Double common bile duct with an ectopic drainage into the stomach

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INTRODUCTION

The anomalies of the biliary system are various and frequent, however, double common bile duct (DCBD) is an extremely rare congenital anomaly [1]. One usually has normal drainage into the duodenum and the other, termed accessory common bile duct (ACBD), opens in different parts of the upper gastrointestinal (GI) tract. This anomaly has great significance because it is often associated with bile duct stone, anomalous pancreaticobiliary ductal union (APBDU) and upper GI tract malignancies [2]. We experienced a very rare case of DCBD with an ectopic drainage into the stomach in a gastric cancer patient. Here we report the case and review the literature.

CASE REPORT

A 54-year-old male presented to a primary care physician with a complaint of indigestion. He underwent gastrofiberscopy, which revealed a small circumferential ulceroinfiltrative ill-defined mucosal lesion at the anterior wall of the antrum. Biopsy specimens were taken from the ulceroinfiltrative lesion, and showed adenocarcinoma. He was diagnosed with gastric cancer and referred to our hospital for an operation. We didn’t detect any abnormal findings physically or in the laboratory. Abdominal CT scan showed mild gastric mucosal thickening in the anterior wall of the gastric antrum. We decided to perform laparoscopic assisted distal gastrectomy. During the surgery, we incidentally detected bile leak from the tubular structure around the hepatoduodenal ligament. We performed intraoperative cholangiogram by cannulizing into the tubular structure, and confirmed the tubular duct as the accessory bile duct with an ectopic drainage into the stomach, which was connected to the proximal common bile duct. In this study, we report a rare case of DCBD with an ectopic drainage into the stomach and review the literature.

Key Words: Bile ducts, Abnormalities, Common bile duct, Gallstones

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therefore converted to open surgery (Fig. 1). We performed intraoperative cholangiogram by cannulating into the tubular duct, and confirmed that the tubular duct was the accessory bile duct with an ectopic drainage into the stomach, which was connected with the proximal common bile duct and linked with the left intrahepatic duct (Fig. 2). In the specimen, the ACBD was independent of the cancer lesion (Fig. 3). The ACBD was resected afterward. The patient was discharged without complications, and is doing well until now.

**DISCUSSION**

The anomalies of the biliary tract are various and common. One of the common encountered biliary anomalies in upper abdominal surgery is the accessory bile ducts opening into the extrahepatic bile ducts or into the gallbladder. Other than classic drainage into the duodenal papilla, ectopic opening of the biliary system into the upper GI tract via the accessory bile duct is an extremely rare anomaly [1]. According to a report by Boyden [3], Vesarius reported the first case of DCBD draining into the duodenum and stomach in 1543. According to Teilum [1], only 24 cases were recognized in the western literature during the 500 years leading up to 1986. On the other hand, Yamashita et al. [2] reviewed 47 cases of DCBD reported in the Japanese literature from 1968 to 2002. Goor and Ebert [4] classified DCBD into seven configuration types according to the anatomical appearance of the anomaly. Saito et al. [5] and Kanematsu et al. [6] modified the classification based on Goor’s morphological grouping consisting of four configuration types of DCBD regardless of the site of the ACBD opening. Type I, common bile duct with a septum within the lumen; type II, common bile duct which bifurcates on the way with independent drainage; type III, double biliary drainage without a communicating channel; and type IV, double biliary drainage with one or more communicating channels. Our case was categorized as type II according to this classification. The symptoms of DCBD include epigastric pain, nausea or vomiting, right upper quadrant pain, heart burn, fever, and jaundice though it may also be asymptomatic [6]. Our patient complained of indigestion, but it is unclear if the symptom was due to the gastric cancer, rather
than the DCBD. Yamashita et al. [2] divided ACBD into 5
groups according to the site the duct opened into: the stomach,
the first portion of the duodenum, the second portion of
the duodenum, the pancreatic duct, or the septum. He also
emphasized that the opening site of the ACBD is clinically
more important than its anatomical appearance. This is due
to two clinical significances of DCBD. First, the duplication
of the common bile duct can lead to severe intraoperative injury
to one of the two common bile ducts, which can be mistaken
for the cystic duct and be ligated [7]. Second, APBDU and
concomitant cancers are serious conditions in DCBD patients
[2]. According to Yamashita’s review, gallbladder cancer, gastric
cancer, ampullary cancer and pancreatic cancer developed more
frequently in DCBD patients. Gastric cancers developed only
in patients with ACBD opening into the stomach: prolonged
exposure of the gastric mucosa to components of duodenal
juice. bile and pancreatic juice may be responsible for atrophic
gastritis and a predisposition to the development of gastric
cancer, but this relationship remains uncertain [8]. Gallbladder
cancer and ampullary cancer usually developed in patients with
ACBD openings into the second portion of the duodenum and
pancreatic duct. Most of all, there was a very high incidence
of concomitant APBDU with DCBD. In other words APBDU
has never been seen in cancer patients with ACBD openings
into the first portion of the duodenum or stomach [2]. Due to
these two concomitant conditions, preoperative diagnosis is
very important for DCBD patients. Unfortunately, preoperative
recognition of DCBD is very rare. Adequate preoperative
diagnosis is based on radiological and endoscopic findings.
magnetic resonance cholangiopancreatography is useful for
demonstrating anomalies and anatomic variants of the biliary
and pancreatic duct [9]. In some cases, gastrofiberscopy shows
an intragastric biliary opening with or without bile flow [6].
In our case, gastrofiberscopy was performed by the primary care
physician, so we couldn’t confirm if the intragastric accessory
bile duct opening was identified. Treatment of DCBD depends
on the coexistence of concomitant cancer and APBDU. In cases
without cancer, surgical resection of the ACBD is recommended.
In addition, when APBDU is also present, surgical separation
of the flow of bile and pancreatic juice into the GI tract should
also be performed to prevent cancer in the biliary system [10].
Furthermore, when DCBD without cancer or coexistent APBDU
is incidentally detected, a careful endoscopic biopsy of the
gastric mucosa surrounding the opening is recommended. If
atypical and dysplastic lesion is found, gastrectomy should be
performed. Otherwise, periodic endoscopic examination is
recommended due to the risk of cancer [8].

In conclusion, we reported a case of DCBD with ectopic dra-
ingage into the stomach. Because the opening site of the ACBD
in DCBD cases has very important clinical implications with
concomitant APBDU and cancers. adequate diagnosis and
proper surgical treatment should be considered.

**CONFLICTS OF INTEREST**

No potential conflict of interest relevant to this article was
reported.

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