A rarely seen biliary variation : Right posterior and right anterior hepatic ducts were opening to the cystic duct

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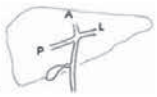
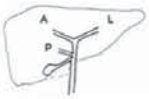
The anatomy of the intrahepatic bile ducts, is consistent with the segmental anatomy of the liver, according to Couinaud classification (1). However there are some variations in this system that can cause significant morbidity and mortality during cholecystectomy. Several classifications have been proposed for biliary opening anomalies. Opening of the whole right main bile ducts to the cystic duct is an extremely rare condition and classified as type-e according to the champetier classification (Table 1) (2).

A 41 year old male patient was admitted to our hospital with acute cholangitis symptoms. In admission his lab tests were as follows : ALT : 401 U/L, AST : 232 U/L, GGT : 453 U/L, total bilirubin : 7.1 mg/dl, WBC : 13.160 × 10^3/uL, and INR : 1.6. On abdominal ultrasonography ; sludge was seen in gallbladder and diameter of common bile duct (CBD) was 10 milimeters and a small stone was seen at the distal part of the CBD. In endoscopic retrograde cholangiopancreatography (ERCP) the stone was extracted from CBD via balloon. On choangiography it was seen that, right anterior and right posterior bile ducts, so whole right biliary system were opening to the cystic duct, surprisingly (Fig. 1). The patient's clinical condition and laboratory profile improved after 1 weeks of the ERCP. Consultant surgeon was informed about the presence of the biliary anatomical variation preoperatively. Open surgery was preferred instead of laparoscopic cholecystectomy. The biliary

Table 1. — **Champetier classification of biliary tract variations**

Type	Definition	Figure
Type a	Right posterior hepatic duct opens into the left hepatic duct	
Type b	Right posterior hepatic duct opens into the confluence	
Type c	Right posterior hepatic duct opens into the main hepatic duct	
Type d	Right posterior hepatic duct into the cystic duct	
Type e	Right posterior hepatic duct and right anterior hepatic duct opens to the cystic duct	

A: anterior hepatic duct, L:left hepatic duct, P: posterior hepatic duct

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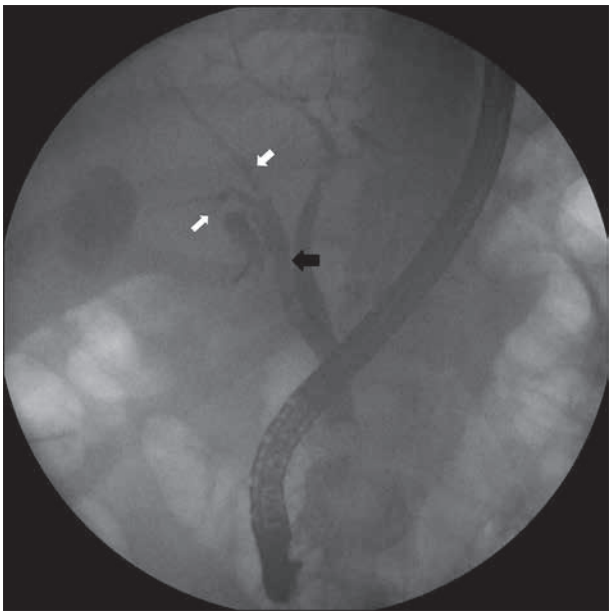

Fig. 1. — Both of the right anterior and right posterior bile ducts (white arrows) were opening to the cystic duct (black arrow).

anatomic variation was intraoperatively confirmed and cholecystectomy was completed by leaving a long cystic stump. The patient was discharged at the seventh day of the surgery without any postoperative complications.

Unawareness of congenital biliary anomalies may cause various complications such as biliary fistula, leakage and even cholangitis after the hepatobiliary surgery. Also in our patient ligation of cystic duct in the subsequent cholecystectomy may cause right hepatic lobe atrophy and even liver failure. Surgeons must be careful about the anatomic variations of the biliary system. If feasible, imaging modalities may be performed to demonstrate biliary anatomy before hepatobiliary surgery.

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