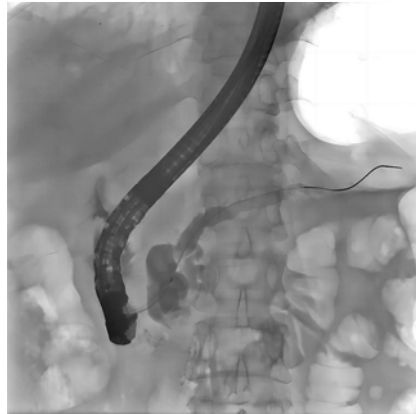


Digital single-operator cholangioscopy-guided endoluminal radiofrequency of an intraductal papillary mucinous neoplasia of the main pancreatic duct

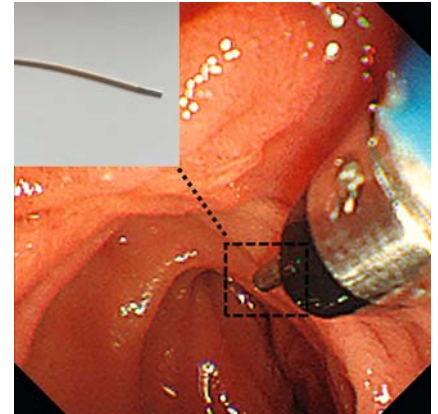
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► **Fig. 1** Magnetic resonance cholangiography (MRCP) showed dilation of the main pancreatic duct and suspicious nodules in the main pancreatic duct.



► **Fig. 2** Endoscopic retrograde cholangiopancreatography (ERCP) showed dilation of the main pancreatic duct, which was the same as in the MRCP; however, there were no obvious filling defects.



► **Fig. 3** A digital single-operator cholangioscopy (DSOC)-guided endoluminal radiofrequency catheter was inserted into the pancreatic duct. The working channel diameter of this catheter was 1 mm; the working channel length was 5 mm.

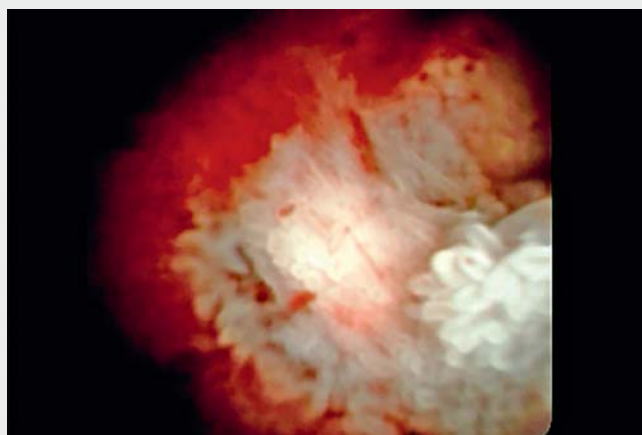
A 64-year-old woman with a history of recurrent acute pancreatitis was referred for treatment of intraductal papillary mucinous neoplasia (IPMN) that was found during a computed tomography (CT) scan in a local hospital. Magnetic resonance cholangiography (MRCP) presented dilation of the main pancreatic duct and suspicious nodules in the main pancreatic duct (► **Fig. 1**). Endoscopic retrograde cholangiopancreatography (ERCP) showed that the pancreatic duct was significantly dilated and there seemed to be a cystic lesion at the head of the pancreas (► **Fig. 2**). Further evaluation of digital single-operator cholangioscopy (DSOC) found that the pancreatic duct was full of thick, mucinous fluid, and a few of papillary neoplasms were located at the junction of the main branch and branches of the pancreatic duct in the head of the pancreas (► **Video 1**). Tissues were obtained by biopsy forceps and histopathologically examined.

The patient and her relatives all refused to have her undergo radical surgery, and intraductal radiofrequency ablation (RFA) was offered. A novel radiofrequency operation electrode was inserted into the pancreatic duct over DSOC (► **Fig. 3**). DSOC-guided endoluminal radiofrequency was used to destroy the neoplasms

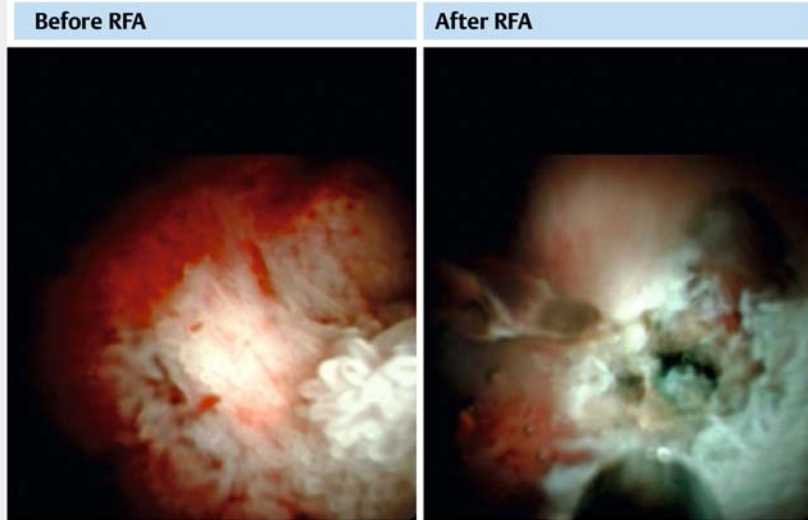
under direct vision. After radiofrequency ablation, these neoplasms became necrotic (► **Fig. 4**). A 5-Fr stent was placed to prevent secondary stenosis (► **Fig. 5**). No adverse events occurred. Finally, pathology examination revealed IPMN with mild dysplasia. To date, the patient has

not developed acute pancreatitis again after 3 months of follow-up.

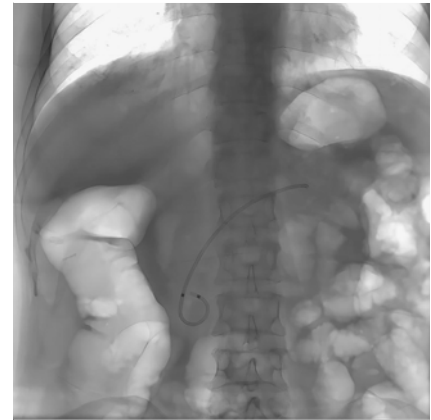
RFA ablates neoplastic tissue via local thermal coagulative necrosis [1]. Previous studies have shown that endoscopic biliopancreatic RFA is a safe and



► **Video 1** Digital single-operator cholangioscopy (DSOC) was used to examine the pancreatic duct. Neoplastic tissues were biopsied and then destroyed by endoluminal radiofrequency under direct vision.



► **Fig. 4** The papillary neoplasms were found by DSOC. After radiofrequency ablation, these neoplasms became necrotic.



► **Fig. 5** A 5-Fr stent was placed to prevent secondary stenosis and post-ERCP pancreatitis.

effective therapy [2–4]. However, these methods are guided by fluoroscopic images. The present case report is the first to report the use of a DSOC-guided endoluminal radiofrequency catheter. The effective outcome and uneventful recovery suggest that this technique could be offered with a curative intent in selected patients. Meanwhile, it could offer a novel, accurate, and minimally invasive treatment method for pancreatic duct-related disorders.

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Competing interests

The authors declare that they have no conflict of interest.

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