recurrent fever, jaundice and abdominal discomfort.

ERCP was done as shown.



The ERCP showed purulent bile drainage, large cystic cavity in the right posterior segment of right lobe and smaller cavity in the left segment (arrow head). There were multiple small cystic cavities in both intrahepatic ducts. The common bile duct, common hepatic duct, gall bladder and cystic duct appeared normal. The diagnosis of Calori's disease with cholangitis was made.

The differential diagnosis are sclerosing cholangitis both primary or secondary type with biloma, polycystic liver disease and hydatid cyst of the liver. Of note, PSC is rarely presented as saccular duct dilation and typically more isolated and fusiform duct shape. The hepatic cyst of polycystic liver disease is rarely communicated with the bile ducts.

The patient was treated by bilateral plastic stent insertion to right hepatic duct cavity and left intrahepatic duct.

## Discussion

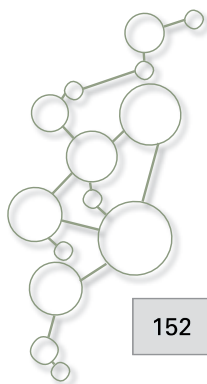
Caroli's disease is a rare congenital condition characterized by nonobstructive saccular or fusiform dilatation of larger intrahepatic bile ducts. The diagnosis of Caroli's disease depends on demonstrating that the cystic lesions are communicate with the biliary tree by various imagings<sup>1</sup>.

Surgery is preferred because the potential for cholangitis, pancreatitis, cholelithiasis and carcinoma can be diminished<sup>2</sup>.

In localized Caroli's disease, liver resection can offer a definitive therapy. In diffuse disease, extended resections or liver transplantation can provide good long-term results<sup>3</sup>.

## References

1. Yonem O, Bayraktar Y. Clinical characteristics of Caroli's disease. World J Gastroenterol 2007;13:1930-3.
2. Kerkar N, Norton K, Suchy FJ. The hepatic fibrocystic diseases. Clin Liver Dis 2006;10:55-71.
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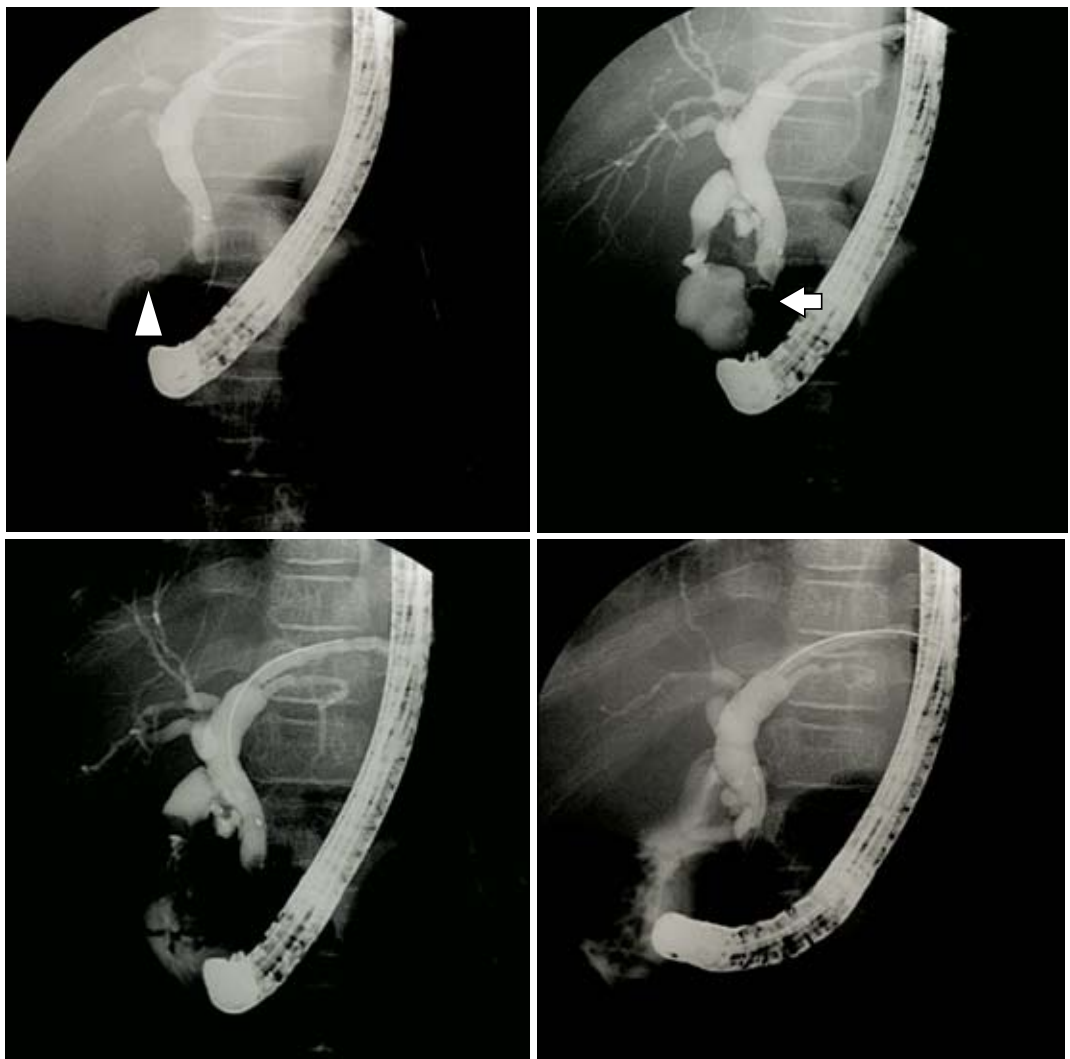
## Case 20

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 20 years old male presented with severe epigastric pain and jaundice. He has underlying of major thalassemia with recurrent hemolysis and underwent splenectomy 7 years ago.

ERCP was done and showed as figure 1-4.



The ERCP showed multiple calcifications in the gallbladder (arrowhead), also there was a filling defect in common bile duct with upstream dilatation of common duct and intrahepatic duct. The diagnosis of common bile duct stone and multiple gallstones was made.

The differential diagnoses are porcelain gallbladder with common bile duct stone.

The patient was treated by standard biliary sphincterotomy and balloon extraction of stone. Surgical consultation for open cholecystectomy due to a past history of splenectomy was done after ERCP.

## Discussion

Common bile duct stones detected in asymptomatic patients, have a high rate of complications if left in situ (approximately 50% of patients will subsequently develop jaundice, cholangitis, biliary colic or pancreatitis)<sup>1</sup>.

CBD stone coexist with gall bladder stones was found in approximately 95% of patients in Western populations. Primary CBD stones are more frequent in Asia<sup>2</sup>.

Stone in patient with frequent hemolysis is mainly made of calcium bilirubinate which is radiopaque<sup>3</sup>.

ERCP is an endoscopic procedure to remove stones from the common bile duct. Early removal of the gall bladder decreases the risk of death or of complications from gall stones<sup>4</sup>.

## References

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2. Lee SH, Hwang JH, Yang KY, Lee KH, Park YS, Park JK, et al. Does endoscopic sphincterotomy reduce the recurrence rate of cholangitis in patients with cholangitis and suspected of a common bile duct stone not detected by ERCP? Gastrointest Endosc.2008;67:51-7
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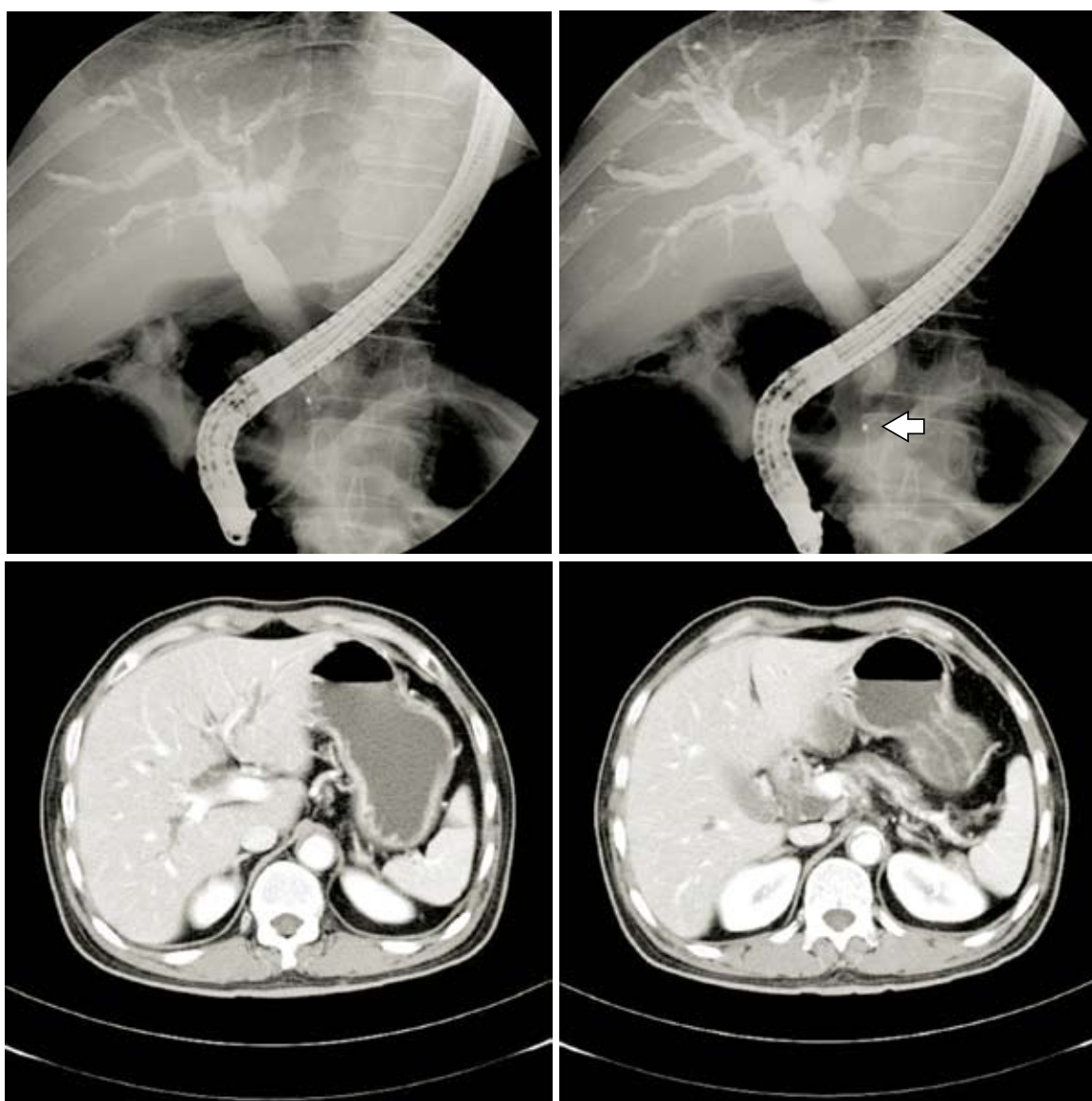
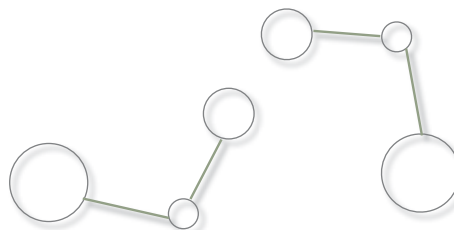
## Case 21

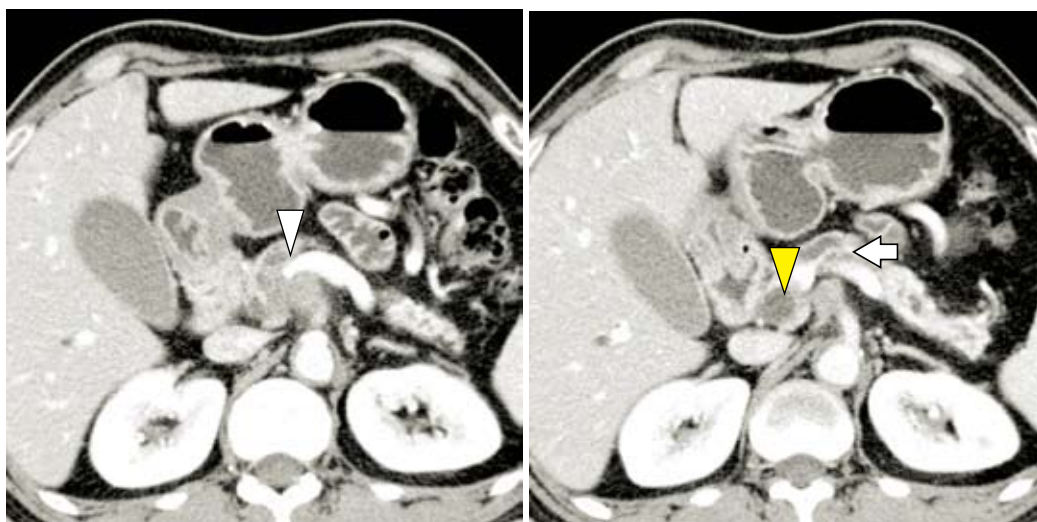
Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 59 years old male presented with epigastric discomfort that increase in severity when lying down for 2 months. He had jaundice for 1 month.

ERCP was done as shown.





CT upper abdomen revealed a mass at pancreatic head (arrow head) with dilatation of pancreatic duct (arrow) and common bile duct (yellow arrow head).

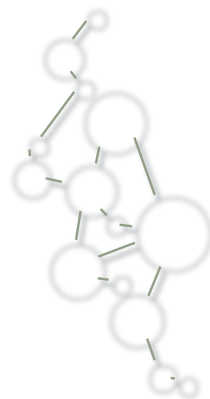
**The ERCP showed** distal common bile duct obstruction with upstream dilatation of common bile duct, common hepatic duct and intrahepatic ducts (arrow). The diagnosis of malignant common bile duct obstruction from pancreatic head cancer was made.

**The differential diagnoses are** chronic pancreatitis or autoimmune pancreatitis with common bile duct stricture.

**The patient was treated by** standard biliary sphincterotomy with double pigtailed stent inserted in across the stricture. Whipple's operation was successfully performed and confirmed as pancreatic head adenocarcinoma with clear margin.

## Discussion

Pancreatic cancer is the fourth leading cause of cancer-related mortality. At the time of diagnosis, only 50% of patients are free of distant metastases and only 20% of these patients have localized disease amenable to curative resection<sup>1</sup>.



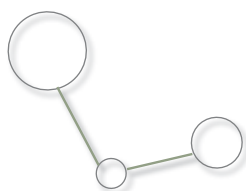
Pancreatoduodenectomy (with or without pylorus preservation) is the most appropriate resectional procedure for tumors of the pancreatic head<sup>2</sup>.

Obstructive jaundice due to invasive pancreatic carcinoma can be relieved by surgery or endoprosthesis insertion<sup>3</sup>.

Endoscopic palliation is better than surgical bypass (same efficacy but lower morbidity, mortality, and hospital stay) in unresectable patients<sup>4</sup>.

## References

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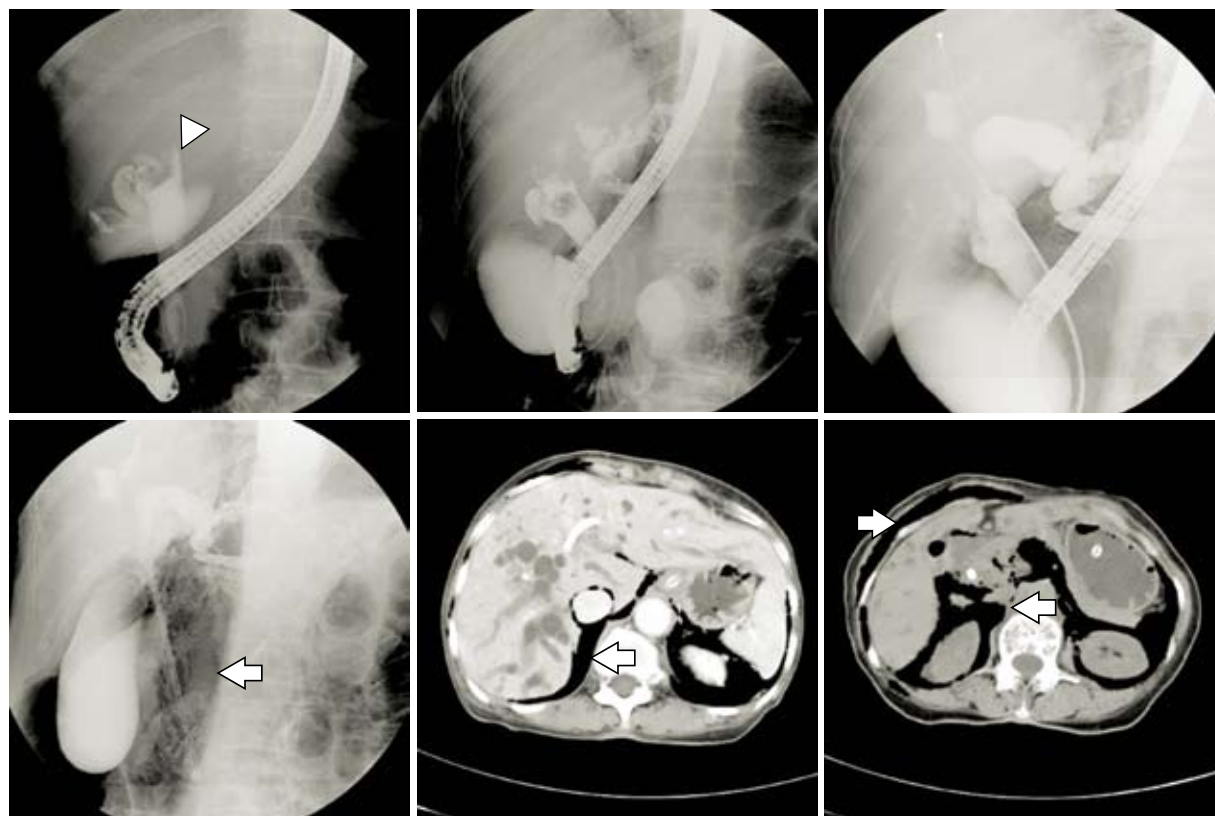
## Case 22

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

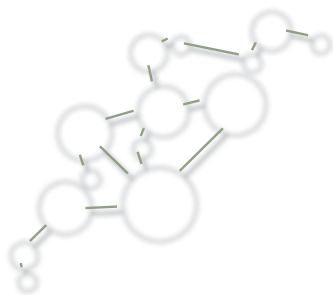
A 70 years old female presented with epigastric discomfort.

ERCP was done and showed as figure 1-4.



The ERCP showed impacted stone in common hepatic duct (arrowhead) with upstream dilatation of bilateral intrahepatic ducts. There was no dilatation of common bile duct. Mirizzi syndrome type IV is the diagnosis.

The patient was treated by a standard biliary sphincterotomy with stone extraction by basket and balloon catheter. There was a small perforation occurred at distal common bile duct while a trapezoid catheter was inserted. This resulted in the detection of free air in retroperitoneal space by fluoroscopic view (arrow). ERCP-related perforation was confirmed. Then the stone removal process was terminated and a plastic stent was inserted in common bile duct to provide biliary drainage. Conservative treatment by gastric and biliary decompressions plus restriction of oral intake was given. The patient improved within two weeks without any further complication. Patient was later underwent repeat ERCP for a complete CBD stone removal at 3 months later.



## Discussion

ERCP-related perforation is rare, occurring in 0.3% to 1.3% of all ERCP procedure. Most perforations are readily apparent by extravasation of air or contrast from the biliary tree or intestinal lumen and delay recognition is associated with a poor outcome<sup>1</sup>.

Risk factors of perforation include suspected sphincter of Oddi dysfunction, age, a dilated bile duct, sphincterotomy, and longer duration of the procedure<sup>2</sup>.

Most patients who have sphincterotomy-related perforations and bile duct injuries related to instrumentation recover fully with conservative treatment. Surgery is only required in large collections, retained stones or hardware, or fail conservative therapy<sup>1</sup>. Therapeutic ERCP may be repeated and has a high success rate in patients whose procedure was initially terminated by endoscopic sphincterotomy related perforation. Optimal duration time for repeat procedure should be at 11 to 15 days after the perforation<sup>3</sup>.

## References

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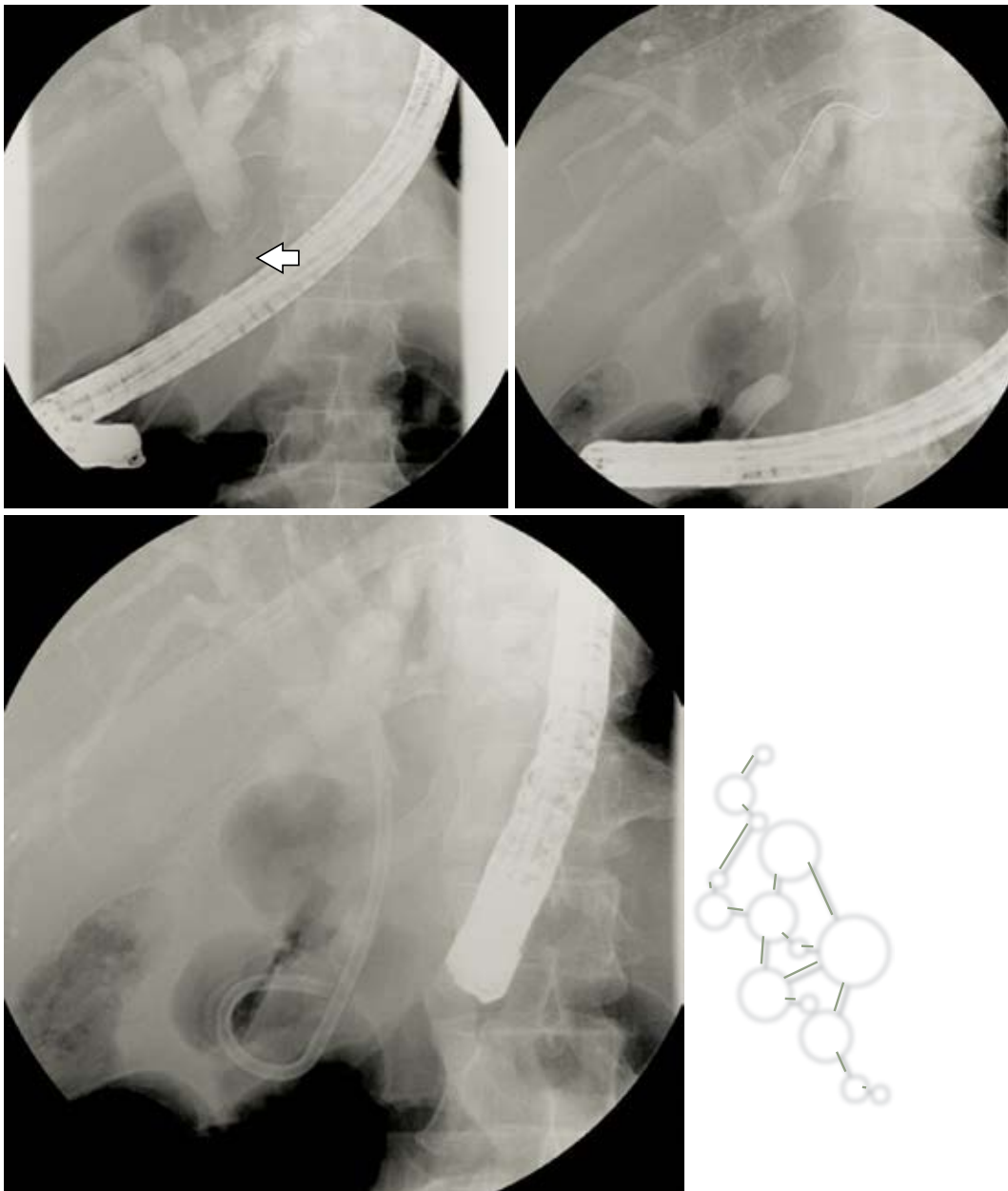
## Case 23

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 60 years old male presented with painless jaundice. He also had weight loss and pruritus.

ERCP was done as shown.



The ERCP showed abrupt narrowing (arrow) at common hepatic duct with upstream dilatation of bilateral intrahepatic ducts. The diagnosis of Bismuth type I hilar cholangiocarcinoma was given.

The differential diagnoses are other benign strictures such as iatrogenic bile duct injuries and stricture secondary to chronic pancreatitis .

The patient was initially treated by a standard biliary sphincterotomy with plastic stent insertion in the common bile duct.

## Discussion

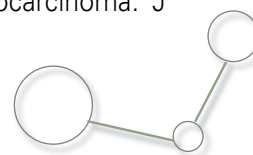
More than 90% of cholangiocarcinomas are adenocarcinomas. More than two third of tumors arise at the confluence of the hepatic ducts (Klaskin tumors)<sup>1</sup>.

Biliary drainage of only 25%-30% of the hepatic parenchyma is required to achieve resolution of jaundice. Patient jaundiced because of Bismuth type I hilar cholangiocarcinoma can receive successful palliative treatment with a single biliary stent<sup>2</sup>.

The outcome of biliary drainage in patients with earlier stages (Bismuth I or II) is better than advanced hilar tumors (Bismuth III or IV)<sup>3</sup>.

## References

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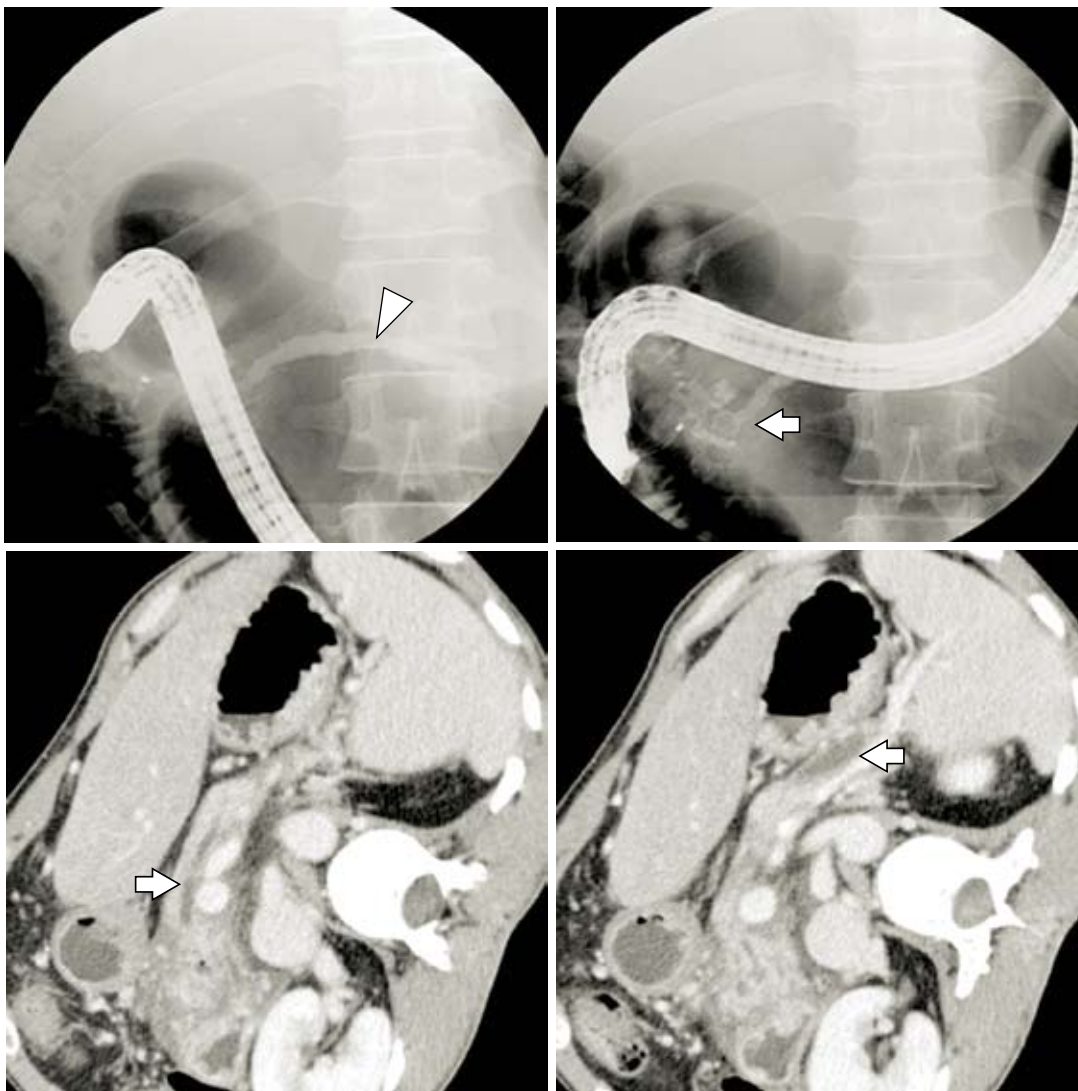
**Case 24**

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 40 years old male presented with epigastric discomfort. He had a history of longtime alcoholic drinking for many years.

ERCP was done as shown.



The ERCP showed deformed duct at pancreatic head with stone (arrow) in the main pancreatic duct with upstream dilatation of the duct (arrow head). Chronic pancreatitis with stone from alcoholic drinking was the diagnosis.

**CT abdomen revealed** heterogeneous density of pancreatic head and uncinate process. There were mild dilatation of proximal pancreatic duct and marked dilatation of duct in pancreatic tail (arrowhead).

**The differential diagnoses are** pancreatic head cancer and IPMN.

## Discussion

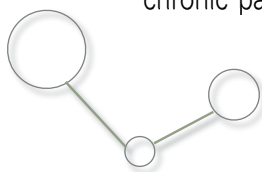
Chronic pancreatitis is an inflammatory condition with poorly understood pathogenesis, multiple etiologies and varied presentations<sup>1</sup>.

When duct dilatation is determined by stenosis or stones close to the papilla, endoscopic therapy without definitive stent might be recommended. The problems of stenting in main pancreatic duct are the need for frequent stent exchanges and the potential ductal alterations from long-standing intraductal pancreatic catheters. Surgery is more effective than endotherapy in long-term pain control<sup>2</sup>.

Modified Puestow procedure is the preferred ductal decompression procedure for chronic pancreatitis and should be considered for patients with a dilated ( $\geq 7$ mm) main pancreatic duct of Wirsung<sup>3</sup>.

## References

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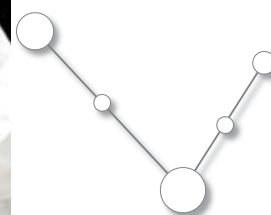
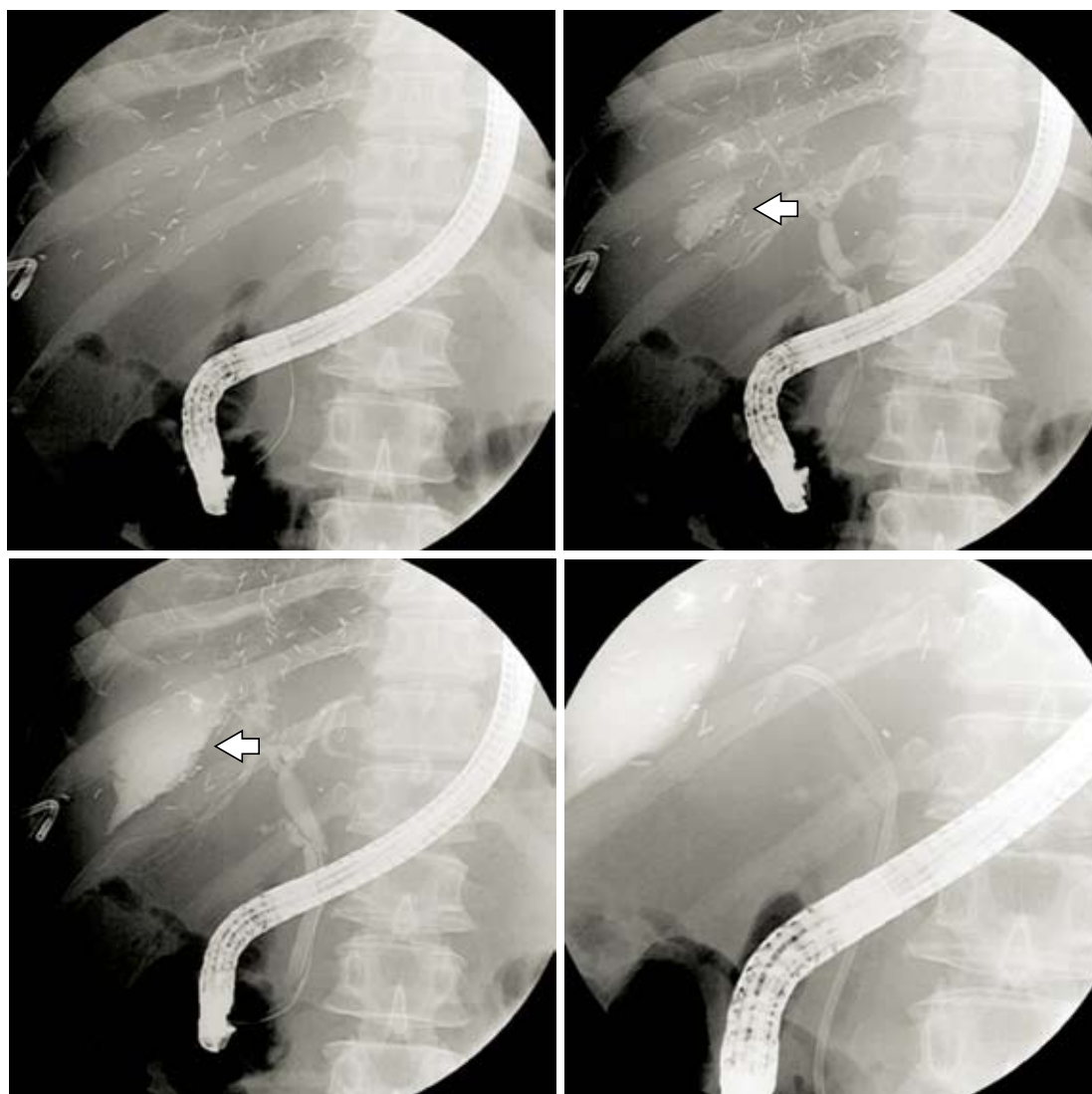
## Case 25

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 66 years old male presented with abdominal discomfort and jaundice after right hepatectomy.

ERCP was done as shown.



The ERCP showed extravasation of contrast at right posterior sector branch. The diagnosis of posthepatectomy biliary leakage was given. Multiple surgical clips were noted.

The patient was treated by a standard biliary sphincterotomy and double pigtail stent was inserted in the right hepatic duct.

## Discussion

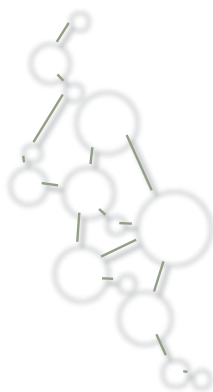
Biliary leakage is one of the common complications after liver and biliary surgery. Bile leakage can originate from biliary-enteric anastomosis, accessory biliary ducts, resected duct stump, bile ducts of Luschka (supravesicular ducts), and cystic duct stump<sup>1</sup>.

Many patients with bile leak become symptomatic at 3 to 6 days after operation. However late presentation up to 90 days has been reported. Abdominal pain is the most common symptom followed by fever, anorexia, malaise, nausea, vomiting and jaundice<sup>2</sup>.

Endoscopic therapy is safe and effective for management of bile leak. Sphincterotomy with endoprosthesis insertion or endoprosthesis insertion alone is equally effective in decompressing biliary system<sup>3</sup>.

## References

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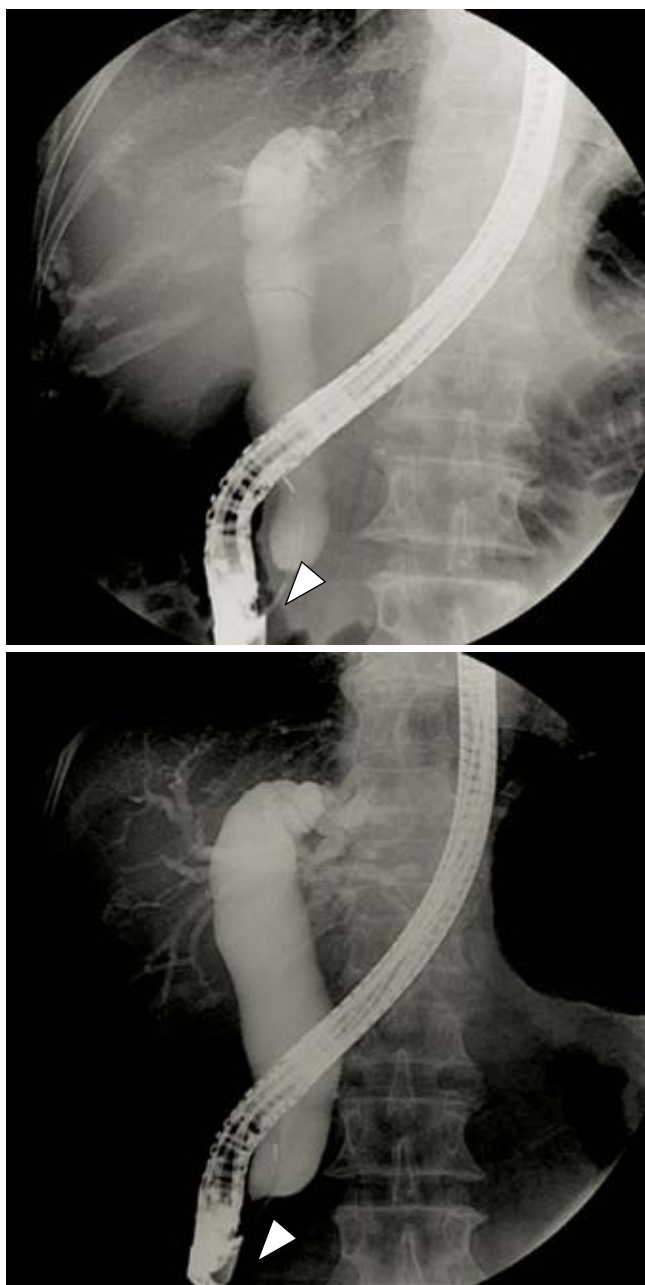
**Case 26**

Danai Limmathurotsakul, MD.

Rungsun Rerknimitr, MD.

A 70 years old female presented with recurrent cholangitis.

ERCP was as shown.



The ERCP showed distal common bile duct narrowing with dilatation of common hepatic duct (arrow head). Endoscopic findings showed papillary stenosis. The diagnosis of papillary stenosis was given. Endoscopic biliary sphincterotomy with balloon sweeping was done.

The differential diagnoses are early cholangiocarcinoma at distal common bile duct or extrinsic compression of common bile duct.

## Discussion

Papillary stenosis is characterized by fixed fibrosis leading to structural outflow obstruction and it is usually secondary to inflammation and fibrosis from the chronic passage of gallstones, episodes of acute pancreatitis, chronic pancreatitis, sclerosing cholangitis, peptic ulcer disease, and malignancy<sup>1</sup>.

MRCP are equal to ERCP for differentiating malignancy from benign cause of stricture. A Lengthy segment of extrahepatic bile duct stricture with irregular margin and asymmetric narrowing suggests cholangiocarcinoma<sup>2</sup>.

Stenosis can be successfully treated with endoscopic sphincterotomy that result in sustained improvement of clinical symptoms and cholestasis<sup>3</sup>.

## References

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