Endoscopic ultrasound-guided fine-needle aspiration studies: Fanning the flames

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We hope you have found our series of reviews on endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) useful, and I would like to sincerely thank the authors for their very hard work. We tried to focus on an evaluation of variables that can impact the success of EUS-FNA, from training, to technique, to complications. Hence what can we conclude from all these data?

The sheer volume of data suggested that EUS-FNA is arguably the most unique and powerful clinical tool that EUS can provide, and will likely help maintain a niche for EUS in clinical practice for years to come; since it uniquely combines high-resolution and very safe and effective tissue acquisition. Generally speaking, a sensitivity of >85% should be attainable[1] (higher for nodes, lower for more difficult lesions such as submucosal tumours). It is also very safe in experienced hands.[2] Therefore, it is hard to imagine an EUS practice that does not providing EUS-FNA capability to referring physicians.

So what about technical variables? In a recent survey of experts, there was variability their FNA practice. However, for cytology specimens, there was good consensus (≥75% agreement) for: The number of passes (1-3 passes), use of fanning, use of a cellblock, and use of alcohol as cytology medium. On the contrary, there was poor agreement (≤50%) for: Availability of on-site cytology, preference for the 25 gauge needle, and the value of looking for tissue cores. The results were similar for FNA biopsy except there was no consensus on needle size or on the type of suction technique used (Marco Bruno, personal communication). The use of the stylet and suction were not assessed, but it is clear that many people continue to use the stylet (despite extensive data proving its lack of value),[3-7] and most people continue to use suction, despite conflicting data.[8-11] Hence, while there is some consensus on some variable, there is a large potential mix of these variables, which leads to very poor agreement on the number one overall best technique. Simply put, most have one technique that they use, that they stick with, and that they think is best!

What is then somewhat perplexing to me is that, despite these varied techniques, the overall yield in EUS-FNA results, based on the available data, and in experienced hands, remains about the same – no matter what you do. For the most commons indications, pancreatic masses and lymph nodes, the sensitivity rarely goes above 92% and 95% respectively,[12] and this with various techniques and operators. We obtain identical results with no stylet, no suction, a 25 gauge needle, and an aggressive "multi-pass" fanning technique.

Therefore, an important question would be: Why do experienced endosonographers all get similar results, but with different techniques? Given that, there was consensus for fanning, the number of passes, and use of similar sample processing (cell block), it

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would appear that the one variable all experienced endosonographers share that less successful operators may not, is the sampling pattern. Interestingly, this variable is rarely, if ever, described in detail in FNA studies.

The question therefore remains: Is technique more important than the device? For future studies comparing new devices, I believe it is crucial to ensure that the sampling pattern is measured as a key variable, since different devices and/or techniques can affect the sampling pattern. For example, some devices may be stiffer and may therefore make fanning more difficult. Other needle designs may make reduce the ability to make long or aggressive needle strokes due to increased friction. Therefore, it is possible that some devices produce better results, not due to improved needle tip design, but simply because they make effective needle movement easier. Or, it is possible that effective needle movement can overcome perceived improvements in needle design. Hence, in the experienced hands, good technique may weigh more on results than any differences in device design, but in less experienced hands, devices may make a difference – this needs to be clarified in future studies.

If technique does prove to be a key variable, then it follows that further work will be required to study the best technique to teach EUS-FNA. In our experience in training people with limited EUS experience, it is quite evident that performing high quality EUS-FNA (particularly for pancreatic masses) is harder than it looks. For larger (>3 cm) body lesions, where the scope is in a straight position, FNA is fairly straightforward; but even then, fellows often struggle to move the needle effectively due to the unexpected hardness of the mass. It would be interesting to determine, if possible, if there is a minimum standard of needle sampling pattern that must be attained to achieve expert results. And again, if there is a minimal sampling pattern required, what is the best way to teach it? Could it be done only with direct supervision, or could it be done through simulators or simply by diagrams.

So, while there are certainly many studies to come comparing different devices, I think it is time to ask more questions about the operator, than the device. As a general rule, these studies require a randomized, controlled trial (RCT) design. However, always remember that, in the case of RCTs comparing devices for EUS-FNA, it is impossible to blind the operator. Therefore, there is always the possibility of bias towards the operator's preferred device – especially if there is no standardization and objective documentation of the FNA sampling pattern.

Finally, there is a lot of interest in core specimens. The paper by Fuccio and Larghi published in this issue shows that we are fairly good at obtaining core samples with various needles, as long as the needle is large enough.[13] However, it remains unclear whether cores are really necessary for most indications. A cellblock allows cytology specimens to be centrifuged into a pellet that can then be processed like a tissue block to then make pathology slides. In our unit, this "pseudo-histology" allows our pathologist to do flow cytometry and immunochemistry studies. Is this sufficient for most oncological analyses? If this is so, then core specimens might be needed only in cases where tissue structure is truly required, such as lymphoma and liver biopsy. Since core needles are often significantly more expensive than standard needles, and also somewhat harder to use, they could be reserved for cases where standard needles are clearly inadequate.

Again, we hope you have found the reviews in the last two issues helpful. Much work has been done, but there is still much work to do in order to clarify what are the best, baseline technique and device for EUS-FNA.

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