

# Robot-assisted hepatectomy and complete excision of the extrahepatic bile duct for type IV-A choledochal cysts

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## Abstract

**Background** Complete removal of the dilated biliary tree is regarded as inevitable in choledochal cysts due to its malignant potential. However, technical difficulty and the high risk of postoperative complications as well as the various presentations of the disease make the surgical options for type IV-A cysts challenging and controversial. We report the first case of a type IV-A choledochal cyst treated using a robot-assisted approach.

**Patient and methods** A 41-year-old healthy female was admitted with intrahepatic and extrahepatic cysts incidentally found on routine checkup. Preoperative image studies showed two large cystic dilatations of the main biliary tract at the hilum and distal common bile duct as well as multiple cystic dilatations of the left intrahepatic duct. Anomalous pancreatico-biliary duct union was also found. The mid common bile duct was transected first, and the distal cystic bile duct of the intrapancreatic portion was resected at the junction with the pancreatic duct. The hilar cyst involved the right intrahepatic portion; therefore, liver

resection proceeded to the right lobe, removing the caudate lobe. The right anterior and posterior hepatic ducts were securely isolated and resected with the help of real-time fluorescent imaging using an ICG. Roux-en-Y hepaticojejunostomy was performed intracorporeally.

**Result** The total operation time was 540 min. The estimated amount of intraoperative bleeding was 750 ml. No blood transfusion was given. CT on postoperative day 6 showed no complications. Pathologic examination was accorded in choledochal cysts without evidence of malignancy. The patient was discharged on postoperative day 7 in good condition.

**Conclusion** Hepatectomy and complete excision of the extrahepatic bile duct for type IV-A choledochal cysts requires fine and delicate surgical techniques. The wrist-like movement of the working instruments and the firefly imaging of the robot surgical system allowed this advanced minimally invasive surgery to be successfully performed on this patient.

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## Compliance with ethical standards

**Disclosures** Dr. Ji Wool Ko, Sung Hoon Choi, Sung Won Kwon, and Kwang Hyun Ko have no conflicts of interest or financial ties to disclose.

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This video was selected for a video presentation at SAGE 2016.

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