

## Introduction

- Iatrogenic biliary injuries occur in approximately 0.2-0.5% of patients with open cholecystectomy (CCY), whereas the incidence is up to 2.7% in laparoscopic procedures.<sup>1,2</sup>
- Strasberg types A and D post-CCY biliary leak can be treated with endoscopic retrograde cholangiopancreatography (ERCP) with excellent success rates > 90%.
- ERCP interventions can decrease the pressure gradient between the bile duct and duodenum and facilitate transpapillary flow of bile, to allow the leak site to heal.

## Case Report

- An 81-year-old female with dementia, recurrent deep vein thrombosis and coronary artery disease presented to an outside hospital (OSH) with severe abdominal pain, nausea, emesis and was diagnosed with acute cholecystitis (Image A).
- Intraoperatively, a gangrenous perforated gallbladder was found, an open cholecystectomy was performed, and a surgical drain was placed in the gallbladder fossa.
- Post operatively, she complained of worsening abdominal pain and there was persistent high output from her surgical drain. She was referred to our center for ERCP to treat a suspected bile leak.
- ERCP cholangiogram showed a high-grade Strasberg type A biliary leak from the cystic duct (Image B).
- Her major papilla was entirely located within a large duodenal diverticulum. Due to difficulty identifying safe cutting margins within the diverticulum, biliary sphincterotomy was not performed, and a 7 Fr plastic biliary stent was placed which resulted in good flow of bile into the duodenum.
- Post-ERCP the patient felt better, and her surgical drain output decreased. She was discharged.
- 3 days later, she presented to OSH with bile leakage around her drain, vomiting, constipation and abdominal pain.
- Due to recurrent vomiting, an upper gastrointestinal series was performed which excluded a gastric outlet obstruction (Image C).
- Due to lack of available hospital beds, she was finally transferred to our center for repeat ERCP evaluation 2 days later.
- The scout film of her second ERCP showed oral contrast that she had ingested approximately 3 days ago within the proximal jejunum (Image D). She reported no bowel movements while at OSH and thus a diagnosis of ileus was made.
- The biliary stent was found to be patent and in good position, but a persistent high-grade biliary leak remained. Biliary sphincterotomy was performed and an 8mm by 6 cm fully covered self-expanding metal stent (FCSEMS) was placed into the distal common bile duct.
- The patient was started on an aggressive bowel regimen with successful results.
- The surgical drain output diminished quickly over the next few days and subsequently the drain was removed.
- Unfortunately, the patient ultimately passed away in hospice before her follow-up ERCP appointment from other causes.

## Discussion

- Despite successful diversion of bile to the duodenum via a biliary stent, small bowel ileus can increase the pressure gradient across the major papilla, resulting in a persistent biliary leak.
- More aggressive ERCP interventions using FCSEMS, along with aggressive medical treatment of ileus allowed the biliary leak to heal expeditiously.

## References

1. Archer SB, Brown DW, Smith CD, Branum GD, Hunter JG. Bile duct injury during laparoscopic cholecystectomy: results of a national survey. *Ann Surg.* 2001;234(4):549-58; discussion 58-9.
2. Deziel DJ. Complications of cholecystectomy. Incidence, clinical manifestations, and diagnosis. *Surg Clin North Am.* 1994;74(4):809-23.

## Images

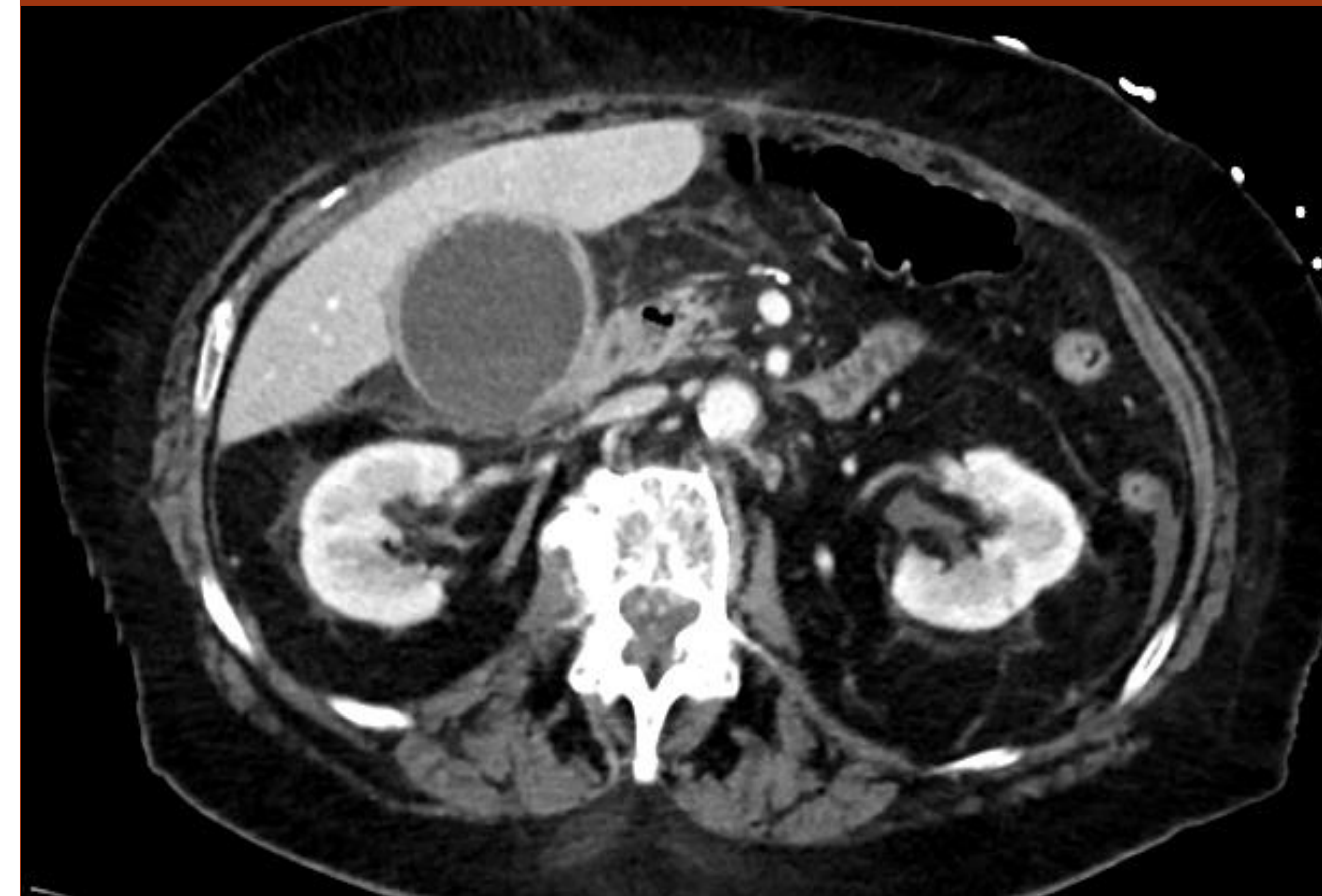


Image A: Acute cholecystitis seen on CT.

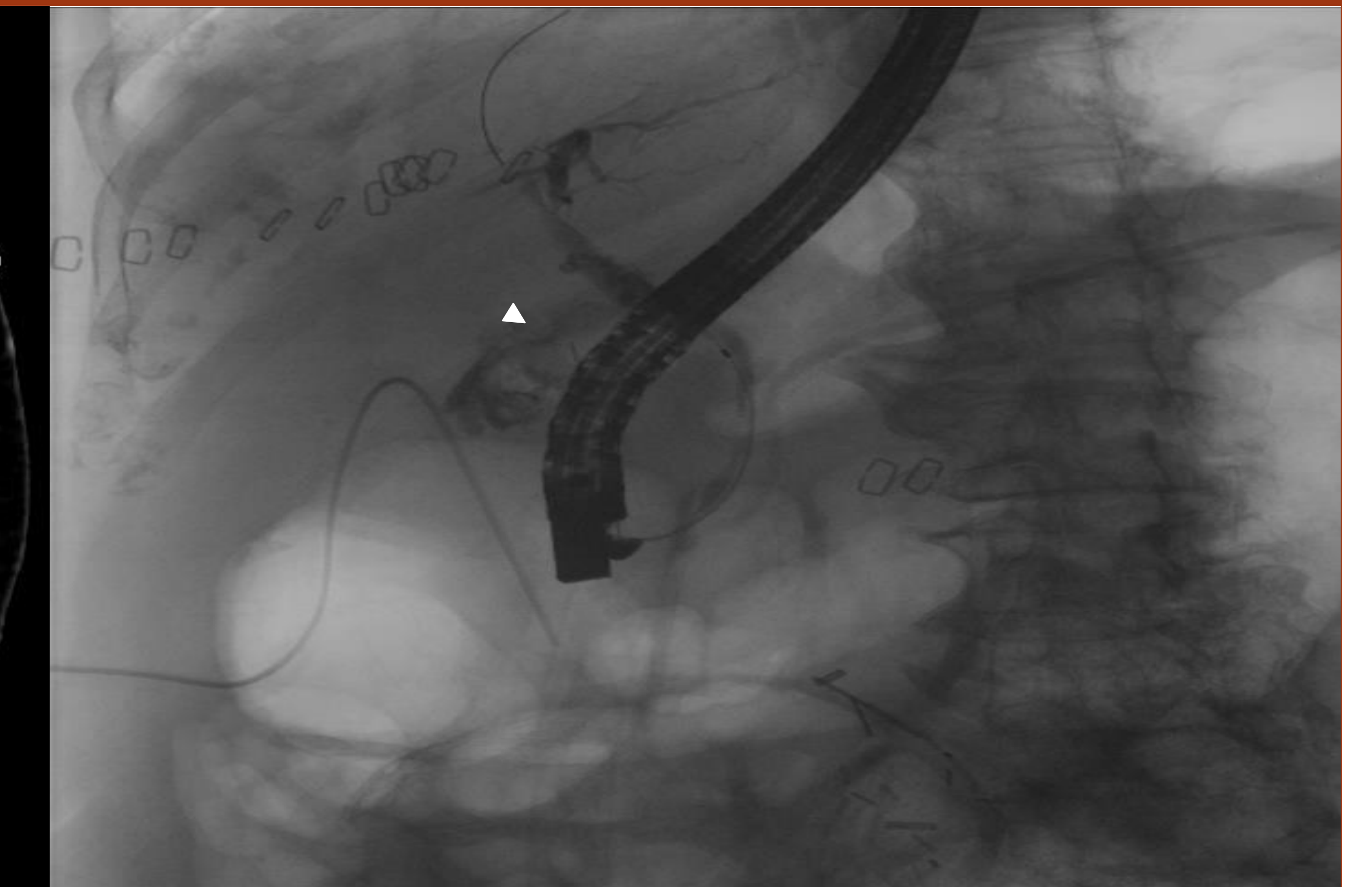


Image B: Contrast extravasation from cystic duct stump before opacification of intrahepatic biliary branches with contrast injection (white arrow).



Image C: Contrast flowing from stomach to duodenum in upper gastrointestinal series. The plastic biliary stent remains in good position.

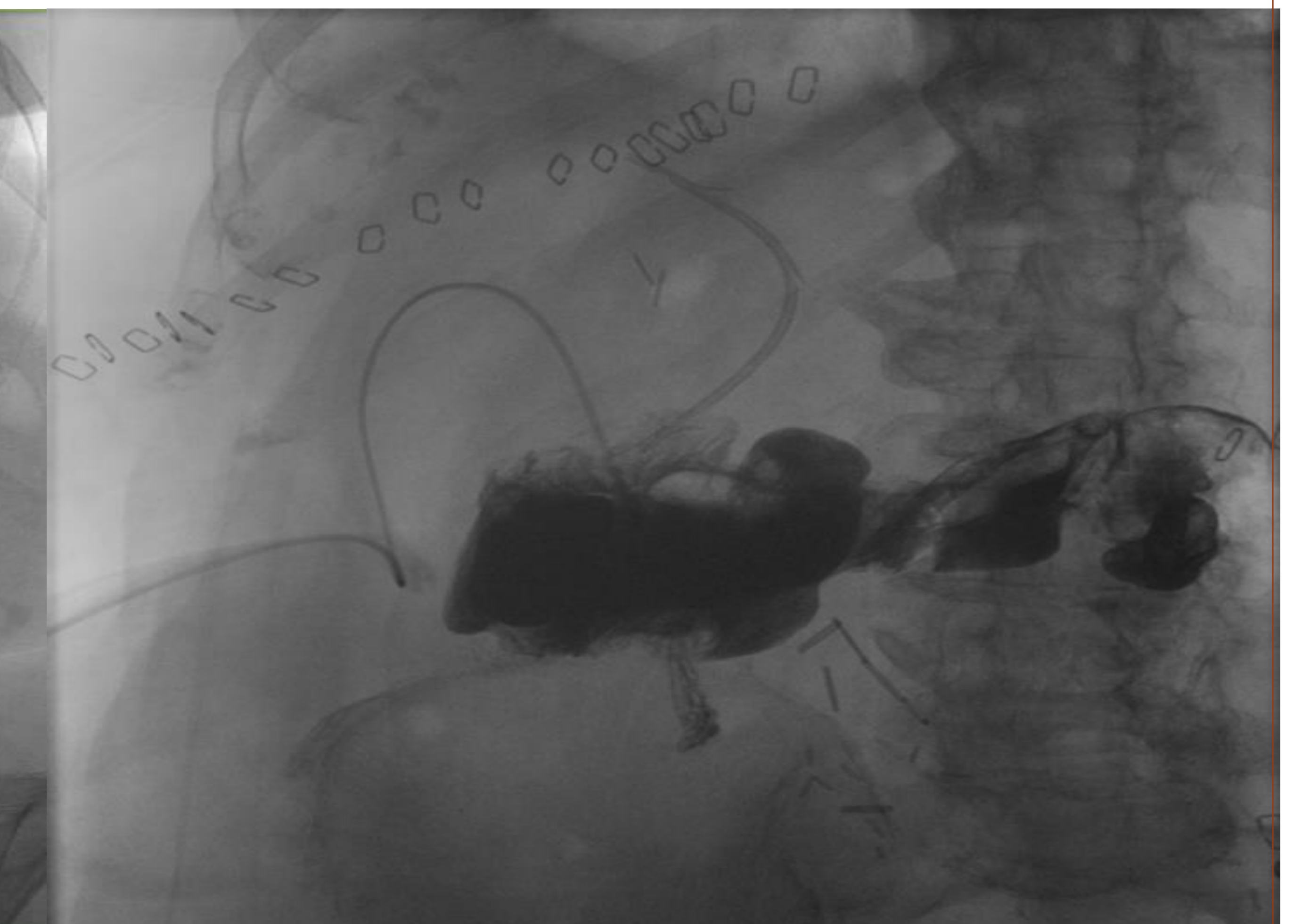


Image D: On scout film of second ERCP, the oral contrast ingested approximately 3 days prior is still visible within the proximal jejunum and the plastic biliary stent remains in good position.