Resect and Discard Strategy: Why?

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Introduction

The prevalence of colorectal neoplasms is approximately 30-40% in asymptomatic average-risk Koreans,1-3 which is comparable with the rate in Western countries. Although colonoscopic polypectomy can decrease the incidence of colorectal cancer,4-6 polypectomy and the ensuing pathologic examinations are major determinants of the cost. However, pathologic examinations are used only for determining post-polypectomy surveillance intervals; the majority of complications are associated with polypectomy. Recently, with advances in the optical technologies, the in vivo histologic characterization of polyps has become available. Therefore, it has been proposed that the use of these optical technologies can decrease the requirement for the histologic assessment of diminutive (≤ 5 mm) or small (6-9 mm) polyps, as well as the frequency of unnecessary polypectomies.7

In this article, we will review what the “resect and discard” strategy means and whether this strategy is applicable in Korea.

What is the “resect and discard” strategy?

If we could predict the polyp histology accurately during colonoscopy, we would allow rectosigmoid hyperplastic polyps in situ (“discard without resection” or “leave-in-place”) and subcenteric adenomas to be resected and discarded (“resect and discard”) without histologic examinations. This strategy would save in time and cost and decrease the risk of patients.8

Rationales of “resect and discard” strategy

1. The risk of advanced adenoma is extremely low in diminutive polyps and less than 5% in small polyps

Ninety percent of colorectal polyps are smaller than 1 cm, and 80% of polyps are smaller than 5 mm.9 According to previous studies,10-12 half of the diminutive polyps are non-neoplastic. When limiting the analysis to the distal colorectum, the incidence of non-neoplastic polyps becomes much higher.1,13 Compared to diminutive polyps, the rate of adenomatous components is higher in small polyps.7 However, according to a systematic review,14 the prevalence of an advanced adenoma was 0.8% in patients with diminutive-only lesions and 4.9% in patients with small-only lesions. Moreover, the risk of invasive cancer was only 0.04% for diminutive polyps and 0.07% for small polyps. The prevalence of sessile serrated adenomas or traditional serrated adenomas was also very low in diminutive (0.3-0.5%) and small lesions (0.8-1.3%).11

2. Diagnostic accuracy of virtual chromoscopy for differentiating between adenomatous polyps and hyperplastic polyps

Major endoscope manufacturers have developed virtual chromoscopy techniques, such as narrow-band imaging (NBI) and post-image processing (Fuji Intelligent Color Enhancement [FICE] and i-scan). These techniques enable the
visualization of surface microvessels or pits at the push of a button. When these techniques were combined with optical magnification, the sensitivity and specificity for differentiating between neoplastic and non-neoplastic lesions were 77 to 100% and 50 to 100%, respectively. However, magnifying endoscopes are unavailable in Western countries and even in most non-academic hospitals in Eastern countries.

Although the accuracy of NBI endoscopy without magnification is inferior to that of NBI endoscopy with magnification, adenomatous polyps can be differentiated from hyperplastic polyps without optical magnification. With NBI endoscopy, the color of the hyperplastic polyps is the same as or lighter than the background, while the color of adenomatous polyps is browner in comparison with the background. No vessel or isolated lacy vessels coursing across the lesion are observed for hyperplastic polyps, while the brown vessels surrounding white structures, representing the pits and epithelia of the crypt opening, can be observed for adenomatous polyps. The surface of the hyperplastic polyp consists of dark or white spots of uniform size that are occasionally homogeneous, while the surface of the adenomatous polyp consists of oval, tubular, or branched white structures surrounded by brown vessels. Figure 1 shows typical NBI endoscopy findings for hyperplastic and adenomatous polyps. The sensitivity and specificity of NBI endoscopy without magnification ranged between 61% and 91% and between 32% and 98%, respectively.

3. In vivo optical diagnosis of polyp histology can reach the Preservation and Incorporation of Valuable Endoscopic Innovations (PIVI) threshold.

The American Society of Endoscopy developed the PIVI to establish an a priori diagnostic and/or therapeutic threshold for endoscopic technologies and to assist in the development of new paradigms for the colonoscopic management of diminutive colorectal polyps (Table 1). Recently, the US Multi-Society Task Force on Colorectal Cancer recommended a 10-year interval for distal small (< 10 mm) hyperplastic polyps, a 5- to 10-year interval for 1 to 2 tubular adenomas < 10 mm, and a 3-year interval for ad-
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Table 1. The Preservation and Incorporation of Valuable Endoscopic Innovations (PIVI) on Real-Time Endoscopic Assessment of the Histology of Diminutive Colorectal Polyps Statements

1. In order for colorectal polyps ≤5 mm in size to be resected and discarded without pathologic assessment, endoscopic technology (when used with high confidence*) used to determine histology of polyps ≤5 mm in size, when combined with the histopathologic assessment of polyps >5 mm in size, should provide a ≥90% agreement in assignment of post-polypectomy surveillance intervals when compared to decisions based on pathology assessment of all identified polyps†.

2. In order for a technology to be used to guide the decision to leave suspected rectosigmoid hyperplastic polyps ≤5 mm in size in place (without resection), the technology should provide ≥90% negative predictive value (when used with high confidence*) for adenomatous histology†.

*The term “when used with high confidence” indicates that clinical judgment can be used deciding whether the histology of a given polyp can be assessed accurately using an endoscopic technology. Thus, if a polyp lacks features associated with confident endoscopic assignment of histology, it could still be resected and submitted for pathologic assessment. This occurrence does not diminish the potential benefits of endoscopic assessment of histology when there is high confidence in the endoscopic assessment.

†The use of endoscopic technologies to determine real-time histology must be accompanied by technology that allows permanent storage of polyp images that are of sufficient resolution to support the endoscopists’ assessment and clinical decisions when subjected to quality review.

enomas with advanced histology or ≥3 adenomas.6

According to a retrospective analysis of data from 3 prospective trials, NBI can successfully achieve the above PIVI threshold, although the results depend on the interpretation of the guideline.12 The second PIVI (negative predictive value of diagnosing adenomatous histology in diminutive rectosigmoid polyps) was achieved easily, whereas the first PIVI threshold for predicting the surveillance interval was achieved only when a 10-year schedule was adopted for subjects with 1 to 2 tubular adenomas <10 mm.

Is the “resect and discard” strategy applicable in Korea?

The prevalence of advanced adenomas in Korea seems to be lower than that of Western countries;1,2 however, we need more data on the risk of advanced neoplasia in diminutive and small colorectal polyps.

According to a study conducted in Korea, the sensitivity and specificity of NBI vs. i-scan without optical magnification by experts for diminutive colonic polyps were reported as 88.8% vs. 94.6% and 86.8% vs. 86.4%, respectively.18 However, high performance levels in the optical diagnosis of polyp histology by experts using NBI could not be replicated in real-time practice by community gastroenterologists.19 Thus, the evaluation of the accuracy of optical diagnosis for diminutive colorectal polyps among community gastroenterologists should be evaluated before the application of the strategy.

According to the Korean guidelines for post-polypectomy colonoscopic surveillance, surveillance colonoscopy should be performed five years after the index colonoscopy in patients without any high-risk findings on the index colonoscopy,20 which is more strict than the recommendation of the US Multi-Society Task Force on Colorectal Cancer.6 As we discussed, the accuracy of optical diagnosis should be increased to meet the PIVI threshold when the surveillance interval is different between patients with no adenoma or distal small hyperplastic polyps and patients with 1 or 2 adenomas <10 mm.

The relatively low cost for histology in Korea should also be considered before the application of the strategy; another problem is that private health plans, which are very popular in Korea, frequently demand pathology reports before polypectomies will be reimbursed.

Conclusions

With recent advances in optical technologies, it might be possible to leave rectosigmoid hyperplastic polyps in situ.
and to resect and discard subcentric adenomas without formal histology in the near future. However, before applying this strategy, we should evaluate the accuracy of optical diagnoses among gastroenterologists in various settings and whether this technique can meet a certain diagnostic and therapeutic threshold in Korea.

References