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Ectopic Opening of the Common Bile Duct: A Case Report

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1. Abstract

1.1. Background: Ectopic opening of the common bile duct (EOCBD) is a rare congenital biliary anomaly. Herein, we herein presented a case of duodenal stenosis with EOCBDectopic opening of the common bile duct into the lesser curvature of stomach.

1.2. Case Presentation: A 47-year-old man had dull pain in the right upper abdomen for a week without obvious inducement, presenting paroxysmal dull pain.

1.3. Physical Examination on Admission: showed right upper abdominal tenderness, no rebound pain and muscle tension, weakly positive Murphy's disease weakly positive, no touched mass touched, and normal bowel sounds normal. In Choledochoscopy; the patient underwent Magnetic Resonance Cholangiopancreatography (MRCP) and laparoscopic cholecystectomy and converted to open choledocholithotomy and T-tube drainage. Laparoscopic cholecystectomy and through the umbilical round incision, the elbow forceps were separated; CO2 (12 mmHg) was delivered into the abdomen of the patient, and the endoscope was placed. The gallbladder wall is thickened and the volume is reduced, with multiple stones and atresia at the lower end of the common bile duct. Stones of different sizes in the left hepatic duct converge with the lesser curvature of the stomach. After cholecystectomy, T-tube angiography was performed. The left hepatic duct was unobstructed, and no stone shadow was found in it. The left hepatic duct was connected to the lesser curvature of the stomach.The incision was made under the xiphoid process, and the laparoscopic instrument was inserted. The retrograde removal of gall bladder was performed, and the common bile duct was still invisible in the exploration, thus, the gallbladder duct was opened, and the choledochoscope was entered to explore the enlarged gallbladder duct. The lower segment of the cystic duct was closed, and there was no clear common bile duct. The common liver duct was unobstructed, no obvious stones or dilatation were observed in the right hepatic duct, and a large number of unequal stones were found in the direction of the left hepatic duct. Period of closing under the cystic duct, the absence of clear, bravery manager choledochoscope probing up see hepatic duct unobstructed, right hepatic duct did not see obvious calculi and expansion, in the left hepatic duct direction to see a large number of stone size, choledochoscope into the left mistakes in abdominal cavity left hepatic biliary liver edge down to abdominal aorta left down contorts the rendezvous in the stomach is little, variation of bravery manager opening in the stomach is little place, two HuiGeKou visible, The upper segment till the left and right confluence of the common hepatic duct. No obvious stone or dilation was observed in the left hepatic duct. Magnetic Resonance Cholangiopancreatography (MRCP) displayed the left and right hepatic duct branches, common hepatic duct widening, low signal intensity shadow in common hepatic duct, no common bile duct, reduced gallbladder volume, and multiple small gallstones appeared as signal void-filling defects in the gallbladder MRCP: left and right hepatic duct branches, common hepatic duct widening, low signal shadow in common hepatic duct, no common bile duct, reduced gallbladder volume, multiple low signal shadow filling in gallbladder cavity. The left hepatic duct was is located in the abdominal cavity below the left hepatic margin to the abdominal aorta left downward confluence with the lesser curvature of the stomach. After cholecystotomy, T- tube angiography was performed, and T- tube was placed into the common hepatic duct. and The common hepatic duct and the right hepatic duct were

developed, but while the distal end of the left hepatic duct was not developed, and the common hepatic duct was descended to the left and merged into the lesser curvature of the stomach.

1.4. Conclusions: a case of EOCBD into the lesser curvature of the stomach was described. The patient needs to be carefully monitored for stones rather than tumors in the duplicated bile ducts.

Although EOCBD into the lesser curvature of the stomach with common bile duct atresia is an extremely rare anomaly, it may have important clinical implications Ectopic opening of the common hepatic duct into the lesser curvature of the stomach, accompanied by gallbladder atrophy, cholecystitis, gallstones, similar to simple cholecystitis, gallstones. Although rare, we should be aware of the accurate diagnosis of this abnormality.

In conclusion, a case of EOCBD into the lesser curvature of the stomach was described. The patient needs to be carefully monitored for stones rather than tumors‘.

2. Background

Various opening sites have been described in the literature of the Ectopic Opening of the Common Bile Duct (EOCBD), such as the 3rd or 4th portion of the duodenum, pyloric canal, duodenal bulb, and stomach [1, 2]. Some cases of EOCBD cases in the duodenal bulb develop complications, such as duodenal ulcers, deformities, biliary stones, tumors, and stenosis. Herein, we presented a case of duodenal stenosis with EOCBD in the duodenal bulb.

Case presentation: A 47-year-old man had dull pain in histhe right upper abdomen for a week without obvious inducement, presenting paroxysmal dull pain. Physical examination on admission: right upper abdominal tenderness, no rebound pain and muscle tension, weakly positive Murphy’s disease weakly positive, no mass touched mass and normal bowel sounds normal. Magnetic Resonance Cholangiopancreatography (MRCP) and laparoscopic cholecystectomy and converted to open choledocholithotomy and T-tube drainage.: the left and right hepatic duct branches, common hepatic duct widening, low signal intensity shadow in common hepatic duct, no common bile duct, reduced gallbladder volume, and multiple small gallstones appeared as signal void-filling defects in the gallbladder low signal shadow filling in gallbladder cavity. The left hepatic duct was is located in the abdominal cavity below the left hepatic margin to the abdominal aorta left downward confluence with the lesser curvature of the stomach. And multiple small calculi are seen in the left hepatic duct. The pancreatic duct is located in the pancreas parenchyma and traverses the whole length of the pancreas. Its running is consistent with the long axis of the pancreas. The accessory pancreatic duct of the uncinate process is communicated with the main pancreatic duct at the head of the pancreas, and finally opens together at the duodenal papilla. There were no images of common bile duct in pancreatic head and descending duodenum (Figure 1). The patient underwent laparoscopic cholecystectomy and converted to open choledocho-lithotomy and T-tube drainage. Cut an arc incision about 1 cm long through the umbilical wheel, separate the curved forceps, puncture with torcar with a diameter of 10 mm, inject CO2 to make the abdominal pressure reach 12mmhg, and place the endoscope. Gallbladder about 4cm×3cm×2cm, the gallbladder wall thickened and hardened, the bottom of the gallbladder was seriously adhered to the duodenum and gallbladder triangle, the anatomical structure was not clearly displayed, and the common bile duct was not detected. Then, through the incision under the xiphoid process and the right costal margin, respectively, with the diameter of 10 mm and 5 mm, the torcar puncture was performed, and the laparoscopic instrument was placed to separate the gallbladder adhesion and dissect the gallbladder triangle. Because the gallbladder triangle adhesion was serious, the gallbladder was removed retrogradely, but the common bile duct was not found during the exploration, so the bile duct was opened, and the choledochoscope entered the enlarged cystic duct for exploration. The exploration found that the lower segment of the cystic duct was closed, and there was no clear common bile duct, So choledochoscopy turned the direction upward and found that the common hepatic duct was unobstructed, no obvious stones and expansion were found in the right hepatic duct, and a large number of stones of different sizes were found in the left hepatic duct. It was difficult to completely remove the stones with a stone basket. Then open common bile duct exploration. Take a vertical incision about 8cm long from the center of the upper abdomen to the right, enter the abdomen in turn, further dissect the portahepatis, enter the left hepatic duct with choledochoscope, and see that the choledochoscope moves downward and converges with the lesser curvature of the stomach, then cut the variant common bile duct, and see a small amount of bile flowing out. Take out several stones with stone forceps. No. 24 T-tube was left in the open variant common bile duct, and the T-tube was sutured and fixed without injury. After 50ml of 0.9%, saline was injected into the T-tube, no obvious exudation was observed at the common hepatic duct and the fixed position of the T-tube. Rinse the operation field and electrocoagulation to stop bleeding Choledochoscopy: The patient underwent laparoscopic cholecystectomy, and T-tube drainage was performed after open choledochotomy was transferred to open choledocholithotomy and T tube drainage. Through the umbilical round incision with a length of about 1 cm arc, the elbow forceps were separated, and the diameter of 10mm Torcar puncture with trocar was 10mm; CO2 (12 mmHg) was delivered into the abdomen of the patient, to create a working space and maintain a steady intra-abdominal pressureinjection to make the abdominal pressure reached 12mmHg, and the endoscope was then placed. The gallbladder had the size ofis about 4×3×2cm3, with thick wall, hard quality, serious degree of adhesion was found between the duodenum and the gallbladderthe bottom of the gallbladder is seriously adhesion in the duodenum, the severe degree of adhesion was found that was caused by compression of the gallbladder triangletriangle adhesion of the gallbladder is serious, and the common bile duct wasis not detected. The incision was made

under the xiphoid process and the right costal margin, respectively, with in which the diameters of puncture with trocar were of 10mm and 5mm Torcar puncture, and the laparoscopic instrument was inserted to separate the gallbladder adhesion and to dissect the gallbladder triangle. The retrograde removal of gall bladder was performed retrograde removed due to the serious adhesion of the gallbladder triangle, and the common bile duct was still not seen invisible in the exploration, thus, so the gallbladder duct was opened, and the choledochoscope was entered to explore the enlarged gallbladder duct.: The lower segment of the cystic duct was closed, and there was no clear common bile duct. Upward investigation by choledochoscopye showed that the common liver duct was unobstructed, no obvious stones or dilatation were observed in the right hepatic duct, and a large number of unequal stones with a size of 0.8×0.5 cm^2 were found in the direction of the left hepatic duct, thus, so it was difficult to fully remove the stones completelywith the stone basket. Then decided it was attempted to carry out open common bile duct exploration.

Take the middle of the right upper abdomen ca. 8 cm long, with vertical incision in turn into the abdomen, further and the anatomy of the hepatic portal vein, choledochoscope into the left hepatic mistakes choledochoscope contorts in abdominal cavity left liver edge down to abdominal aorta left down contorts the rendezvous in the stomach is little, consider into the stomach, after common bile duct variation along the abdominal aorta left cut variation bravery manager, see a smallamount of impaired bile flow, lithotomy forceps to take out the number of stones,. The lower segment of the common bile duct was opened at the lesser curvature of the stomach (Figure 2). Aftercholecystotomy, T- tube angiography was performed, and T- tube was placed into the common hepatic duct. and Then, the commonhepatic duct and the right hepatic duct were developed, whilebut the distal end of the left hepatic duct was not developed, and the common hepatic duct was descended to the left and merged into the lesser curvature of the stomach (Figure 3).

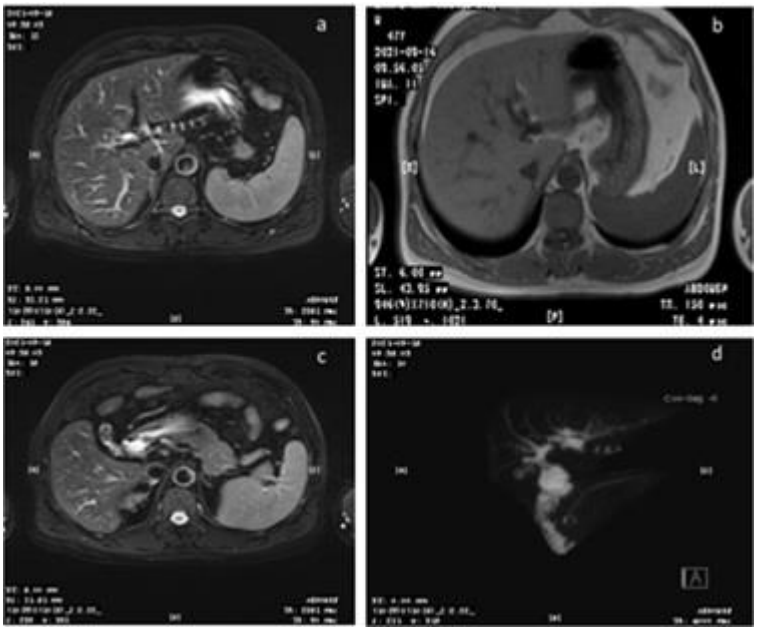

Figure 1: a～b: MRI showed a low-density continuous tubular structures extending from the left hepatic lobe to the stomach. c : The gallbladder is small in volume, and multiple low-signal shadows can be seen in the gallbladder cavity. d: MRCP showed the left hepatic duct was downward confluence with the lesser curvature of the stomach,the pancreatic segment, the posterior segment of duodenum, the pancreatic segment and the inner segment of duodenal wall of the common bile duct are not shown, and the main and auxiliary pancreatic ducts of the pancreas are unobstructed.

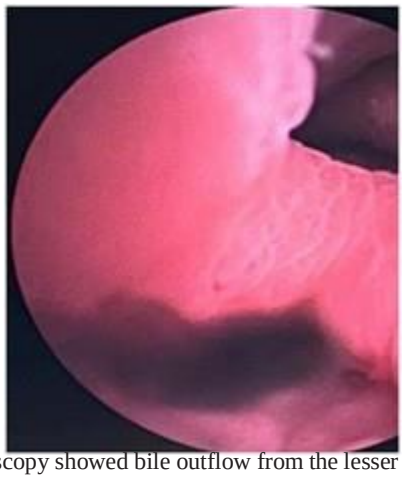

Figure 2: Choledochoscopy showed bile outflow from the lesser curvature of the stomach

Figure 3: T-tube angiography showed left hepatic duct merged into the lesser curvature of the stomach.

3. Discussion

There are severalmany congenital abnormalities of the biliary system and their incidence is extremely lowvery rare [3-6]. Sezgin et al. reported that 1.05% of patients had an EOCBD at various sites of the upper digestive tract, such as the pyloric canal, stomach, and duodenal bulb [7]. Double common bile duct is a rare congenital anomaly, in which two common bile ducts exist, including normal drainage into the duodenum and the other is accessory common bile duct opens in different parts of upper gastrointestinal tractBoyden formulated a hypothesis on the mechanism of double common bile duct generation in organogenetic stages that ectopic bile duct anomalies take place as a chance subdivision of the embryonal primary hepatic furrow in 1932. This disorder arises embryologically when the common bile duct is formed due tofrom the intersection of the cranial part of the hepatic diverticulum (pars hepatica), leading which goes on to form the hepatic cords and thehepatic duct, and the posterior part of the hepatic diverticulum (pars cystica), which goes on to causing the formation of the gallbladder and the cystic duct, while it fails to fuse completely during the developmental phase, resulting in the persistence of their respective drainage routes and the consequent formation of two bile ducts. The drainage route is determined by differences in the timing of the separation of the stomach and duodenum, and it is mainly observe dost often seen in the duodenum, followed by the stomach and then the pancreatic duct2a.

The patent had dull pain in his right upper abdomen without obvious inducement, presenting paroxysmal dull pain, weakly positive Murphy's disease, no touched mass, and should be considered associated with cholecystitis and gallstones caused by EOCBD. Yoshitaka ARASE did not find bile duct stones and whether there was tumor formation around the ectopic bile duct opening in the stomach of EOCBD 2b. However In this case, ectopic hepatic duct stones were found, and the tumor at the opening of the liver duct was not found. A high incidence may be stasis of the bile juice and/or repetitive cholangitis caused by a reflex of the gastrointestinal contents predisposing to calculus formation with or without stones [8]. Direct discharge of bile into the stomach can lead to an increase in gastric pH. At high pH, bile acid can cause gastric mucosal damage, and loss of gastric sphincter can lead to reflux cholangitis [7, 9, 10]. In addition, abnormal anatomy of the biliarytract and biliary tract dilatation leads to changes in biliary tract dynamics, which are the important factors in the occurrence of stones [11]. Therefore, when there are anatomical and dynamic abnormalities in the common bile duct, it will eventually lead to cholestasis, which is the prerequisite for the formation of stones.

Boyden has noted that when there are two gastrointestinal outlets of the biliary tract, either of them tends to occlude. Yamashita et al. summarized the data for 47 cases of double common bile duct and found Several cases that could not be classed as belonging to any particular type have also been reported thanks to recent advances in diagnostic imaging [12]. In this case, one hepatic duct is connected to the lesser curvature of the stomach in the bilateral biliary system, and the other bile duct is the gallbladder duct, which is a blind end with gallbladder atrophy. This is consistent with Boyden's hypothesis. Yoshitaka ARASE reported a case of asymptomatic double common bile duct drainage into the stomach. The left hepatic duct opened at the lesser curvature of the stomach, and the common bile duct was connected to the duodenal large papilla, but there was local stenosis of the lumen2b. The case we found was slightly different from the biliary anomaly reported by Yoshitaka ARASE, the left hepatic duct also opened at the lesser curvature of the stomach. However, calculus could be seen in the left hepatic duct, the lower end of the common bile duct in this patient was completely occluded and not connected with the duodenal papilla, resulting in slow bile circulation in the gallbladder, accompanied by gallbladder calculi, chronic inflammation of the gallbladder and adhesion with duodenum and gallbladder triangle (Arase et al., 2016).

Morphologically, Goor categorized this condition into four categories in 1972 under the name "double drainage to the duodenum"2c. Based on Goor's classification, Saito et al. devised a revised classification into the following types: I, septate; II, branching; III, separate (IIIa, the left and right bile ducts open separately into the gastrointestinal tract, with no communication between them; IIIb, the left and right bile ducts open into the gastrointestinal tract afterhaving formed a common bile duct, and the anomalous bile duct branches from either the left or right hepatic duct and opens separately into the gastrointestinal tract); and IV, mixed2d. This is a case report to address ectopic opening of the common bile duct. The authors presented a case of EOCBD into the lesser curvature of stomach.This abnormality did not belong to any of the types that the classification of Ectopic Opening of the Common Bile Duct (EOCBD). Therefore, we suggest revising the classification of biliary tract variation to adapt to the actual situation of biliary tract variation.

Here, we herein reported a case of chronic cholecystitis with EOCBD common bile duct atresia and ectopic biliary opening in the lesser curvature of the stomach. The true incidence of EOCBD entering the lesser curvature of the stomach is unknown has still remained elusive. Sezgin et al. reported that 1.05% of patients had an EOCBD at various sites of the upper digestive tract, such as the pyloric canal, stomach, and duodenal bulb (Sezgin et al., 2010). Therefore, EOCBDectopic CBD opening into the lesser curvature of the stomach with common bile duct atresia is an ex- tremely rare anomaly, it may have important clinical implications. This abnormality should be considered especially in patients with recurrent biliary pain, cholangitis, and/or recurrent duodenal ulcer, where Vater's large papilla is not invisible in the second duodenal portion. Although further research is required needed, clinicians should keep in mind that this abnormality may be associated with biliary calculi in these patients.

In conclusion, a case of EOCBD into the lesser curvature of the stomach was described. The patient needs to be carefully monitored for stones rather than tumors.

4. Conflict of Interest

The authors declare that there is no conflict of interest.

5. Acknowledgments

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