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Perfecting Video Capsule Endoscopy: Is There Need for Training?

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See "Learning Curve of Capsule Endoscopy" by Korean Gut Image Study Group, Yun Jeong Lim, Young Sung Joo, et al., on page 633-636

The small bowel had been a no man's land, inaccessible by direct endoscopic examination until the new millennium. However, an innovative scientific advancement changed the perspectives of small bowel evaluation with the introduction of small bowel video capsule endoscopy (VCE) by GIVEN Imaging (Yoqneam, Israel) in 2001. We were introduced to the VCE during the Asian Pacific Digestive Week 2000 in Sydney, Australia, the first time in Asia, after which it was brought to Korea for clinical use in late 2001. VCE has revolutionized our ability to visualize the entire small bowel mucosa, and this modality is now valuable for evaluating small bowel diseases including obscure gastrointestinal bleeding, nonsteroidal anti-inflammatory drug-associated small bowel injury, Crohn and Celiac disease, back-wash ileitis of ulcerative colitis, unexplained malabsorption syndrome, small bowel tumors including cancer, inherited intestinal polyposis syndrome, chronic unexplained abdominal pain, protein-losing enteropathy, intestinal lymphangiectasia, eosinophilic enteritis, and other conditions involving the small bowel mucosa. The small intestine is no longer a deserted island to gastroenterologists.¹⁻³

The capsule is swallowed and passively passes through the gastrointestinal tract. It is considerably less invasive and requires less technical training than conventional endoscopy and rarely causes complications during the procedure. Accurate interpretation of the images from VCE is important for gastroenterologists; therefore, quality control could be an issue

if a qualified individual does not interpret the data. Accordingly, a gastroenterologist who is familiar with small bowel disease diagnosis with experience in performing small bowel endoscopy should interpret the data. Specific interpretation skills are needed for the images provided by VCE. Furthermore, a sharp eye is needed to recognize these rapidly-passing images from the VCE for accurate interpretation.^{4,5} Once the interpreter is familiar and has more experience with VCE, the time spent in VCE evaluation might be significant in increasing diagnostic accuracy.^{6,7}

In this issue of *Clinical Endoscopy*, the Korean GUT Image Study Group and their colleagues investigated the learning curve of VCE for beginners.⁸ They postulated that although VCE has become an important tool for the diagnosis of small bowel diseases and can be performed without technical skill, the images should be interpreted by someone with experience in gastrointestinal mucosal image assessment. Therefore, they attempted to determine the number of cases needed by trainees to gain the necessary experience for attaining VCE competency. They found that the agreement rate of VCE diagnosis between the trainees and an expert increased as frequency of interpretation increased; the majority of mean κ coefficients were >0.60 and >0.80 after weeks 9 and 11, respectively (one case reviewed per week). They concluded that 10 cases of VCE are appropriate for trainees to attain an expert level competency. Similarly, several previous reports and guidelines have recommended 10 to 25 cases of VCE interpretation to ensure competence.^{2,7} This number is lower than that for endoscopic techniques such as colonoscopy, which usually require >200 cases to ensure competence.

A prospective view shows several important developments in the field of VCE in clinical use in the near future. For instance, besides the second generation of VCE for the esophagus and colon, the next generation of VCEs such as those with

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double lenses, tissue diagnostic capabilities such as brushing cytology, fluid aspiration, drug delivery, and biopsy; those equipped with imaging mass spectroscopy; and confocal endomicroscopic VCE would be beneficial. The esophageal VCEs are already available, and compared to standard esophagoscopy, showed good sensitivity and specificity and were tolerated excellently; thus, adequate training for esophageal VCE is essential, as is similarly required for small intestinal VCE.⁹ Development of an externally operated capsule has also been attempted and a VCE containing magnets in one of the domes, thus allowing a joystick-like manipulation of the capsule, is being developed.¹⁰ This, however, may require a larger number of training cases to ensuring adequate technical skill.

In conclusion, a reasonable number of cases are necessary for the trainees to perfect VCE, and this number will further increase as new generations of VCEs emerge.

Conflicts of Interest _____

The authors have no financial conflicts of interest.

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