

## Splenic injury complicating ERCP

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### Abstract

Endoscopic retrograde cholangiopancreatography (ERCP) is an invasive procedure which carries a complication rate of 5-10%. Splenic injury is a very rare and potentially lethal complication following ERCP. We report a case of a 64-year-old man with a mass at the pancreatic head and obstructive jaundice, who sustained a splenic injury following ERCP. Six hours after the procedure, the patient presented with epigastric pain and hypotension. The abdominal CT scan revealed splenic hematoma. He was offered surgical treatment. Splenectomy was performed with enterogastrostomy.

**Keywords** Splenic injury, ERCP, splenectomy

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### Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is an invasive procedure used for diagnostic and therapeutic purposes. The procedure itself carries a complication rate of 5-10% [1-3]. The most common complications are acute pancreatitis, perforation and hemorrhage. Splenic injury is a very rare and potentially lethal complication following ERCP. The first splenic injury post ERCP was reported in 1988 by Trondsen [4]; a total of eleven cases have been documented in the literature since then [5].

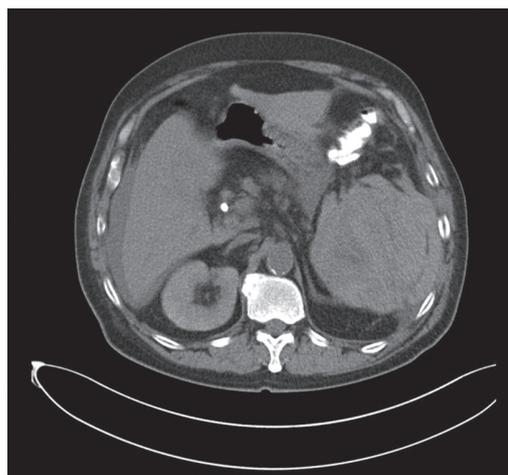
### Case report

We report a case of a 64-year-old man who sustained a splenic injury following ERCP. He was admitted to hospital with obstructive jaundice, and he reported a past medical history of coronary heart disease, right lower pulmonary lobectomy due to lung cancer 5 years previously and nephrotic syndrome. The basic laboratory tests were normal except for liver function tests, which showed a bilirubin level of 12.6 mg/dL (reference level, 0.3-1.2 mg/L), an alkaline phosphatase level of 419 U/L (reference level, 40-129 U/L), and an amylase level of 708 U/L (reference level, 28-128 U/L). His clotting profile was normal.

The abdominal computed tomography (CT) showed

a mass at the head of the pancreas with dilated pancreatic and common bile duct and additionally some paraortic and mesenteric lymph nodes. The CT was performed without intravenous contrast medium due to renal insufficiency. An upper GI endoscopy revealed duodenal stenosis (treated with balloon dilatation) and a deformed ampulla of Vater secondary to the tumor. An ERCP followed which confirmed the above findings and a plastic stent was placed in the common bile duct and draining was achieved.

Six hours after the procedure the patient complained of epigastric pain. He was afebrile with a pulse rate of 85 beats/min and a systolic and diastolic blood pressure of 100 and 70 mm Hg respectively. The physical examination revealed a soft abdomen with mild tenderness over the epigastrium and left upper quadrant without peritoneal signs. The next day (18 h after the procedure) a second CT was performed which showed a homogeneous mass lesion of the left subdiaphragmatic region in keeping with a splenic hematoma (Fig. 1). A hemoperitoneum



**Figure 1** Computed tomography of splenic hematoma

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**Figure 2** Resected spleen with hematoma

and a plastic biliary stent were also present. Laboratory blood tests including complete blood count showed a decrease of the hemoglobin (from 14.1 to 8.0 g/dL) and mild leukocytosis: 11.3 k/mL. Subsequently, an emergency surgical solution was offered to the patient. After entering the peritoneal cavity the following findings were observed: a) rupture at the hilum of the spleen; and b) a solid mass in the head of the pancreas obstructing the duodenum. Splenectomy was performed (Fig. 2) with meticulous hemostasis and enterogastrostomy (stomach - jejunum) in order to bypass the obstructed duodenum.

## Discussion

As ERCP has become more widely used, rare complications of the procedure have been reported more often in recent years. Cases of splenic injury after colonoscopy are well described in the literature but splenic injury after ERCP remains rare. Post-ERCP splenic injuries have variable pathological findings. They include avulsion of the short gastric vessel(s), avulsion of the splenic capsule, subcapsular hematomas and splenic lacerations. The exact mechanism causing splenic injuries during ERCP remains unresolved. 'Bowling' of the endoscope in the 'long' position with torsion on the greater curvature of the stomach (while attempting to pass the endoscope through the narrowed duodenum or to cannulate the papilla) is the causative mechanism postulated by most authors [1,6,9,11]. Patients with cirrhosis, pancreatitis, and those who are on anticoagulants are expected to be more prone to splenic injury during ERCP. Pancreatitis, especially chronic pancreatitis, may lead to calcification and fibrosis of the supporting ligaments between the pancreas and the spleen, resulting in reduced relative mobility between the stomach and spleen [5,14]. Another factor contributing to splenic injury during ERCP is the presence of abdominal adhesions due to prior abdominal surgery.

In our case two steps of the procedure were particularly challenging. Firstly, in order to bypass the duodenal stenosis a balloon dilatation was necessary. Secondly, in order to achieve cannulation of the bile duct prolonged manipulations of the

side-view endoscope within the edematous and deformed duodenum had to be performed. These difficulties led to a prolonged procedure. It is our speculation that pressure on the spleen capsule/ligament from the bowing endoscope within the stomach's greater curvature led to the splenic injury.

Additionally, although the patient had intraperitoneal bleeding he had no high pulse rate. That was attributed to previous  $\beta$ -blocker treatment.

In conclusion, we report the case of a splenic injury post ERCP. Gastroenterologists and surgeons should be aware of this potential complication and have increased suspicion in patients with diffuse abdominal pain and drop of hemoglobin post ERCP. The interval of appearance of the symptoms following splenic injury may vary between a few hours to a few days [6-15].

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