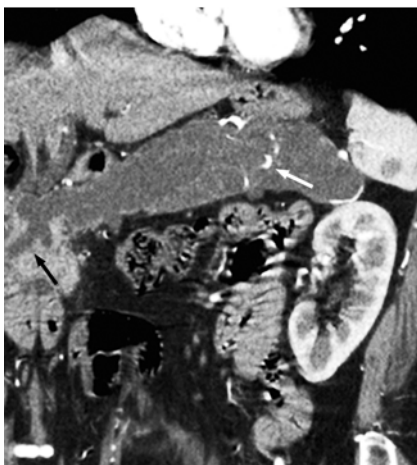


Use of needle-based confocal laser endomicroscopy in the diagnosis of multifocal intraductal papillary mucinous neoplasm with high grade dysplasia

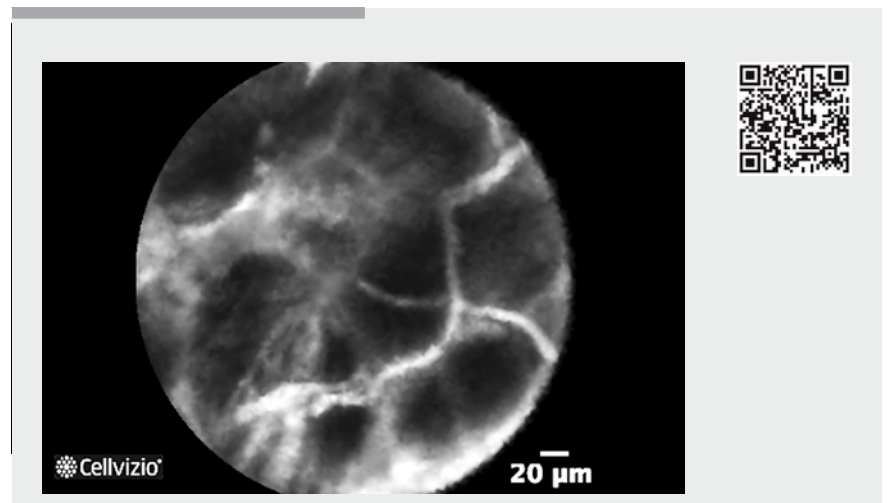
A 64-year-old woman with newly diagnosed type 2 diabetes mellitus was admitted with intermittent abdominal pain of 3 years' duration. Computed tomography (CT) showed multifocal pancreatic cystic lesions with a dilated main pancreatic duct and calcification of a cyst wall (► **Fig. 1**), raising suspicion of a mucinous neoplasm of the pancreas. Needle-based confocal laser endomicroscopy (nCLE) (AQ-Flex 19; Mauna Kea Technologies, France) is a novel imaging technique that enables real time in vivo microscopic imaging of a cyst wall during endoscopy, with a promising diagnostic yield [1–3]. The diagnosis of intraductal papillary mucinous neoplasm (IPMN) is indicated by the presence of finger-like papillae, while mucinous cystic neoplasms (MCNs) have a characteristic single band-like epithelium on nCLE [1–3]. We performed endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) in our patient, with EUS confirming multifocal anechoic cystic lesions extending

from the head of the pancreas to the tail, with hyperechoic margins. nCLE showed dark aggregates of cells with surrounding small vessels (► **Video 1**), which had indicated features concerning for neoplasia in an earlier study [4]. The cyst fluid had a mucinous appearance and viscosity, and FNA cytology confirmed neoplastic mucinous cells (► **Fig. 2 a, b**). The patient consequently underwent a total pancreatectomy (► **Fig. 3**). Histopathological ex-

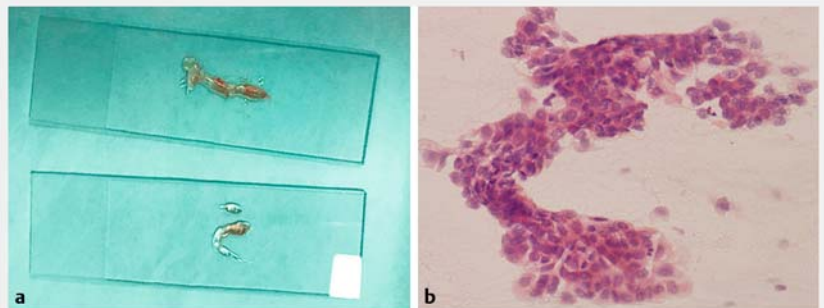
amination revealed an IPMN with high grade dysplasia (► **Fig. 4**). Lymph node sampling was negative for metastasis. Wider use of nCLE has resulted in consensus on some of the characteristic features of common pancreatic cystic lesions, but this is an evolving area with scope for further definition of diagnostic features. In this case, nCLE images showed features concerning for neoplasia prior to surgery. The pattern of dark



► **Fig. 1** Computed tomography (CT) image showing multifocal pancreatic cystic lesions with dilated main pancreatic duct (black arrow) and calcification of cyst wall (white arrow). The patient was a 64-year-old woman with newly diagnosed type 2 diabetes mellitus and with intermittent abdominal pain of 3 years' duration.



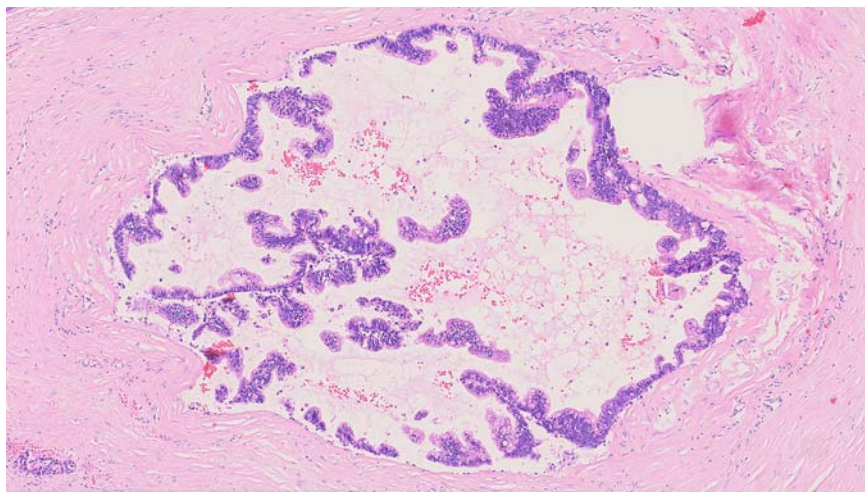
► **Video 1** Needle-based confocal laser endomicroscopy (nCLE) in the diagnosis of multifocal intraductal papillary mucinous neoplasm with high grade dysplasia: endoscopic ultrasound shows multifocal cystic lesions with hyperechoic margins, and nCLE shows dark aggregates of cells with surrounding small vessels.



► **Fig. 2 a** Fine needle aspiration (FNA) specimen showing mucinous appearance. **b** FNA cytology shows neoplastic mucinous cells (hematoxylin and eosin [H&E], × 200).



► **Fig. 3** The surgically resected specimen. Throughout the pancreas there were multifocal cystic lesions filled with mucus.



► **Fig. 4** Histopathological appearance shows papillae protruding into the cyst lumen and neoplastic mucinous cells arranged in an irregular multilaminar pattern without infiltration (hematoxylin and eosin [H&E], ×40).

aggregates of cells surrounded by small vessels may be a promising characteristic in identification of malignant pancreatic cystic lesions (MPCLs). Further studies are required to confirm these findings and to establish nCLE criteria in the diagnosis of MPCLs.

Endoscopy_UCTN_Code_CCL_1AF_2AF_3AC

Competing interests

None

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