Trifurcated hepatic duct with low union complicated by choledocholithiasis

A 74-year-old man was admitted to our hospital with right upper quadrant pain. Laboratory data on admission were as follows: aspartate transaminase (AST) 261 IU/L, alanine transaminase (ALT) 70 IU/L, total bilirubin 0.9 mg/dL, alkaline phosphatase 337 IU/L, and γ-glutamyl transpeptidase 552 IU/L. Magnetic resonance cholangiopancreatography (MRCP) revealed a trifurcated configuration of hepatic ducts with an unusual low union, and drainage of the cystic duct into the right posterior segmental duct, accompanied by several common bile duct stones (Fig. 1). Endoscopic retrograde cholangiopancreatography (ERCP) revealed similar findings to those of the MRCP. The CBD stones were removed successfully using a retrieval basket after endoscopic sphincterotomy (Fig. 2). After 4 days, the patient underwent cholecystectomy followed by hepaticojejunostomy.

To the best of our knowledge, this unusual anomaly has not been described previously. This case is of clinical significance because such an anomaly could lead to accidental dissection or ligation of the bile duct during laparoscopic cholecystectomy. Triple confluence of the right anterior and posterior segmental ducts and the left hepatic duct is known to occur in up to 10% of hepatic duct variations [1]. Drainage of the cystic duct directly into the right hepatic duct at a low level is quite rare [2]. The pattern of variation in some hepatic ducts may eventually lead to impaired bile flow and biliary stasis, subsequently resulting in bacterial overgrowth and formation of primary bile duct stones. Any ligation or dissection of the hepatic duct will result in potentially fatal complications, such as bile leakage, partial biliary obstruction, ductal stricture, cholangitis, or biliary cirrhosis [3–5]. In order to avoid serious iatrogenic injuries of the bile duct, thorough interpretation and accurate diagnosis of any anatomical variation of the biliary tree is emphasized.

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