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Commentary on “Comparative Study of Narrow-Band Imaging and i-scan for Predicting the Histology of Intermediate-to-Large Colorectal Polyps: A Prospective, Randomized Pilot Study”

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See “Comparative Study of Narrow-Band Imaging and i-scan for Predicting the Histology of Intermediate-to-Large Colorectal Polyps: A Prospective, Randomized Pilot Study” by Joon Seop Lee, Seong Woo Jeon, Yong Hwan Kwon, on page 881-887.

Recent advances in endoscopic imaging technology, including high-definition endoscopy and image-enhanced endoscopy (IEE), have improved the detection and diagnosis of colorectal lesions. IEE is used to diagnose gastrointestinal lesions using contrast-enhanced images of the mucosal surface and blood vessels. IEE is classified into dye-based IEE (using indigo carmine or crystal violet dyes) and electronic-based IEE (using optical and electronic technologies). Electronic-based IEE can use one of several techniques: narrow-band imaging (NBI; Olympus, Tokyo, Japan), i-SCAN (Pentax, Tokyo, Japan), blue laser imaging (Fujinon Inc., Saitama, Japan), linked color imaging (Fujinon Inc.), and flexible spectral imaging color enhancement (Fujinon Inc.).¹ NBI uses narrow-spectrum light to evaluate the mucosal surface pattern and microvascular architecture, with red light removed, and blue and green lights used as optical filters.² I-scan is a software-based image enhancement technology that provides an enhanced view of

the blood vessels and mucosal surface in three modes: tone enhancement, contrast enhancement, and surface enhancement.³

Accurate optical diagnosis during colonoscopy is necessary to determine the appropriate treatment, avoid unnecessary investigations and treatments, and reduce patient discomfort and cost. The American Society for Gastrointestinal Endoscopy (ASGE) proposed two strategies that can be used by experts in advanced endoscopic technologies to reduce the cost of treatment for diminutive polyps: resect-and-discard and leave-in-place strategies.^{4,5} A cross-sectional analysis of a large colonoscopy database confirmed that the use of these strategies reduced unnecessary biopsies and healthcare costs in the treatment of diminutive polyps.⁶ A meta-analysis conducted by ASGE Technology Committee, which included 4013 in-situ diminutive or small colorectal polyps from 19 studies, compared the results of standard histopathology with real-time NBI, and reported a pooled negative predictive value (NPV) of 91%, using the random-effects model. The pooled NPV of histological prediction with real-time NBI was 91.8%, 88.3%, 93% and 87%, for academic medical centers, community practices, experts, and novice operators, respectively. The pooled NPV of real-time NBI was 93% at a high confidence level.⁵ A meta-analysis of eight studies, which included 979 small or diminutive colorectal polyps, used the random-effects model and reported a pooled NPV of 84% for histologic prediction using the i-scan compared to standard histopathology. The NPV for endoscopies performed by experts was 96% (95%

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confidence interval [CI] : 94–98), which was higher than that for novice endoscopists (NPV: 72%; 95% CI : 69–76).⁵ The ASGE recommends initiating a resect-and-discard strategy for diminutive polyps when the agreement in surveillance intervals for polyps larger than 5 mm is greater than 90% compared with those dictated by histology, and the leave-in-place strategy is also recommended when the NPV for the diagnosis of adenomatous polyps is greater than 90%.⁴ In a meta-analysis of NBI and i-scan, only expert endoscopists achieved the minimum requirements set by the ASGE to apply the two strategies.

Few prospective studies have compared the diagnostic accuracy of the IEE modalities for colorectal polyps. A direct comparative analysis reported significantly higher sensitivity and accuracy for NBI and i-scan compared to high-definition white-light colonoscopy for the diagnosis of adenomas in diminutive polyps. However, there were no significant differences between NBI and i-scan.⁷

This study by Lee et al.⁸ published in this issue of *Clinical Endoscopy* compared the accuracy of NBI and i-scan to predict the histology based on the Japan NBI Expert Team (JNET) classification for intermediate-to-large colorectal polyps. This is the first study to prospectively compare the diagnostic accuracy of NBI and i-scan for large colorectal polyps. One of the strengths of this study was that the reliability and reproducibility of the results were checked by evaluating inter-/intra-observer agreement using recorded videos. In addition, the authors provided practical information and demonstrated that the diagnostic accuracies of NBI and i-scan were not significantly different for intermediate-to-large colorectal polyps. However, the sample size in this study was small, and only two cases of NBI and one case of i-scan were included in the JNET classification 3 cases which requires accurate prediction of deep submucosal invasion. In addition, the size of the included lesions was 10–50 mm, which is significantly diverse for a small number of samples. For large lesions, the area to be observed as well as the number of blind spots increased. Therefore, few previous studies of IEE have included large lesions, which may introduce bias in the results. The use of first-generation NBI is another limitation of this study. The JNET classification uses magnified NBI observations. Therefore, the use of magnification in this study is questionable.

Histological prediction of large colorectal polyps is important because the malignant potential of polyps increases with size. Accurate histopathological prediction can reduce unnecessary or excessive procedures and help determine the appropriate treatment. Based on the aforementioned consid-

erations, conclusive recommendations cannot be drawn based on this study alone. To verify the results of this study, large-scale studies should be conducted to evaluate the usefulness of the IEE modalities for large colorectal polyps and to compare the diagnostic accuracies between the different modalities.

Conflicts of Interest

The authors have no potential conflicts of interest.

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