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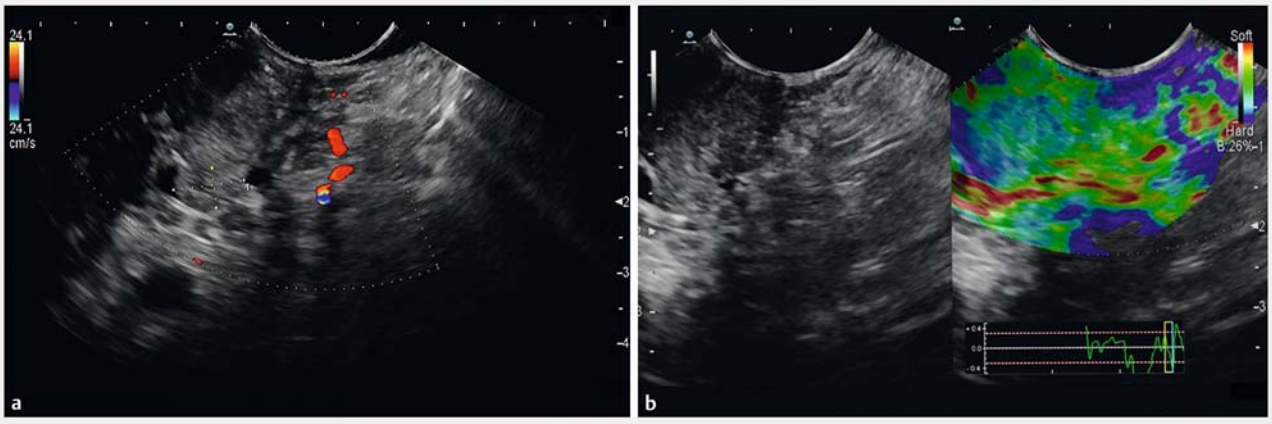
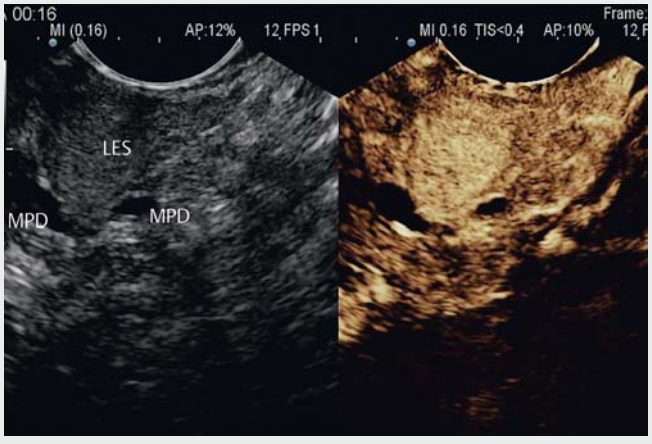
Pancreatic metastasis of papillary thyroid carcinoma with an intraductal growth pattern



▶ **Fig. 1** Endoscopic ultrasound (EUS) images. **a** Main pancreatic duct lesion invasion. **b** EUS elastography showed a soft pattern, different from pancreatic adenocarcinoma or neuroendocrine pancreatic tumors, which have a rigid elastography pattern.



Video 1 Main pancreatic duct (MPD) invasion with hyperenhancement of pancreatic metastasis (LES), both in early and late phases. Intraductal lesion invasion is also well evidenced after intravenous contrast injection.

Papillary thyroid carcinoma (PTC) is generally associated with excellent long-term outcome and survival [1,2]. PTC recurrence is most common in regional cervical lymph nodes and only 5%–7% of patients show a distant disease, most commonly in lung, bone, and brain [3].

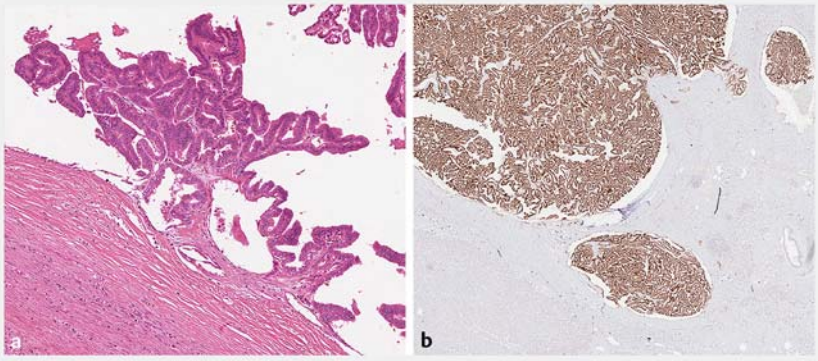
Pancreatic PTC metastasis represents an extremely rare event and endoscopic ultrasound (EUS) plays a fundamental role in diagnosis, histological characterization, and therapeutic decision making [4,5].

A 60-year-old man presented with a pancreatic solid mass (evidenced by computed tomography and magnetic resonance imaging) after recurrent pancreatitis. He had undergone thyroidectomy 15 years earlier for PTC and two subsequent extended lymphadenectomies for lymph node metastases. Subsequently, he presented paratracheal, pulmonary, and brain metastases.

EUS was performed using a linear echoendoscope (EG3870UTK; Pentax Medical, Tokyo, Japan) with the patient in the left lateral position and under deep sedation. A solid hypoechoic and hypervascular 20-mm lesion (▶ **Fig. 1**) was apparent in the pancreatic head, with peculiar intraductal growth in the dorsal duct and main pancreatic duct (MPD), and initial dilation upstream (▶ **Video 1**). Fine-needle aspiration (25 G Expect Slim-Line; Boston Scientific, Marlborough, Massachusetts, USA) and biopsy (25 G Acquire; Boston Scientific) were performed with rapid on-site evaluation by an expert cytopathologist. The final pathological diagnosis was PTC pancreatic metastasis.

At 2 months after the first EUS, the patient was evaluated for possible radiofrequency ablation (RFA) of the lesion under EUS guidance; however, pancreatic metastasis had increased in size and

▶ **Fig. 2** Pancreaticoduodenectomy specimen after bivalving through the common bile duct (asterisk). Black arrows indicate the papillary tumor growing inside the main pancreatic duct.



▶ **Fig. 3** Histological findings of pancreatic metastasis growing inside the main pancreatic duct. **a** Hematoxylin and eosin stain. **b** Immunohistochemical stain (TTF1 labels nuclei of neoplastic cells).

complete MPD infiltration (associated with dorsal pancreatic duct infiltration) was apparent. Owing to the high risks of EUS-RFA (pancreatitis, duct stenosis, incomplete targeting of the lesion), the patient was finally referred for surgical treatment (▶ **Fig. 2**, ▶ **Fig. 3**).

EUS represents a fundamental procedure for the diagnosis, characterization, and eventual treatment of pancreatic PTC metastasis. Surgery in high-volume centers can be considered in symptomatic patients.

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Competing interests

The authors declare that they have no conflict of interest.

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