

# A standardized technique for gastroscopy: Still missing?

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## Bibliography

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The effectiveness of esophagogastroduodenoscopy (EGD) for diagnosis and management of upper gastrointestinal disorders is dependent on operator skill. Endoscopic training focuses on not only the technical skills needed for endoscope manipulation, but also cognitive skills, such as lesion identification, and non-technical skills, such as communication and teamwork [1]. Novice endoscopists encounter a prolonged learning curve, as they need to master all three skill domains to provide safe, high-quality endoscopic care [2,3]. Despite EGD being a commonly performed procedure even taught to primary care physicians [4], there is no standardized technique or curriculum.

Learning curve data suggest that novices acquire competency in EGD after 200 to 250 procedures [2,5]. Initial technical challenges include advancement of the endoscope through the oral cavity and hypopharynx and intubation of the upper esophagus [6]. This may be further compounded by suboptimal hand positioning, as novices may not know how to move their hands and arms in a manner that is both safe for the patient and minimizes their own risk of musculoskeletal strain injury. Conversely, experienced endoscopists can use techniques such as changing their left-hand position to rotate the tip of the endoscope without twisting their right hand. Such skills are best learned through focused instruction and deliberate practice [7].

In this issue of Endoscopy International Open, Sugimoto and Osawa [8] report on a novel method to teach operator positioning to novice endoscopists. They delivered a simulation-based curriculum to 122 medical students at the Hamamatsu University School of Medicine that centered around the four-position method. In this method, the left hand is: a) held at the shoulder when inserting the endoscope; b) beside the hip when obser-

ving the greater curvature of the stomach; c) at the chest when passing through the pylorus; and d) in front of the right shoulder when viewing the second part of the duodenum. In their study, the authors randomized participants to Group A, where they were only taught how to hold the endoscope and use the dials, Group B, where they learned the four-position method, or Group C, where they learned the four-position method and were able to practice on a mechanical simulator.

Unsurprisingly, participants who were able to practice on the simulator were able to reach the duodenum more quickly, in keeping with the large body of evidence supporting use of simulation to augment endoscopic training [9, 10]. In addition, however, participants who were taught the four-position method but had no time with the simulator were faster in performing a simple technical task compared to participants who were only taught how to hold the endoscope and operate the dials. The four-position method group also perceived endoscopy to be easier after instruction. These findings highlight the potential impact of simple instructional strategies in improving endoscopic skill during the initial stages of training.

While the underlying reasons as to why the four-position method group found endoscopy easier are unclear, it is possible that this group felt better equipped to navigate the technical challenges of EGD due to their additional instruction. While completing the procedure, participants who knew the four-position method may have been able to reflect on their instruction and apply it to reach their goal. This knowledge also may have helped them problem-solve by reducing their cognitive load, defined as the mental exertion required when completing a task [11]. The potential impact of cognitive load has previously been reported in endoscopic settings and may impact the ac-

quisition of technical skills as well as self-assessment efficacy [12, 13].

Adding simulation-based training to the four-position method yielded the additional benefit of shorter time to the duodenum, perhaps indicative of improved technical performance. Simulation has been used for a range of endoscopic settings, including teaching technical, cognitive, and non-technical skills [14–16]. While another recent simulation-based study focused on endoscopist technique to improve ergonomics and mitigate musculoskeletal injury risk [17], the current report by Sugimoto and Osawa is unique in that it hand-positioning was deliberately taught and resulted in improvement in procedure time.

Still, work is needed to characterize the impact of these types of interventions for gastroenterology trainees and to evaluate transfer of potential benefits to the clinical setting. In addition, evaluation of the impact of such interventions with assessment tools with strong evidence of validity, such as the assessment of competency in endoscopy and direct observation of procedural skills instruments, [2, 6] can delineate the ways in which standardized techniques for gastroscopy are impactful and how they may be improved.

### Competing interests

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