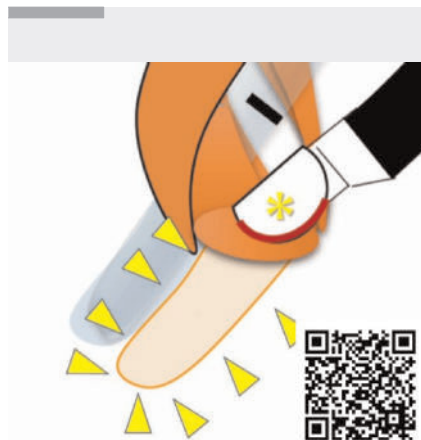


The “echo-free space” technique: A safe and reliable method for endoscopic ultrasound scope insertion into the esophagus

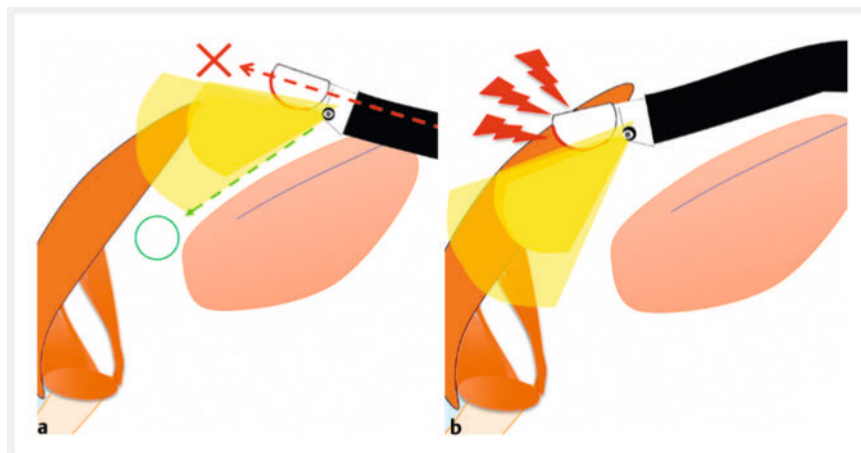
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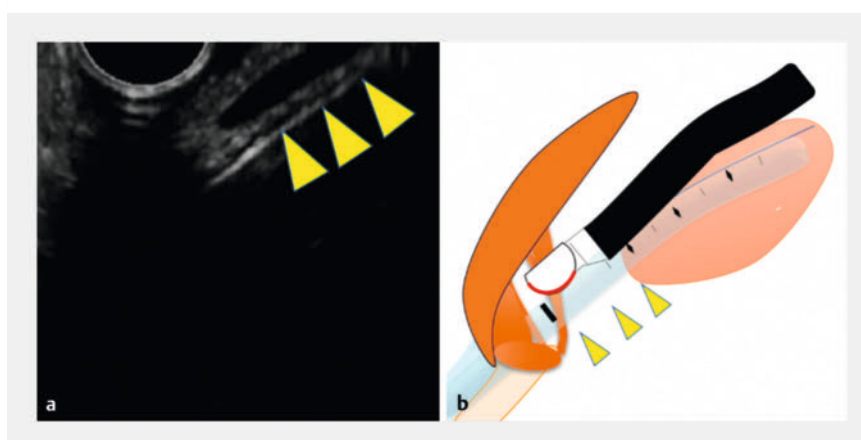
▶ Video 1 This video introduces the “echo-free space” method, which allows safe insertion of the EUS scope while confirming the esophageal lumen as the echo-free space.

In recent years, the use of endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) and EUS-guided drainage has greatly expanded [1–4]. However, inserting a linear EUS scope into the esophagus can be challenging, particularly in intubated or pediatric patients. This is because the scope is side-viewing, and the tip does not face the cervical esophagus. As a result, it can damage the laryngopharynx and lead to unsuccessful insertion if advanced, based on endoscopic imaging (**▶ Fig. 1**).

Because of these difficulties, inserting an EUS scope into the esophagus can be a hurdle for trainees learning this procedure. Even expert EUS sonographers may experience difficulties, resulting in repeated insertion attempts and potential damage to the laryngopharynx. We present the case of an 8-year-old girl with an infected pancreatic pseudocyst who underwent emergency EUS-guided drainage under general anesthesia and tracheal intubation. Initially, scope insertion into the esophagus was difficult due to contact with the intubation tube (**▶ Fig. 2**). In this situation, the technique



▶ Fig. 1 **a** The tip of the side-viewing scope does not face the cervical esophagus. **b** It can damage the laryngopharynx and lead to unsuccessful insertion if advanced, based on endoscopic imaging.



▶ Fig. 2 The insertion of the scope into the esophagus was difficult due to contact with the intubation tube (arrowhead).

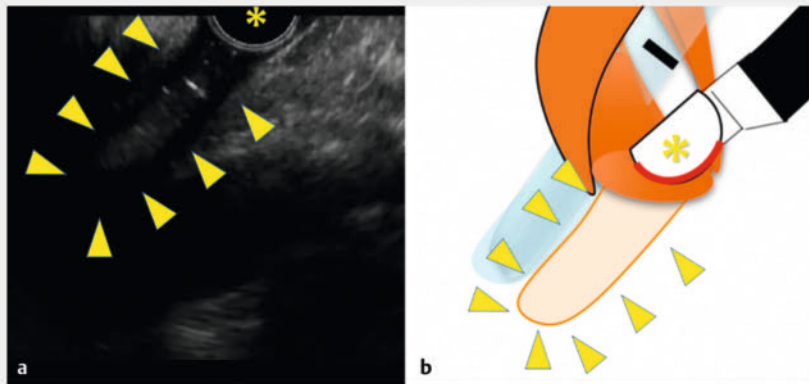
of inserting the EUS scope safely while confirming the lumen of the esophagus was required. In this case, we used the “echo-free space” technique, which is a safe insertion technique for EUS scopes that depicts the digestive tract lumen as echo-free space [5].

First, the cervical esophageal lumen, which is depicted by EUS as an echo-free space, was sought and successfully identified (**▶ Fig. 3**). Then, the tip of the scope was advanced toward the echo-free space (**▶ Fig. 4**). By aligning the tip

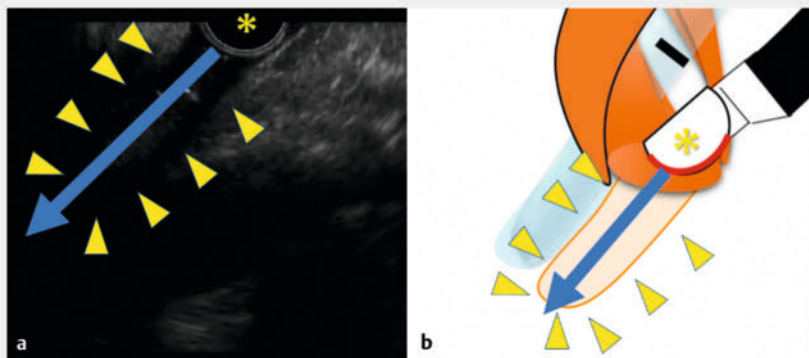
of the scope with the echo-free space on the EUS image, successful insertion of the EUS scope into the esophagus was achieved (**▶ Video 1**).

This echo-free space technique, which is the safe EUS scope insertion technique guided by an EUS image, can be helpful for trainees and experts when esophageal insertion of the EUS scope is difficult.

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► **Fig. 3** The cervical esophageal lumen, which was depicted by EUS as an "echo-free space," was successfully identified (arrowhead).



► **Fig. 4** The tip of the scope (*) was advanced toward echo-free space (arrowhead). By aligning the tip of the scope with the echo-free space on the EUS image, successful insertion of the EUS scope into the esophagus was achieved.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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