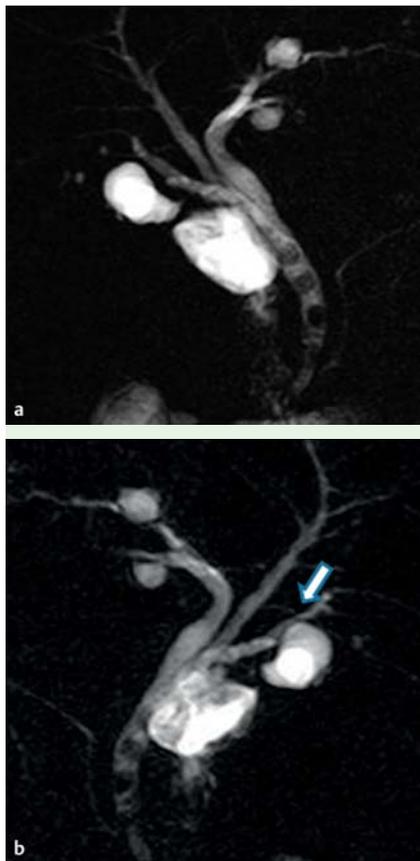
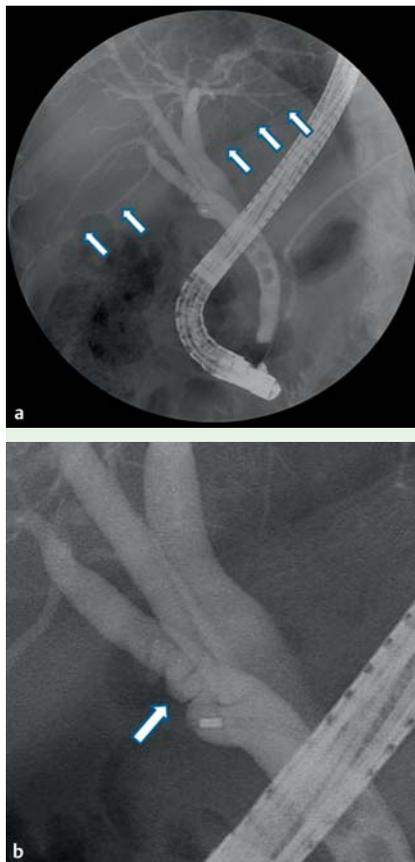


## Trifurcated hepatic duct with low union complicated by choledocholithiasis



**Fig. 1** Magnetic resonance cholangiopancreatography (MRCP) findings. **a** Anterior coronal image demonstrating trifurcation of the bile ducts. The confluence of the anterior and posterior branches of the right hepatic duct has joined the left hepatic duct. **b** Posterior coronal image demonstrating the outlet of the cystic duct into the right posterior segmental duct (arrow).



**Fig. 2** Endoscopic retrograde cholangiopancreatography (ERCP) findings. **a** Cholangiogram demonstrating low union of the right and left hepatic duct with calculus in the common bile duct. The arrows indicate the inferior margin of the liver. No gallbladder was seen because of chronic cholecystitis. **b** Magnified view demonstrating drainage of the cystic duct into the right posterior segmental duct (arrow).

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) 26 IU/L, alanine transaminase (ALT) 70 IU/L, total bilirubin 0.9 mg/dL, alkaline phosphatase 337 U/L, and  $\gamma$ -glutamyl transpeptidase 552 U/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 (CBD) 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 pat-

tern of variation in some hepatic ducts may eventually lead to impaired bile flow and bile 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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**Competing interests:** None

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