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Which Needle Is Better for Diagnosing Subepithelial Lesions?

Eun Young Kim

Department of Internal Medicine, Catholic University of Daegu School of Medicine, Daegu, Korea

See "Yields and Utility of EUS-Guided 19-Gauge Trucut Biopsy versus 22-Gauge Fine Needle Aspiration for Diagnosing Gastric Subepithelial Tumors" by Hee Kyong Na, Jeong Hoon Lee, Young Soo Park, et al., on page 152-157.

Endoscopic ultrasonography (EUS) plays an essential role in the diagnostic process for subepithelial lesions (SELs). Location of the mass within the gut wall, internal echogenicity, outer margins of the mass, and its relation to extramural structures can all be determined using EUS. Careful examination may provide a definitive diagnosis such as cyst or lipoma when these characteristic EUS findings are observed. Alternately, narrowing the differential diagnosis is possible by an 'educated guess' based on the information obtained from EUS examination.[1] However, the accuracy of EUS in the diagnosis of SEL is not absolute and a microscopic tissue examination is still necessary to obtain a definitive diagnosis of SEL.

There are many methods available for tissue acquisition for diagnosing SEL.[2] EUS-guided tissue acquisition is regarded as a safe and accurate method and EUS-guided fine needle aspiration (EUS-FNA) is a widely-used approach. Nevertheless, reported diagnostic accuracy of EUS-FNA for SEL varies broadly from 60% to 98%[3,4] as results are easily influenced by various factors such as the availability of an on-site cytopathologist, experience of endosonographer, location and size of lesion, equipment used, technique used, and deviated data interpretation.[2,5] The spring-loaded 19-gauge (G) biopsy needle Trucut (QuickCore; Cook Medical, Winston-Salem, NC, USA) has been introduced for EUS-guided Trucut biopsies (EUS-TCBs) for increased diagnostic accuracy by providing sufficient core tissue for immunohistochemical staining and architectural examination. However, its diagnostic yield has not met expectations.[6]

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Correspondence: Eun Young Kim
Department of Internal Medicine, Catholic University of Daegu School of Medicine, 33 Duryugongwon-ro, Nam-gu, Daegu 705-718, Korea
Tel: +82-53-650-4092, **Fax:** +82-53-624-3281, **E-mail:** kimey@cu.ac.kr

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In this issue of *Clinical Endoscopy*, Na et al.[7] reported their experience with EUS-guided sampling and the diagnostic accuracy of 19-G EUS-TCB versus 22-G EUS-FNA for SEL. The authors aimed to compare the yield and utility of these two different types of needles in the diagnosis of gastric SEL through retrospective analysis. The diagnostic yields of 19-G TCB and 22-G FNA were 77.8% and 38.7%, respectively (p<0.001). They, therefore, concluded that 19-G EUS-TCB is a safe and highly valuable tool in the diagnosis of gastric SELs larger than 2 cm. To accept their conclusion, a careful interpretation of these results is suggested. This study is based on 152 cases that underwent EUS-guided sampling during a 6 and half year period between November, 2005 and May, 2012. A 22-G FNA needle was used for 62 patients (40.8%) and a 19-G TCB needle was used for 90 patients (59.2%). An interesting aspect of this study involves the annual usage of needles reported. Reported usages of 22-G FNA versus 19-G TCB were 2 vs. 0 in 2005 (from November only), 5 vs. 0 in 2006, 2 vs. 2 in 2007, 2 vs. 9 in 2008, 8 vs. 15 in 2009, 16 vs. 24 in 2010, 17 vs. 26 in 2011, and 10 vs.14 in 2012 (until May). The authors noted that the 19-G TCB needle was only adopted in their endoscopy unit since January 2007. This means that they mainly used 22-G FNA needle in the early 15 months of the study period, while 19-G TCB needle was used, together with the FNA needle, after those 15 months through the study period. Operating endosonographers were at liberty to choose the needles for each procedure, suggesting the possibility of a selection bias mentioned in this publication. It is not clear how the needle was chosen, but it can be assumed that TCB needle could not completely replace FNA needle. Furthermore, 77% of EUS-FNAs were performed before 2010 while just 55% of EUS-TCBs were performed before 2010. In the absence of information regarding the endosonographers' experience, it may be speculated that EUS-TCBs were performed more frequently at a later stage, once endosonographers had gained sufficient ex-

perience in EUS-guided tissue acquisition. In addition, the diagnostic yield of EUS-FNA reported in this study was lower than that reported by earlier publications. The authors surmise that this may be due to the absence of an on-site cytopathologist. However, additional factors need to be counted.

Procuring core tissue with preserved architecture for histological evaluation may be beneficial for the diagnosis of certain diseases such as SEL,[8] lymphomas,[9] and autoimmune pancreatitis.[10] With the samples obtained using EUS-FNA, cytological evaluation and cell block preparation for immunohistochemical staining are doable.[11] However, EUS-TCB could have greater potential with regards to acquiring sufficient tissue for immunohistochemical staining for the diagnosis of SEL, including hypoechoic mass originating from the fourth wall layer, such as gastrointestinal stromal tumor (GIST).[12,13] The usefulness of EUS-TCB appears to vary across studies and some authors have suggested supplemental use of FNA or TCB needles for rescuing the alternate.[12,13] One prospective study suggested that EUS-FNA only raised suspicion of a mesenchymal tumor, while EUS-TCB correctly classified GIST or leiomyoma by providing significant additional information.[14] A further advantage of EUS-TCB is that the endosonographer can be assured of a visible tissue core sample with their own eyes and thus expect a good outcome even though there is no available on-site cytopathologist.

Technical failure of EUS-TCB mainly occurs when location of the lesion does not allow the needle to reach or be fired due to the scope angulation. The fundus and distal antrum are known to be challenging locations for EUS-TCB. Nine cases of technical failure (9.1%) were reported in this study.[7] The TCB needle is technically demanding, cumbersome to use, and cannot be used via a transduodenal route. It is heard through the grapevine that the company has ceased production of this needle for these reasons.

New needles for better outcomes have been recently developed. A new flexible 19-G nitinol needle (Expect 19-G Flex; Boston Scientific Corp., Natick, MA, USA) has been introduced to the market. This needle is very flexible and capable of transduodenal puncture. One study showed very good performance of this needle reporting a successful procedure via a transduodenal route. In addition, the examination of cell-block specimens revealed optimal histologic core tissues in 36 of 38 (94%) patients, including five gastric SELs.[15] Further studies with this needle are necessary to evaluate its usefulness in the diagnosis of SEL. A new Olympus prototype side-port needle (Olympus Medical Corp., Tokyo, Japan) has been developed to harvest increased amount of tissue with reduced needle pass.[16] This needle has a second opening located 4 mm from the tip on the opposite side of the bevel. Studies conducted with this new side-port needle have shown encouraging results. However, the main targets were the lymph nodes or pancreatic lesions and SEL data is yet to come. A new needle from Cook Medical (ProCore needle) incorporates reverse bevel technology to obtain both cytology and histology samples, and a transduodenal approach is possible with various sizes available.[17] In a prospective study of 28 patients with gastrointestinal SELs larger than 2 cm, the ProCore needle had improved capacity for obtaining histological core samples as well as a higher diagnostic sufficiency rate than a 22-G FNA needle. Furthermore, no technical difficulties were encountered with the ProCore needle.[18]

For a definitive diagnosis of SEL, both cytological and histological evaluation is important. In EUS-guided tissue sampling, different needles present unique advantages and disadvantages. Both TCB and FNA needles possess complementary merits.[19] Further studies would help on finding which needle has the best diagnostic yield. There have been continuous innovations in the field of improving EUS needles.[20] A needle which allows for both a safer, higher quality yield, and a more accurate, less expensive procedure will hopefully be developed in the near future.

Conflicts of Interest

The author has no financial conflicts of interest.

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