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# Totally laparoscopic hepato-pancreatico-duodenectomy for diffuse cholangiocarcinoma

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## Introduction

Hepato-pancreatico-duodenectomy (HPD) has been offered as a surgical option for selected patients with cholangiocarcinoma showing widespread infiltration. Although the recent rapid development of technological innovations, improvements in surgical skills and the accumulation of extensive experience by surgeons have greatly expanded the applications of laparoscopic liver or pancreatic resection, there have been a few reports on a laparoscopic HPD.

## Materials and Methods

An 80-year-old female with cholangiocarcinoma showing widespread infiltration underwent a pure laparoscopic HPD, including left hepatectomy, caudate lobectomy, and pylorus-preserving pancreaticoduodenectomy. First, a pylorus-preserving pancreaticoduodenectomy was performed. The common bile duct was lifted in the cranio-ventral direction and skeletonization of the hepatic artery and portal vein was advanced up to the hepatic hilum, then the left hepatic artery and portal vein were divided. The left liver was mobilized and the caudate lobe was fully separated from the inferior vena cava (IVC). Liver parenchymal transection began from the caudal-ventral edge of the demarcation line and was performed along the middle hepatic vein. The direction of parenchymal dissection proceeded toward the right edge of the IVC. The right anterior and posterior sectional bile ducts were divided respectively. Finally, the left hepatic vein was divided, and the specimen was placed in a plastic endobag, and extracted through a navel incision, which was extended to 5 cm. The proximal jejunal end was delivered through a window in the transverse mesocolon. Child's method of reconstruction, which included an end-to-side pancreaticojejunostomy, an end-to-side hepaticojejunostomy, and an end-to-side duodenojejunostomy in a proximal-to-distal manner, was performed intracorporeally.

## Results and Conclusions

The procedure took 629 minutes, and operative bleeding was 200 ml. The patient was discharged on the 28th postoperative day because the patient had developed biliary leakage that later resolved spontaneously. A histological examination showed well differentiated tubular adenocarcinoma. Although the tumor had widely in-

filtrated to the extrahepatic bile duct, the surgical margins were histologically clear (R0 resection). During the 12-month follow-up since the treatment, no recurrence has been detected. Pure laparoscopic HPD is minimally invasive, safe and feasible, and can achieve R0 resection in selected patients with cholangiocarcinoma.