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INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/15832
DOI URL: http://dx.doi.org/10.21474/IJAR01/15832

RESEARCH ARTICLE

DOUBLE COMMON BILE DUCT ASSOCIATED WITH PANCREATIC DIVISUM: A CASE REPORT

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Manuscript Info

Manuscript History
Received: 05 October 2022
Final Accepted: 09 November 2022
Published: December 2022

Key words:
Double Common Bile Duct, DCBD, Pancreatic Divisum, Extrahepatic Bile Duct Duplication

Abstract

Double common bile duct type I is a rare anomaly. Moreover, the association of double common bile duct and Pancreatic divisum is an even less common malformation. We reported a case of a combined double common bile duct type I and pancreatic divisum presented after complicated with a large common bile duct calculus. Classification and investigations for the double common bile duct are briefly discussed.

Introduction:-

Bile duct anatomic variations are quite common. Only58% of people have the standard teaching conventional biliary anatomy [1]. However, most variations involve the intrahepatic ducts, whileextrahepatic bile duct duplicationis extremely rare, with very few reported cases in the literature [2,3]. The first classification of extrahepatic bile duct duplicationwas suggested by Goorand Ebert in 1972 [4]. Subsequently, classification was fine-tuned to include five types by Choi in 2007 [5].

On the other hand, pancreatic divisum is a relatively common malformation affecting 4-14% of the population [6]. Nonetheless, theassociation of bile duct duplication and pancreatic divisum is rarely reported.

We reported a rare case of type I Extrahepatic bile duct duplicationassociated with pancreatic divisum presented with sizeable common bile duct calculus.

Case Report:

A 45-year-old woman presented with a history of recurrent upper abdominal pain and Nausea for the last fourmonths. Symptomatic treatment was received without improvement. She had a history of laparoscopic Cholecystectomy ten years ago because of calculous cholecystitiswithout endoscopic retrograde cholangiopancreatography ERCP.

Lab Investigations showed elevated liver enzymes with normal bilirubin, Amylase, and lipase. Magnetic resonance cholangiopancreatography (MRCP) disclosed sizeablecommon bile duct CBD calculuscausing dilatation of the CBD and common hepatic Duct. The CBD showedtwo stems connected proximally and distally, suggestive of duplication of the common bile duct DCBD Type I. Moreover, the main pancreatic duct accessed the duodenum in a separate orifice suggesting the additional diagnosis of pancreatic Divisum [figure1].

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Diagnostic and therapeutic ERCP was performed. The large calculus was removed from CBD. And the Cholangiogramconfirmed the diagnosis of common bile duct duplication type I associated with pancreatic divisum [figure 2].

Subsequently, the patient was discharged one day after ERCP. During follow-up, after three weeks, she was doing well, asymptomatic, and liver function tests normalized. No further management was recommended.

Discussion:-

Double common bile duct DCBD is a rare malformation. It is one of the rarest congenital abnormalities that was first reported in 1543 by Vesarius [7]. Since then, more cases have beensparingly mentioned in the literature [8].

In the embryo, the bile duct developsas a lengthening of the caudal part of the hepatic diverticulum. Although typical in reptiles and fish and the early stages of human embryonic development, theprimitive duplicated system turns into the conventional solitary common bile duct later during human embryonic development [9]. DCBC can be described to disturbed recanalization of the hepatic diverticulum, which has two lumens initially [10].

This intriguing anomaly has been reported in association with anomalous pancreatobiliary junction, congenital choledochal cysts, and biliary atresia and can predispose to complications such as choledocholithiasis, cholangitis, and pancreatitis [11,8]. Updated classification by Choi et al. (2007) divide DCBD into five categories based on the anatomy [5]:
Type I: distal septum splitting the bile duct lumen
type II: distal bile duct splitting into two channels, each draining independently into the bowel.
type III: Duplicated extrahepatic bile ducts without (a) or with intrahepatic communicating channels (b); type IV: Duplicated extrahepatic bile duct with one or more extrahepatic communicating channel
type-V single biliary drainage of double bile ducts without (a) or with communicating channels (b)

This reported case fits into type I as MRCP revealed two stems connected proximally and distally.

For an unknown reason, Type I cases are more common in the Chinese series (58.5%) [11], while it is less mentioned in the series reported in Japan Yamashitha et al. (8.5%) [7].

It was suggested that the development of type I DCBD was due to double canalization during the solid stage of extrahepatic bile duct development [12]. DCBD type I can be associated with other malformations likea choledochal cyst and biliary atresia [3]. However, as the CBD normally opens into the duodenum in type I DCBD, there is a minimal associated risk of an abnormal pancreaticobiliary junction and thereby, lower risk of biliary or duodenal malignancy [7].

Usually, DCBD is asymptomatic until it presents with complications such aspancreatitis, cholangitis, and Cholelithiasisas in this case [3]. Multidetector computed tomography (CT) and MRCP are excellent non-invasive imaging modalities that provide anatomic diagnosis and detailed pictures of the pancreaticobiliary ducts [10, 13]. This patient was diagnosed with MRCP well before the interventional ERCP. Hence, ERCP was well prepared, and the removal of the large calculus was uncomplicated.

Additionally, the MRCP of this case showed a separate entry of the main dorsal pancreatic duct into a minor papilla with a remnant ventral duct joining the CBD. This finding confirms the incidental diagnosis of pancreatic divisum. The latter is a relatively common finding in 4-14% of people [6]. It is usually asymptomatic unless complicated with pancreatitis [14]. However, this case had no signs of pancreatitis with normal Amylase and lipase. Nevertheless, a low threshold for pancreatitis diagnosis should be kept in case of abdominal pain with elevated pancreatic enzymes or another suggestive clinical picture [14].

Conclusion:-

This is a very interesting case of DCBD complicated by choledocholithiasis and associated with pancreatic divisum. This case raises the importance of MRCP as an accuratenoninvasive diagnostic procedure, especially for such rare and complicated malformations.

Although primarily asymptomatic, cases of biliary malformations or pancreatic divisum bear a significantly increased risk of complications. It requires short intervals ofclinical, laboratory, and ultrasound follow-up. High incidence of cholangitis, cholelithiasis and pancreatitis denotes the importance of close monitoring and repeating liver and pancreatic enzymes whenever clinically suspicious.

Figure 1: MRCP showed a distal septum splitting the bile duct lumen (type I DCBD) [a], as well as the main pancreatic duct accessing the duodenum in a separate orifice (pancreatic divisum) [b], axial MRI view of the abdomen showed the distal septum in the CBD lumen [c].
Figure 2: ERCP showing the DCBD with two stems connected proximally and distally.

Figure 1A:

Figure 1B:-

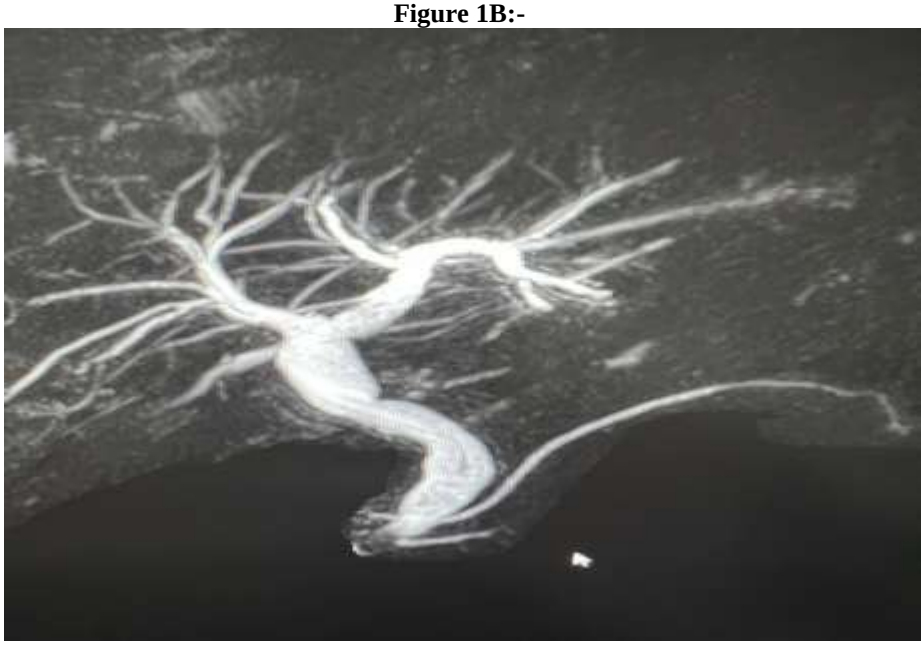


Figure 1C:-

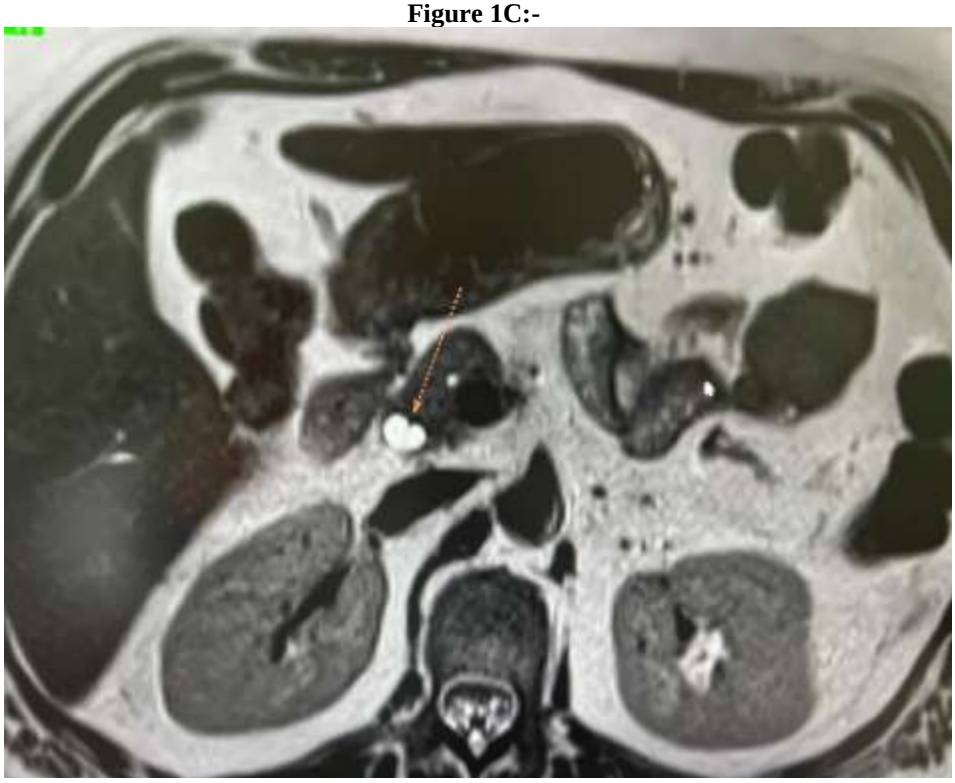
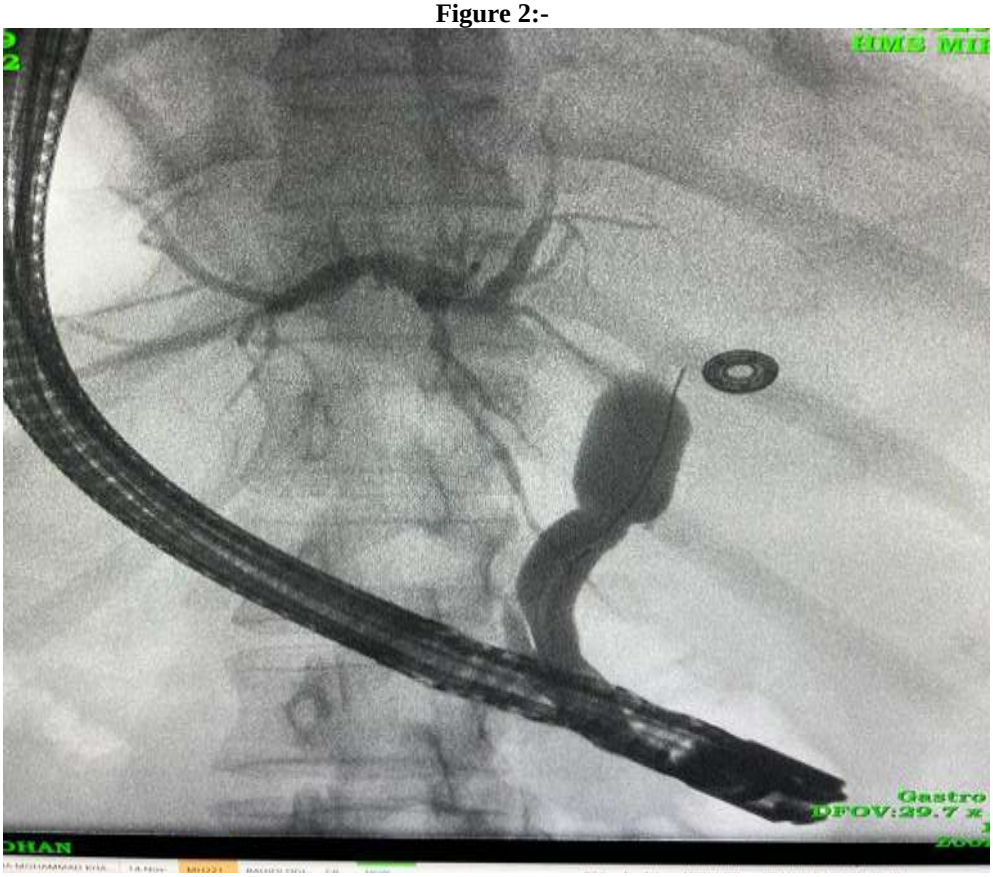


Figure 2:-



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