

The spearfishing sign: differentiating mucin from mural nodules in pancreatic cysts

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Pancreas cystic lesions have been increasingly detected with expanded use of high-resolution CT and magnetic resonance imaging. Mural nodules in pancreatic cysts are a strong predictor of malignancy and considered consensus criteria for resection.¹⁻⁴ Despite important advancements in cross-sectional imaging over the past decade, studies have shown the sensitivity and specificity of retrospective CT review for epithelial nodules were 47% and 89%, respectively. Thus, EUS has played a pivotal role in diagnosing mural nodules. However, inspissated mucin can resemble mural nodules, but these are not high-risk findings and do not warrant additional interventions. Therefore, it is critical to differentiate mucin from mural nodules as it guides subsequent decision making, including surgical evaluation for possible pancreatic resection.^{5,6} We present a case of a patient referred to our center for evaluation of pancreas cyst with an intracystic lesion.

A 43-year-old woman with a medical history of right-sided breast cancer status post-lumpectomy and radiation treatment on hormonal therapy was referred to the Pancreas Clinic for evaluation of a pancreatic head/uncinate cyst noted on CT and magnetic resonance imaging reporting a nonenhancing intracystic nodule with findings representative of a mucinous cystadenoma versus side-branch intraductal papillary mucinous neoplasm (IPMN) (Figs. 1 and 2). The patient underwent EUS evaluation, which demonstrated a 4.1-cm cyst with an intracystic lesion that demonstrated imaging features of a hyperechoic rim, smooth edge, and hypoechoic center (Fig. 3). FNA was performed for laboratory fluid analysis. After initial partial cyst decompression, the needle was used to focally puncture the lesion. The lesion readily moved with needle puncture, confirming the diagnosis of a mobile mucin ball. This maneuver is described as the spearfishing sign (Fig. 4; Video 1, available online at www.videogie.org).

Abbreviation: IPMN, intraductal papillary mucinous neoplasm.

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Fluid analysis was consistent with the diagnosis of a mucinous cyst with amylase 69410, carcinoembryonic antigen 47, abundant mucin, and cytology negative for malignancy (Fig. 5). There were no procedural adverse events. The overall impression was consistent with a branch duct IPMN with 1 worrisome feature (>3 cm). Given that the intracystic lesion was identified to be inspissated mucin and not a mural nodule, a multidisciplinary decision was made to observe the patient with surveillance MRCP in 6 months.

Mural nodules are often too small to be seen on cross-sectional imaging, and distinguishing a mural nodule with mucin on EUS can be challenging. The emerging technologies in EUS, including contrast-enhanced EUS and EUS-

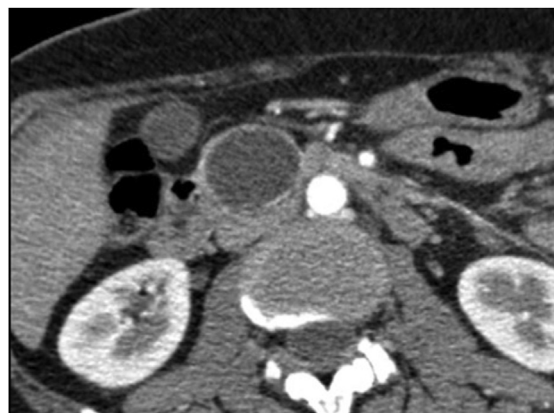


Figure 1. CT findings of a pancreatic head/uncinate cyst.

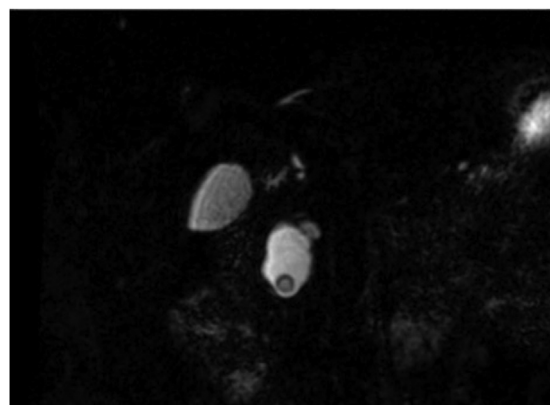


Figure 2. Magnetic resonance imaging demonstrating intracystic nodule.

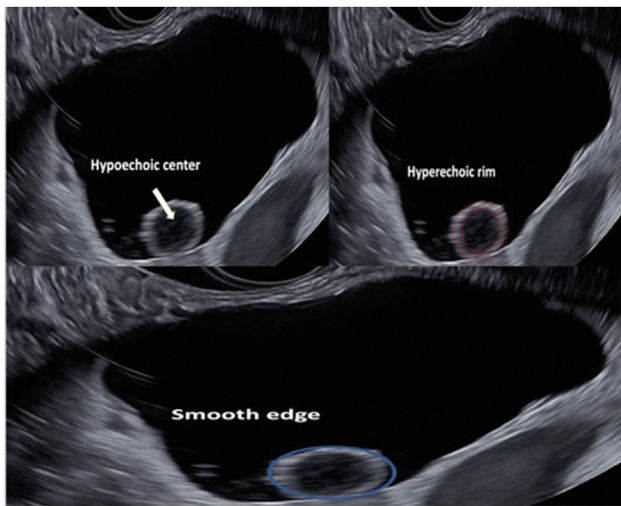


Figure 3. EUS examination of intracystic lesion with hypochoic center, hyperechoic rim, and smooth edge.

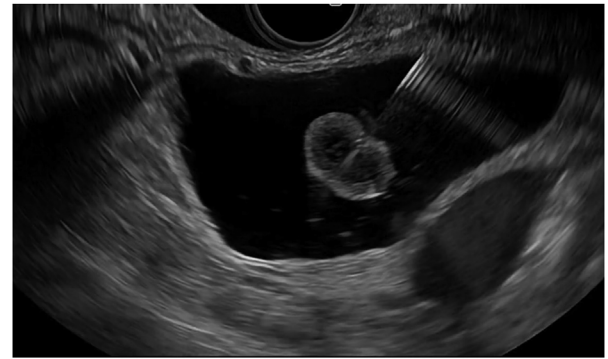


Figure 4. FNA needle spearfishing sign in a pancreas cyst with intracystic lesion.

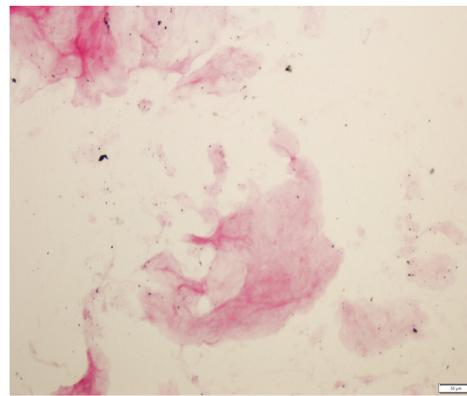
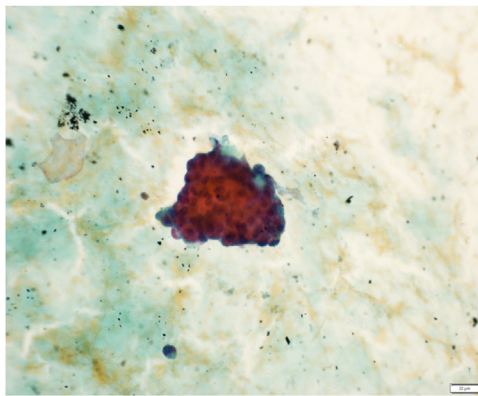


Figure 5. FNA cytology with bland appearing epithelial cluster with mucin and few macrophages (PAP and mucin stain, mag. $\times 200$).

guided SpyGlass (Boston Scientific, Natick, MA, USA), are validated tools in expert hands with additional training.^{7,8} The spearfishing sign is an easy immediate maneuver to distinguish these 2 entities and can help any endosonographer who performs FNA to better identify inspissated mucin masquerading as a mural nodule, which can drastically alter subsequent management decisions.

DISCLOSURE

Dr Chandrasekhara is a consultant for Boston Scientific, Covidien LP and is a shareholder for Nevakar Corporation. Dr Umar disclosed no financial relationships.

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