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Narrow Band Imaging as an Efficient and Economical Tool in Diagnosing Colorectal Polyps

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See "A Randomized Controlled Clinical Study Comparing the Diagnostic Accuracy of the Histologic Prediction for Colorectal Polyps Depending on the Use of Either Magnified or Nonmagnified Narrow Band Imaging" by Jin Joo Kim, Kyoung Sup Hong, Joo Sung Kim and Hyun Chae Jung, on page 528-533.

INTRODUCTION

Colorectal cancer (CRC) is one of the leading causes of cancer-related death in males and females of the Western world, and is one of the most prevalent cancers amongst populations (including within Asian countries).¹ Screening for CRC should be considered a medical priority in all health systems and reduced mortality from CRC could be achieved by improving the available screening methods. The early detection and removal of neoplastic polyps is essential in this challenge because the sequential development of an adenoma into a carcinoma has become a well-understood process. This sequential model describes the development of cancer in relation to the stepwise pattern of mutational activation of oncogenes and inactivation of tumor suppressor genes. Colonoscopy is the only available technique that allows for removal of adenomas, thereby preventing progression towards CRC. Unnecessary risks associated with polyp removal should be avoided. Since Gono and colleagues² designed narrow band imaging (NBI), this digital optical enhancement

method of gastrointestinal endoscopy has become a popular imaging technique. Importantly, it can distinguish between neoplastic and non-neoplastic lesions without requiring the use of a dye.^{3,4} Magnifying endoscopy, in combination with the digitally enhanced method, provides an obvious advantage in analyzing the epithelial pit pattern and the vascular network.⁵ No guidelines have been established for the application of image enhancing techniques, and issues have recently been identified regarding the selection of neoplastic lesions in the colorectum.

The use of NBI enhances the identification of both the vascular and surface pattern of tumors. There have been many reports evaluating NBI for the diagnosis of colorectal lesions, most of which have focused on the diagnostic accuracy of magnified NBI.⁶⁻⁸ In Western countries, the magnifying endoscope has not been extensively used in clinical practice until recently. Only limited studies have been conducted on non-magnified NBI evaluation,⁹⁻¹¹ possibly due to the complicated variety of magnified appearances of the tumor surface. Given this context, a simple system was proposed to categorically classify NBI findings from close observations with a high-resolution electronic endoscope. The NBI International Colorectal Endoscopic (NICE) classification was proposed by the Colon Tumor NBI Interest Group—an organization for promoting international collaboration and wide utilization of NBI. The NICE classification is a simple category classification consisting of three types (1, 2, and 3) based on three separate characteristics: (1) lesion color, (2) microvascular architecture, and (3) surface pattern.¹² The in-

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ternational study group has tested the validity of this classification in multiple studies, including a pilot evaluation during real-time colonoscopy; this evaluation demonstrated the predictive validity of NICE with a high degree of confidence.^{13,14}

In an issue of *Clinical Endoscopy*, Kim et al.¹⁵ reported that non-magnified NBI colonoscopy, using the NICE classification, distinguishes neoplastic lesions from non-neoplastic colorectal polyps with at least the same accuracy as magnified NBI. In this randomized controlled study, the efficacy of magnified and non-magnified NBI was compared in real-time. While this is an advancement on other studies, it is worth noting that the analysis was conducted by a single experienced endoscopist. A total of 236 polyps were evaluated by NBI in real time during therapeutic colonoscopy, with the decision on whether or not to use NBI made at random. After a real-time endoscopic histological prediction, all lesions were endoscopically excised and retrieved for pathological diagnosis. The 236 isolated lesions had an average size of 5.6 mm (range, 2.5 to 12.0). The sensitivity, specificity, positive predictive value, and negative predictive value in differentiating neoplastic from non-neoplastic lesions with magnified NBI were 97.5%, 83.3%, 94.0%, and 92.6%, respectively; meanwhile, in the non-magnified group, the values were 97.5%, 85.1%, 91.7%, and 95.2%, respectively. Considering that based on clinical experience and opinions from expert committees,² it is recommended that colonic polyps 5 to 9 mm in size be removed, these data suggest that non-magnified NBI could help in performing risk stratification for these middle-sized polyps. The findings of this study are significant because they have the potential to be incorporated into the algorithm for therapeutic colonoscopy. It is obvious that the costs of magnifying colonoscopy are much higher than those of a more standard type. Moreover, detailed observation with magnification is likely to require longer time, especially during therapeutic colonoscopy, which could lead to increased work and endoscopist exhaustion in hospital units. In an era of large scale CRC screening, establishing both efficient and economical procedures is an important matter. This is not only important for patients, but also for medical providers. It is noted that the quality of this study would have been enhanced if the procedure time had been assessed and included.

In this study, the authors aimed to adopt a 'resect and discard strategy' which may result in cost saving for screening and surveillance colonoscopy.¹⁶ Fortunately, no small invasive carcinomas were found. However, there is a certain risk of small invasive carcinomas accompanied by lymph node metastasis amongst polyps that are 10 mm or less in size.¹⁷ In a recently conducted prospective trial, magnifying NBI was proved useful in discriminating small invasive carcinomas

from discardable lesions.¹⁸ If small invasive carcinomas were resected and discarded without careful evaluation, regardless of whether the technique required complete or incomplete resection, additional lymph node dissection surgery might also be missed. It is perhaps too premature to establish a 'resect and discard' protocol using non-magnified NBI as a more efficient and economical way of managing the rate of CRC. Along with the evolution of NBI technology, we will need to wait until a multicenter, prospective randomized study of non-magnifying NBI in colonoscopy (with a large number of polyps) has been conducted. This work would need to show a validated reduction in CRC, efficiency, and favorable costs.

Conflicts of Interest

The authors have no financial conflicts of interest.

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