Editorial

Endoscopic Ultrasound

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EUS-guided through-the-needle microforceps biopsy for pancreatic cysts: Why no widespread adoption?

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EUS-guided through-the-needle microforceps biopsy (TTNB) has been shown to have an accuracy, sensitivity, and specificity of 78.8%, 82.2%, and 96.8%, respectively, for diagnosing pancreatic cyst subtypes.[1–7] However, despite data showing the efficacy and clinical value of this device, TTNB has not seen widespread clinical adoption by the EUS community. Why is this the case?

It has been over a decade since the first use of TTNB to perform direct intracystic biopsy was reported by Aparicio et al.[8] This initial report was followed by a number of studies on its diagnostic performance.[1–8] TTNB has demonstrated histological adequacy with regard to tissue acquisition in comparison to other tools to investigate pancreatic cysts such as fine-needle aspiration, cyst fluid analysis, and cyst fluid cytology. These earlier techniques have been shown to have, in many cases, limited diagnostic value. This is particularly true among patients with suspected intraductal papillary mucinous neoplasms without obvious communication with the main pancreatic duct and in cases with very viscous fluid that cannot undergo standard chemical analysis.[9,10]

Pancreatic cyst fluid is usually only scantly cellular. By comparison, TTNB samples contain tissue from the lining of the cyst wall, including both epithelial cells and associated connective tissue.[11] The safety profile of EUS-TTNB is reasonable, with an overall pooled adverse rate of 8%. Serious adverse events were reported to occur in about 1% of patients. Intracystic bleeding and procedure-related acute pancreatitis are the most feared adverse events.[12]

The 2018 American College of Gastroenterology guidelines recommend obtaining cyst fluid cytology for analysis in patients with known or suspected mucinous pancreatic cystic lesions. However, the median diagnostic accuracy and sensitivity are less than 50%, significantly lower than those of EUS-TTNB.[12] The guideline only briefly mentions TTNB and calls for larger, prospective, multicenter trials, a comment that offers little guidance to the practicing clinician.[13,14]

Multiple factors could explain the apparent reluctance to use TTNB in the diagnostic workup of Pnacreatic cyst lesions (PCLs). Available studies of TTNB show heterogeneity with regard to the technique used. Most studies on TTNB have used 3 passes for sample collection, but this number is arbitrary, and endosonographers may be unsure of how to best, or even properly, utilize TTNB. Tacelli et al reported higher accuracy and diagnostic yield with an increasing number of passes, but this comes with an increased risk of adverse events.[7]

EUS-TTNB is a relatively new the procedure in the field of advanced endoscopy. The intricacies of EUS-TTNB demand specific training and the development of a high level of experience and expertise, which may not be widely available. The perceived complexity and limited expertise in many regions might contribute to this reluctance to adopt EUS-TTNB.

In many instances, there could be a correlation between the hesitancy and the fear of adverse events. This highlights the importance of specialized training programs and continuous professional development for newer procedures, maximizing both patient safety and diagnostic accuracy. However, many practitioners may prefer to continue with what they know and tend to be conservative when adopting new techniques such as EUS-TTNB, that is, “My old tools have worked for me all these years, so I do not have to change.”

Critically, TTNB does not have a specific billing code, so there is no additional reimbursement in the United States for use of this device. This alone may account for much of the limited adoption of this technology. Increases in procedure time as well additional risks of adverse events without concomitant increase in reimbursement almost certainly play a role in the thought processes of clinicians.

Finally, the lack of broad clinical usage of EUS-TTNB may simply reflect that PCLs are no longer a “hot topic” in EUS or even pancreatology at this point. Once the source of frequent lectures at national meetings, innumerable publications, and frequent surgical debates regarding proper medical and surgical management, PCLs may simply be felt to be largely a “settled” issue, and endosonographers may be less than enthusiastic about revisiting this topic for additional research studies.

Although EUS-TTNB appears to be a useful tool for more detailed characterization of pancreatic cystic lesions, it has not crossed over into widespread use by the EUS community. It would be interesting to see if this situation were affected by the development of an appropriate Current Procedural Terminology (CPT) code. Unless

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some new data on this device emerge, and with progress in competing technologies such as genomic pancreatic fluid analysis, this is unlikely to change going forward.

Ethical Approval

This is an editorial from already published studies/data; therefore, it does not involve active human participants and/or animals. Hence, a formal consent, informed consent, institutional review board approval, and ethics approval are not applicable and/or not required.

Conflicts of Interest

Douglas G. Adler is a Co-Editor-in-Chief of the journal. The article was subjected to the standard procedures of the journal, with a review process independent of the editor and his research group.

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Author Contributions

VM, DGA: conception of study idea. VM, BPM: drafting of initial manuscript, editing. All authors: reviewing, editing for intellectual content, and final approval of manuscript.

References

1. Facciorusso A, Del Prete V, Antonino M, Buccino VR, Wani S. Diagnostic yield of EUS-guided through-the-needle biopsy in pancreatic cysts: a meta-analysis. *Gastrointest Endosc* 2020;92:1–8.e3.
2. Kovacevic B, Karstensen JG, Havre RF, et al. Initial experiencewith EUS-guided microbiopsy forceps in diagnosing pancreatic cystic lesions: a multicenter feasibility study (with video). *Endosc Ultrasound* 2018;7:383–388.
3. Cheesman AR, Zhu H, Liao X, et al. Impact of EUS-guided microforceps biopsy sampling and needle-based confocal laser endomicroscopy on the diagnostic yield and clinical management of pancreatic cystic lesions. *Gastrointest Endosc* 2020;91:1095–1104.
4. Crino SF, Bernardoni L, Brozzi L, et al. Association between macroscopically visible tissue samples and diagnostic accuracy of EUS-guided through-the-needle microforceps biopsy sampling of pancreatic cystic lesions. *Gastrointest Endosc* 2019;90:933–943.
5. Hashimoto R, Lee JG, Chang KJ, et al. Endoscopic ultrasound–through-the-needle biopsy in pancreatic cystic lesions: a large single center experience. *World J Gastrointest Endosc* 2019;11:531–540.
6. Robles-Medranda C, Olmos JI, Oleas R, et al. Tu1399 EUS-through-the-needle technologies in the diagnosis and malignancy detection of pancreatic cysts: a comparative study between different technologies. *Gastrointest Endosc* 2019; 89:AB608–AB609.
7. Tacelli M, Celsa C, Magro B, et al. Diagnostic performance of endoscopic ultrasound through-the-needle microforceps biopsy of pancreatic cystic lesions: Systematic review with meta-analysis. *Dig Endosc* 2020. doi: 10.1111/den.13626.
8. Aparicio JR, Martinez J, Niveiro M, et al. Direct intracystic biopsy and pancreatic cystoscopy through a 19-gauge needle EUS (with videos). *Gastrointest Endosc* 2010;72:1285–1288.
9. European Study Group on Cystic Tumours of the Pancreas. European evidence-based guidelines on pancreatic cystic neoplasms. *Gut* 2018;67: 789–804.
10. de Pretis N, Mukewar S, Aryal-Khanal A, et al. Pancreatic cysts: diagnostic accuracy and risk of inappropriate resections. *Pancreatology* 2017;17: 267–272.
11. Larghi A, Manfrin E, Fabbri C, et al. Interobserver agreement among expert pathologists on through-the-needle microforceps biopsy samples for evaluation of pancreatic cystic lesions. *Gastrointest Endosc* 2019;90(5): 784–792.e4.
12. McCarty T, Rustagi T. Endoscopic ultrasound–guided through-the-needle microforceps biopsy improves diagnostic yield for pancreatic cystic lesions: a systematic review and meta-analysis. *Endosc Int Open* 2020;8(10): E1280–E1290. doi:10.1055/a-1194-4085. Epub 2020 Sep 22. PMID: 33015329; PMCID: PMC7508652.
13. Barresi L, Tacelli M, Ligresti D, et al. Tissue acquisition in pancreatic cystic lesions. *Dig Liver Dis* 2019;51:286–292.
14. Elta GH, Enestvedt BK, Sauer BG, Lennon AM. ACG clinical guideline: diagnosis and management of pancreatic cysts. *Am J Gastroenterol* 2018; 113(4):464–479. doi:10.1038/ajg.2018.14.