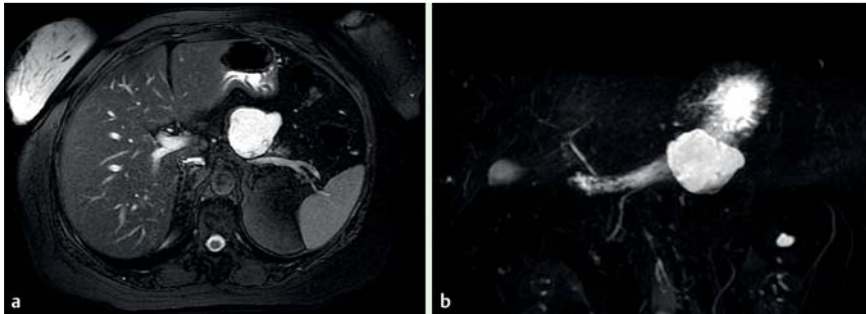
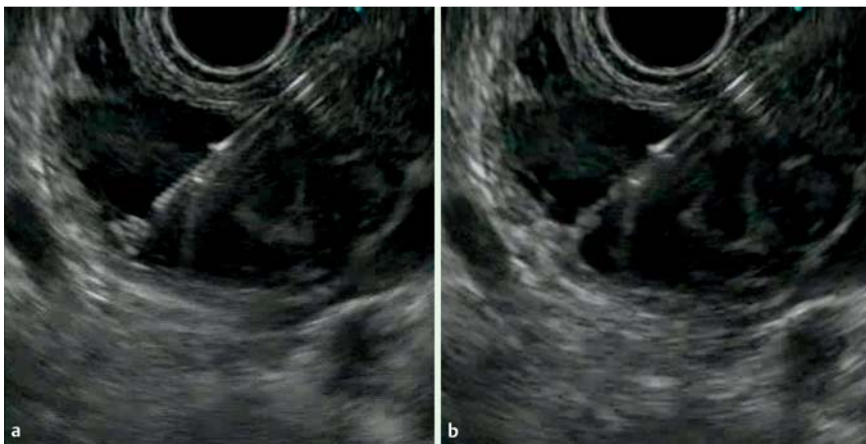


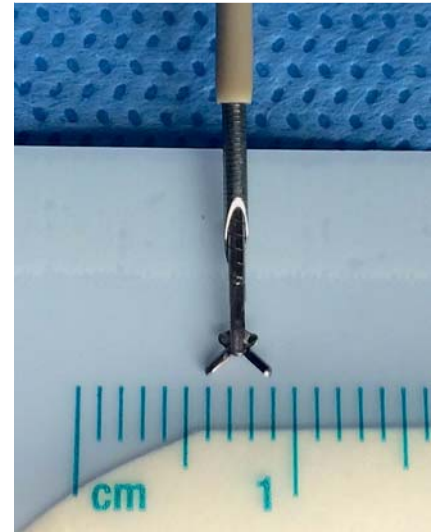
## A new tissue acquisition technique in pancreatic cystic neoplasm: endoscopic ultrasound-guided through-the-needle forceps biopsy



**Fig. 1** a,b Magnetic resonance images of a 5-cm cystic lesion in the pancreatic body of a 46-year-old woman with type 2 diabetes mellitus. The lesion, which was incidentally diagnosed, contains debris.



**Fig. 3** a Endoscopic ultrasound (EUS) image of the pancreatic cystic lesion with granular aspect inside, suspicious for viscous mucin; through-the-needle forceps with open valve. b EUS-guided through-the-needle forceps biopsy of the cystic wall: the “tent sign.”



**Fig. 2** Through-the-needle (19 gauge) biopsy forceps (0.8 mm).

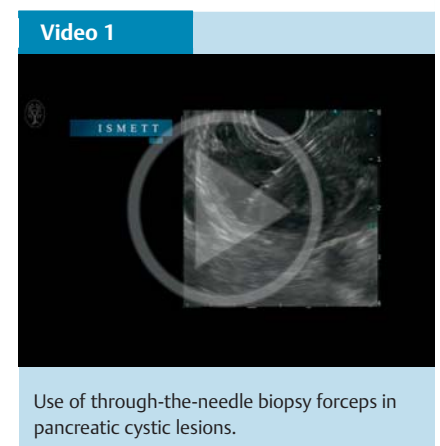
tic fluid has a diagnostic yield of less than 50%, and attempts have been made to improve these results with other techniques. Brush cytology (EchoBrush; Cook Medical, Bloomington, Indiana, USA) [1] and FNA/B targeting the pancreatic cystic walls with a standard needle [2] or Pro-Core needle (Cook Medical) [3] provide better results. Targeting the cystic wall appears to be the right choice because the cells from the cyst are there. Only two case reports (total of three patients) of EUS-guided through-the-needle forceps biopsy of PCLs have been published [4,5], with the same results as in our

A 46-year-old woman with diabetes mellitus type 2 was admitted for endoscopic ultrasound-guided fine-needle aspiration/biopsy (EUS-FNA/B) because of the incidental diagnosis of a 5-cm pancreatic cystic lesion (PCL) in the pancreatic body, suspicious for pseudocyst (Fig. 1). The procedure was performed through the patient's stomach with a standard 19-gauge needle. FNA/B targeting the pancreatic cystic wall was followed by several bites with a through-the-needle forceps (mini biopsy forceps, 0.8 mm in diameter; Endoflex GmbH, Voerde, Germany) (Fig. 2 and Fig. 3, Video 1).

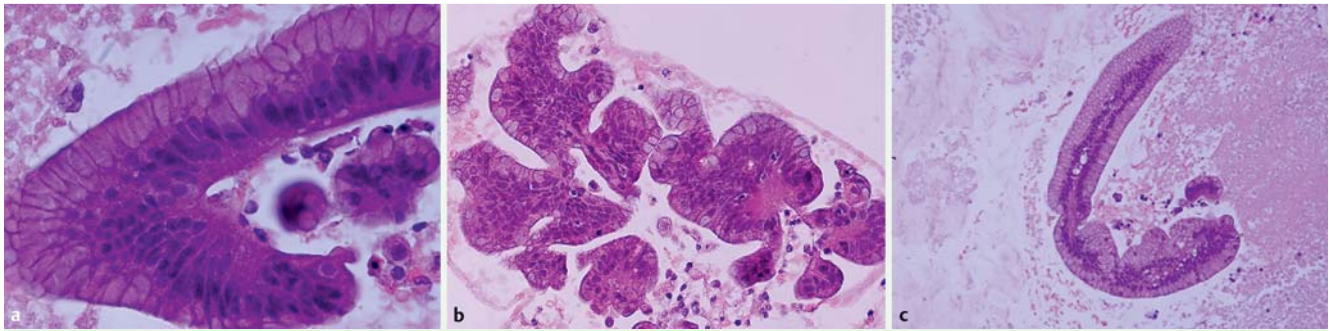
Because of their small size, we treated these specimens as cytologic samples. They were collected in formalin, entrapped in fibrin coagulum after being centrifuged, and then embedded in paraffin for

sectioning. The procedure ended with complete aspiration of the cystic fluid for cytologic, biochemical, and molecular biologic testing.

The results of pancreatic cystic wall FNA/B with the 19-gauge needle and cytologic analysis of the cystic fluid were both inadequate, but the through-the-needle forceps biopsy specimens yielded microhistologic samples of mucinous cylindrical epithelium with mild dysplasia (Fig. 4). In the cystic fluid, the carcinoembryonic antigen level was 7300 ng/mL and the amylase level was 30 U/L. The result of testing for the *K-ras* mutation was negative. Mucinous cystic neoplasm was diagnosed, and the patient was referred for surgery, which confirmed the diagnosis. The cytohistologic diagnosis of PCLs is challenging. The cytologic testing of cys-



Use of through-the-needle biopsy forceps in pancreatic cystic lesions.



**Fig. 4** a, b Mucinous epithelium with mild dysplasia. c Small papillary projection of the mucinous epithelium.

case. For our patient, this promising new technique was the only one to result in an adequate cytohistologic diagnosis. Clinical studies are needed to validate our results.

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**Competing interests:** None

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## Bibliography

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