

# Pancreatoscopy of intraductal papillary mucinous neoplasm of the pancreas



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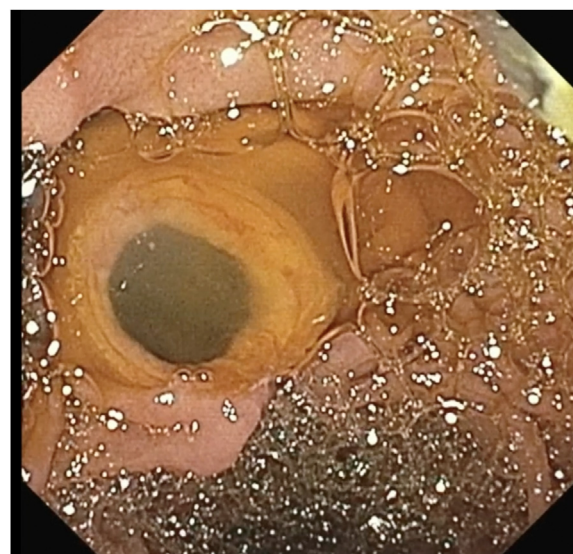
Intraductal papillary mucinous neoplasms (IPMNs) are cystic tumors that occur in the pancreas. IPMNs are considered precursor lesions to pancreatic cancer and require careful monitoring and management. They are characterized by their location, either arising from the main duct (MD-IPMN), a branch duct, or a combination of the two. MD-IPMNs have a higher risk of malignant transformation. IPMNs are often asymptomatic and incidentally discovered during imaging studies. Presenting symptoms include abdominal pain, jaundice, weight loss, and pancreatitis. Imaging techniques are used for initial detection and characterization. EUS with FNA is useful for further evaluation and obtaining tissue samples. Endoscopic examination may reveal fish mouth sign, which is characterized by a bulging, prominent ampulla that is extruding mucin. The fish mouth sign has a prevalence of 25% to 50% and is considered pathognomonic and specific (91%) for IPMN of the pancreas when present.<sup>1</sup>

While total pancreatectomy provides complete oncologic remission, its postoperative impact on patient quality of life and morbidity is significant.<sup>2</sup> Determining the extent of the disease within the pancreatic duct can be helpful because it decreases the risk of over-resection.<sup>3</sup> Single-operator pancreatoscopy allows for targeted biopsies to provide histologic diagnosis as well as defining the extent of disease.<sup>4</sup> Previous data have suggested that single-operator pancreatoscopy can assist with determining surgical excision lines.<sup>5</sup>

A 71-year-old Asian woman presented with a 4-month history of intermittent right upper quadrant pain. She also complained of decreased appetite and 10-lb weight loss. Laboratory studies were significant for a CA 19-9 of 233 U/mL (<34 U/mL). A CT scan revealed marked dilatation of the pancreatic duct throughout the head, body, and tail (Fig. 1).



**Figure 1.** CT scan showing marked dilatation of the pancreatic duct throughout the head, body, and tail. In the pancreatic head, the pancreatic duct measured 3.2 cm in diameter.



**Figure 2.** Endoscopy showing fish mouth sign.

*Abbreviations:* IPMN, intraductal papillary mucinous neoplasm; MD-IPMN, main duct intraductal papillary mucinous neoplasm.

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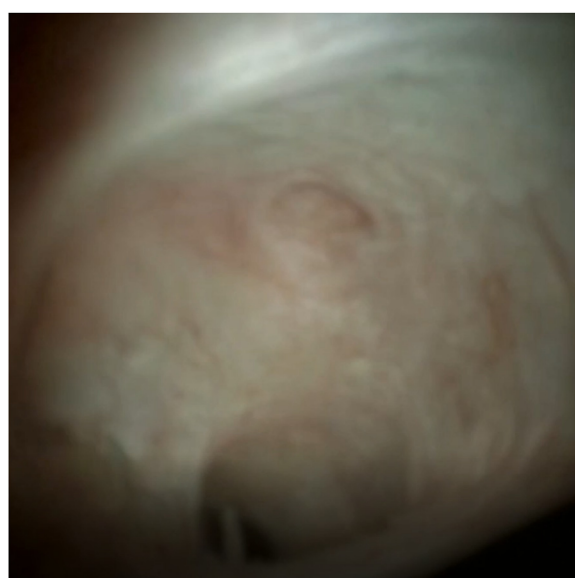
In the pancreatic head, the pancreatic duct measured 3.2 cm in diameter. Endoscopy displayed fish mouth sign, and subsequent pancreatoscopy showed copious mucin, papillary fronds, and projections with a fish-egg appearance (Fig. 2). We used fluoroscopy (Fig. 3) in conjunction with pancreatoscopy to determine the extent of papillary fronds within the pancreatic duct (Figs. 4-6). Biopsy specimens were taken of the papillary fronds for histology (Figs. 7-9).



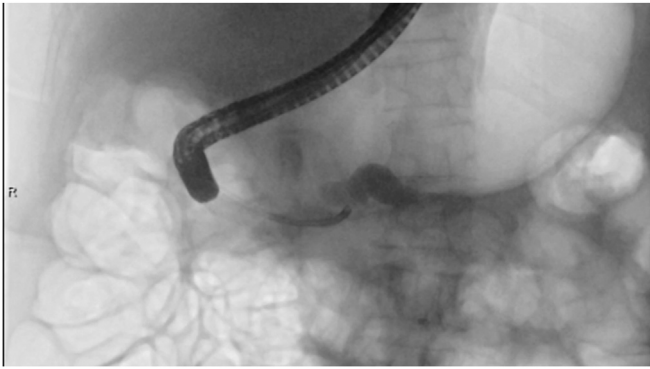
**Figure 3.** Fluoroscopy used to outline the dilated pancreatic duct and confirm wire placement into the pancreatic duct.



**Figure 4.** Initial pancreatoscopy was technically challenging because of the large amount of debris and mucin in the pancreatic duct.



**Figure 5.** Normal pancreatic duct in the body of the pancreas.



**Figure 6.** Fluoroscopy was used to determine the extent of papillary fronds within the pancreatic duct.



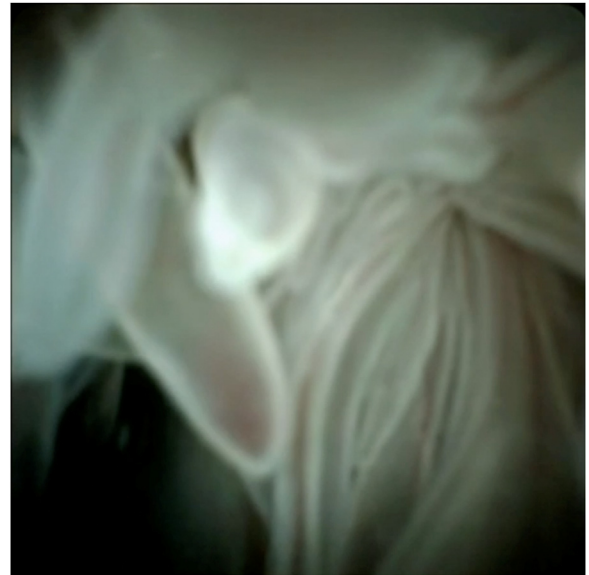
**Figure 7.** Pancreatotomy showing papillary fronds.

This showed mucinous columnar epithelium with low-grade dysplasia compatible with IPMN, and immunohistochemical stains showed increased expression of p53. The patient was discussed at our multidisciplinary tumor board and the decision was made to offer the patient an extended pancreaticoduodenectomy over total pancreatectomy using frozen sections to ensure negative margins.

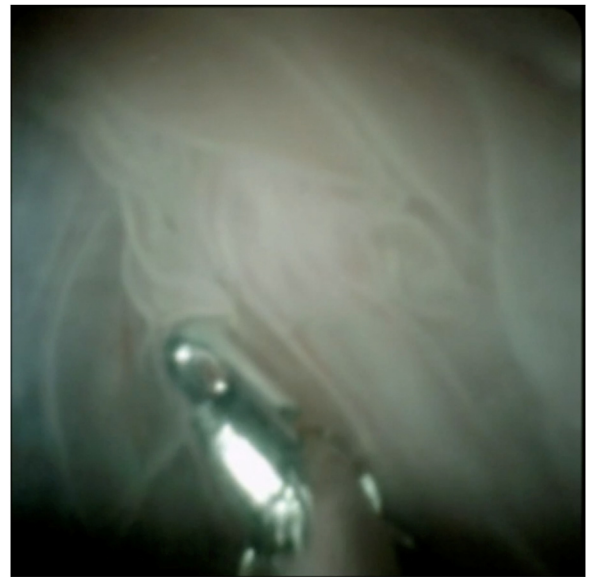
In conclusion, IPMNs are cystic lesions of the pancreas that are precursor lesions to pancreatic cancer and require close monitoring.<sup>6</sup> Fish mouth sign is considered pathognomonic for IPMN when present. Pancreatotomy is helpful in histologic diagnosis as well as defining the extent of disease (Video 1, available online at [www.videogie.org](http://www.videogie.org)).

## DISCLOSURE

The authors did not disclose any financial relationships.



**Figure 8.** Another pancreatotomy image showing papillary fronds and fish egg-like projections.



**Figure 9.** Biopsy of papillary fronds.

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