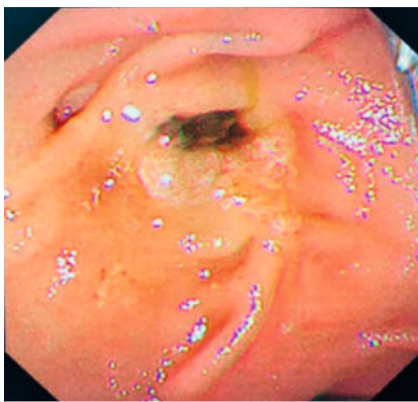


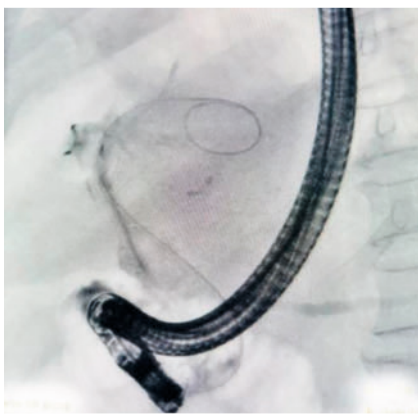
## Cholangioscopy-guided laser ablation for intraductal papillary neoplasm of bile duct



► **Fig. 1** Magnetic resonance cholangiopancreatography revealing dilated extrahepatic and intrahepatic biliary systems.



► **Fig. 2** Endoscopic image of fish-mouth deformity of the papilla.



► **Fig. 3** Endoscopic retrograde cholangiopancreatography revealing filling defects due to mucus.

A 65-year-old man with a history of metastatic bladder cancer was admitted with jaundice. Blood tests revealed a cholestatic pattern of liver function, hyperbilirubinemia, and deranged clotting profile. Computed tomography and magnetic resonance cholangiopancreatography showed cirrhosis and dilated extrahepatic and intrahepatic biliary systems without hyperdense stones (► **Fig. 1**). Endoscopic retrograde cholangiopancreatography revealed a fish-mouth deformity of the papillary opening (► **Fig. 2**), dilated intrahepatic ducts, and poor contrast filling of the common bile duct (► **Fig. 3**). Repeated balloon trawling (18 mm) yielded a copious amount of jelly-like mucus. Cholangioscopy (SpyGlass; Boston Scientific, Natick, Massachusetts, United States) revealed multiple foci of papillary growth in the upper common bile duct, common hepatic duct, and proximal left biliary duct (► **Fig. 4**). The biopsy samples revealed papillary proliferation with a gastric subtype and low-grade dysplasia. A diagnosis of intraductal papillary neoplasm of the bile duct (IPNB) was made. Repeat cholangioscopy was performed by introducing an end-on irradiation fiber connected to a laser system (Leonardo 1470 nm/980 nm dual-wavelength laser; CeramOptec GmbH/Biolitec AG, Bonn, Germany) (► **Fig. 5**). Ablation of the papillary growth was performed until a whitish discoloration and necrosis appeared (► **Video 1**). The patient did not experience any discomfort or adverse events after the procedure and was discharged 9 days later.

IPNB is an epithelial tumor characterized by intraductal papillary proliferation and a thin fibrovascular stem on histological analysis [1]. Due to the risk of progression to cancer, surgical resection is recommended. However, surgery was contraindicated for our patient. Furthermore,



► **Fig. 4** Cholangioscopic image revealing papillary growths.



► **Fig. 5** Application of cholangioscopy-guided laser on the papillary growth.



► **Video 1** Cholangioscopy-guided laser ablation of intraductal papillary mucinous neoplasm.

the insertion of a biliary stent does not relieve biliary obstruction due to the viscous nature of the mucus. The use of cholangioscopy-guided laser to dissect benign biliopancreatic ductal strictures [2, 3] and for ablation of cholangiocarcinoma [4] has been reported previously. Our experience suggests that laser has good ablative effects and may be a promising treatment modality for IPNB, particularly for patients who are unfit for surgery.

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## Conflict of Interest

The authors declare that they have no conflict of interest.

## The authors

**Yuhuan Wu**<sup>1,2</sup>, **Weigang Gu**<sup>1,2,3,4</sup>, **Ka Shing Cheung**<sup>5,6</sup>, **Jianfeng Yang**<sup>1,2,3,4</sup>, **Xiaofeng Zhang**<sup>1,2,3,4</sup>, **Hangbin Jin**<sup>1,2,3,4</sup>

- 1 Zhejiang Chinese Medical University The Fourth School of Clinical Medicine, Hangzhou, China
- 2 Gastroenterology, Affiliated Hangzhou First People's Hospital, School of Medicine, Westlake University, Hangzhou, China

- 3 Key Laboratory of Integrated Traditional Chinese and Western Medicine for Biliary and Pancreatic Diseases of Zhejiang Province, Hangzhou, China
- 4 Hangzhou Institute of Digestive Diseases, Hangzhou, China
- 5 Medicine, The University of Hong Kong-Shenzhen Hospital, Shenzhen, China
- 6 Medicine, School of Clinical Medicine, Queen Mary Hospital, The University of Hong Kong, Hong Kong

## Corresponding author

**Hangbin Jin, MD**

Department of Gastroenterology, School of Medicine, Affiliated Hangzhou First People's Hospital, Westlake University, No. 261 Huansha Road, Hangzhou, Zhejiang 310006, China  
[jhbhzy@163.com](mailto:jhbhzy@163.com)

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