EUS-guided fine-needle biopsy for histological examination: Is it time to change our sampling technique?

Dear Editor,

In the last decade, several novel core biopsy needles and endoscopic techniques have been developed to overcome the limitations of EUS-FNA, with varying degrees of success. These innovations may facilitate a crucial shift in this field from cytology to histology, increasing diagnostic capabilities and allowing for evaluation of predictive molecular markers to drive personalized therapies.\(^{[1]}\)

However, persistent questions regarding the optimal technique must be addressed before widespread conversion to EUS-guided fine-needle biopsy (EUS-FNB).\(^{[2]}\) Should the technique to perform EUS-FNB be different than for EUS-FNA cytological samples? Percutaneous core biopsies are done as a single “gun-shot,” while the current standard practice for EUS-FNA is to gather cytological specimens from three to four different areas within the target lesion, with up to four of back and forth movements in each area.\(^{[3]}\) This so-called “fanning” technique is superior to the previous approach, which utilized multiple to and fro movements inside a single area of the target lesion.\(^{[4]}\)

What should be done differently when performing an EUS-FNB? It appears clear from the failure of the Trucut needle (QuickCore®, Cook Medical USA Bloomington, IN, USA) to show any advantage over standard FNA needles\(^{[5]}\) that the answer is not a very stiff guillotine 19-gauge needle that allows for a single “firing” attempt.\(^{[6]}\) On the other hand, very good results have been obtained using 19-gauge needles, both standard needles and those specifically modified with a reverse side-bevel technology (Procore™, Cook Medical) to enhance the collection of the tissue core.\(^{[7-12]}\) Interestingly, in some of the studies using a standard 19-gauge needle, a technique named EUS-guide fine-needle tissue acquisition (EUS-FNTA) was utilized.\(^{[11,12]}\) With this technique, the stylet is removed completely before insertion of the needle in the working channel of the echoendoscope to increase needle flexibility.\(^{[11]}\) For both the Procore™ needle and EUS-FNTA studies,\(^{[7,11]}\) once the needle is inserted in the target lesion, a single to and fro movement is performed in three to four different areas of the lesion. Changing of the position/angulation of the needle is obtained by moving the big dial upward while the needle is being retracted. If needed, it is also possible to retract the needle entirely to target a different area of the lesion.

We did not perform a comparative study to prove if our “gut feeling” was correct and continued to utilize the EUS-FNTA technique described above to perform both clinical studies and the daily clinical practice. Very recently, however, our chief pathologist met with four other experts and 5 nonexpert pathologists to perform a revision of cytological and histological samples from a meaningful number obtained during the ASPRO study, an international multicenter randomized controlled study comparing the performance of EUS-FNA versus EUS-FNB performed using a standard 25 FNA needle and the newly available EUS-FNB needle the 20-gauge Procore™ (Cook Medical). He came back from the meeting and proudly told us that our histological samples were quantitatively and qualitatively the best and that all the other pathologists asked him how the specimens were handled. Their thought was that the way specimens were handled resulted into a better result. Surprisingly, the way we treated the samples was among all the participants to the meeting the easiest one, i.e., the samples were handled as they were standard endoscopic biopsies by placing them directly in formalin, by flushing the needle with normal saline.

That day, we understood that what we were doing for years was completely right. It is the technique that matters even if you handle the specimens in the simplest way. We speculated that multiple to and fro
movements in the same area can create damage of the tissue with bleeding, which on the other hand is limited by the single back and forth movement done in a specific area of the solid lesion. Differently from cytological specimen, histological ones like the one-shot technique with three or four targeted areas.

With the very high rate of diagnostic accuracy reached with newly available needles for EUS-FNB (The 20-gauge Procore™ (Cook Medical), the 22- and 25-gauge SharkCore™ (Medtronic PLC, Dublin, Ireland), and the 22- and 25-gauge Acquire™ (Boston Scientific Corporation, Marlborough, MA, USA), it will be difficult numerically to prove that our hypothesis is correct. However, sample quality is very important because EUS-FNB is expected to move the practice of EUS from cytology to histology thereby expanding the utilization of EUS throughout the world and facilitate targeted therapies and monitoring of treatment response in a more biologically driven manner.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

Giulia Gibiino, Alberto Larghi
Digestive Endoscopy Unit, Catholic University, Rome, Italy

Address for correspondence
Dr. Alberto Larghi,
Digestive Endoscopy Unit, Catholic University, Largo A. Gemelli, 8, 00168 Rome, Italy.
E-mail: alberto.larghi@yahoo.it
Received: 2017-02-28; Accepted: 2017-07-10; Published online: 2018-02-15

REFERENCES
1. Wani S, Muthusamy VR, Komanduri S. EUS-guided tissue acquisition: An evidence-based approach (with videos). Gastrointest Endosc 2014;80:939-59. e7.
2. Panic N, Larghi A. Techniques for endoscopic ultrasound-guided fine-needle biopsy. Gastrointest Endosc Clin N Am 2014;24:83-107.
3. Bang JY, Magee SH, Ramesh J, et al. Randomized trial comparing fanning with standard technique for endoscopic ultrasound-guided fine-needle aspiration of solid pancreatic mass lesions. Endoscopy 2013;45:445-50.
4. Chang KJ. Maximizing the yield of EUS-guided fine-needle aspiration. Gastrointest Endosc 2002;56:S28‑34.
5. Thomas T, Kaye PV, Ragunath K, et al. Efficacy, safety, and predictive factors for a positive yield of EUS-guided trucut biopsy: A large tertiary referral center experience. Am J Gastroenterol 2009;104:584‑91.
6. Levy MJ, Wiersma MJ. EUS-guided trucut biopsy. Gastrointest Endosc 2005;62:417‑26.
7. Iglesias-Garcia J, Poley JW, Larghi A, et al. Feasibility and yield of a new EUS histology needle: Results from a multicenter, pooled, cohort study. Gastrointest Endosc 2011;73:1189-96.
8. Iglesias-Garcia J, Abdulkader I, Lariño-Noia J, et al. Evaluation of the adequacy and diagnostic accuracy of the histology samples obtained with a newly designed 19-gauge EUS histology needle. Rev Esp Enferm Dig 2014;106:6-14.
9. Yasuda I, Tsurumi H, Omar S, et al. Endoscopic ultrasound-guided fine-needle aspiration biopsy for lymphadenopathy of unknown origin. Endoscopy 2006;38:919-24.
10. Iwashita T, Yasuda I, Doi S, et al. The yield of endoscopic ultrasound-guided fine needle aspiration for histological diagnosis in patients suspected of stage I sarcoidosis. Endoscopy 2008;40:400‑5.
11. Larghi A, Verna EC, Ricci R, et al. EUS-guided fine-needle tissue acquisition by using a 19-gauge needle in a selected patient population: A prospective study. Gastrointest Endosc 2011;74:504‑10.
12. Larghi A, Capurso G, Carnaccio A, et al. Ki-67 grading of nonfunctioning pancreatic neuroendocrine tumors on histologic samples obtained by EUS-guided fine-needle tissue acquisition: A prospective study. Gastrointest Endosc 2012;76:570‑7.
13. DiMaio CJ, Kolb JM, Benias PC, et al. Initial experience with a novel EUS-guided core biopsy needle (SharkCore): Results of a large North American multicenter study. Endosc Int Open 2016;4:E974-9.
14. Nayar MK, Panandip B, Davevas MF, et al. Comparison of the diagnostic performance of 2 core biopsy needles for EUS-guided tissue acquisition from solid pancreatic lesions. Gastrointest Endosc 2017;85:1017-24.
15. Bang JY, Hebert-Magee S, Hasan MK, et al. Endoscopic ultrasonography-guided biopsy using a franseen needle design: Initial assessment. Dig Endosc 2017;29:338-46.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.