Editorial

Colorectal endoscopic submucosal dissection (ESD) could reduce the need for surgery of colonic polyps in the West

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This is an original article written by Gorgun *et al.* who are colorectal surgeons at a large tertiary referral hospital in USA. I read this paper with great interest because I thought most surgeons would believe that colectomy is simple and does not reduce QOL for patients except in rectal tumors.

A tincture of time

It is important to point out that the interval over which this study collected cases encompasses 16 years between 1997 and 2012. In our opinion, it is safe to assume that techniques such as wide-field endoscopic mucosal resection (WF-EMR) and endoscopic submucosal dissection (ESD) were not prevalent during this time and hence may have affected the referral patterns for surgery. Most academic centers now have faculty that perform WF-EMR and as such many of these polyps maybe now be managed endoscopically. It would be interesting with the current study design to determine the percentage of patients with large polyps that are now referred for surgical resection as a function of time.

ESD could reduce over-surgery

Colorectal ESD was developed in Japan and is now widely accepted there as first-line treatment for early colorectal cancers, large laterally spreading tumors (LSTs), and adenomatous polyps not amenable to complete resection by polypectomy or EMR (1,2). However, there is limited practice of colorectal ESD in the West, because of the technical challenge of performing the procedure, and as a result colectomy is commonly performed for large colorectal LSTs although there is no need for lymph-node dissection.

Before the introduction of ESD at the National Cancer Center Hospital, Tokyo, Japan, approximately 20% of surgeries for colonic polyps had only intramucosal neoplasia, however after introduction of ESD this number has dramatically decreased to 1%, and thus "over-surgery" was largely avoided (3). As we conduct challenging ESD on massive LSTs or submucosal cancer (T1a or T1b), about 10% of all ESD cases result in non-curative resections (3), but these patients could easily go on to have surgery with lymph node dissection without additional harm. In this way, patients are given the best opportunity to avoid surgery, and maintain their quality of life. The authors reported that "*cancer was identified on the operative specimen in 37 patients (8.4%)*", the other 402 patients (91.6%) could have potentially avoided surgery if ESD was an available option.

Clinical impact of pathological diagnosis of cancer by biopsy

The diagnostic criteria of cancer on biopsy samples should be discussed in this paper. The authors reported that "*Of the 439 patients, 346 (79%) underwent preoperative colonoscopy*

in our institution for all polyps preoperative biopsy was benign." and "*All patients who had cancer in the final pathology had preoperative biopsies and results were as follows: tubular (n=6, 16.2%), tubulovillous (n=22, 59.5%), villous (n=8, 21.6%) and SSA/P (n=1, 2.7%). Preoperative HGD rate was found to be significantly higher in patients who had cancer in the final pathology compared to benign polyps [n=18 (48.0%) vs. n=70 (17.4%) P<0.001].*"

The consensus criteria for the pathologic diagnosis of intramucosal cancer in the West is only when dysplastic epithelial cells breach the basement membrane to invade the lamina propria or muscularis mucosae (MM); therefore, it might be difficult to diagnose a cancer by pre-operative biopsies.

In Japan, where there are consensus criteria for the pathologic diagnosis of intramucosal cancer without the invasion to lamina propria or MM, expert pathologists are able to diagnose intramucosal cancer on EMR, ESD and biopsy specimens. We believe it is important to establish the diagnosis of intramucosal cancer as we have had several cases of invasive and metastatic recurrence after piecemeal EMR of lesions with intramucosal cancer (4,5).

While small local adenomatous recurrences can easily be treated with follow up EMR, invasive and metastatic recurrences can have a much more devastating outcome (4). Due to these experiences, we no longer perform piecemeal EMR for LSTs-non-granular type >20 mm in diameter and LST-granular type >30 mm in diameter considering the risk of submucosal invasion and difficulty of predicting the area of SM invasion (6,7).

The differences of intramucosal cancer diagnosis between East and West, might help explain why the authors found that high grade dysplasia was associated with malignancy even if the endoscopic appearance of the polyp was benign. Within Japan many of these patient's biopsies might have been diagnosed with intramucosal cancer.

Clinical importance of endoscopic diagnosis using pit pattern

The authors reported "*An endoscopic diagnosis of a malignancy in a polyp is based on the appearance (irregular, ulcerated suggest cancer), feel (hard polyp suggests cancer), fragility (malignant polyps bleed easily) and fixity (a malignant polyp and surrounding colon wall move together).*" But "*None of the cancers in our series were like this. Preoperative biopsy may confirm or suggest cancer but did not here, reflecting an error rate of biopsies compared to examination of the entire lesion. Factors associated with malignancy among unresectable colonic polyps include left sided location, villous architecture, HGD, and advanced patient age. We found that polyp size and HGD were associated with malignancy. Our data establish the importance of high grade dysplasia as a clue that the polyp may be malignant even though it doesn't look it.*" In addition, 37.9% of patients believed to have a benign polyp endoscopically had stage IIa or higher colon cancer on resection.

In Japan, we routinely use magnified endoscopic evaluation to differentiate non-neoplastic from neoplastic lesions and estimate depth of invasion with a high degree of accuracy (8). While magnifying endoscopes are not commonly used in the West, near-focus systems are, that are able to deliver 50× magnification and similar results to optical zoom magnification (from 80× to 100×) may be obtained.

We do recommend, therefore, that use of pit pattern diagnosis with a near focus system be further explored and validated in the West. From our retrospective analysis, pit pattern diagnosis showed the highest accuracy and was an independent factor on multivariate analysis for estimation of early cancer depth of invasion (9).

Safety and QOL of ESD compared to surgery

The authors reported in this article that "*The complication rate after colorectal surgery was nearly 20% in our series*" and "*Many of these complications could be avoided by using advanced endoscopic techniques. Based on the results of the current study we pushed advanced endoscopic techniques for the management of benign polyps not amenable to conventional colonoscopic removal. The algorithm we follow for the different colorectal lesions are summarized in Figure 3.*"

We have published several papers comparing clinical results and patient's QOL between ESD and surgery including laparoscopic colectomy (LAC) (10,11). LAC showed lower QOL and increased post-procedure complications compared to ESD with similar clinical results (12). Accurate pre-operative diagnosis using pit pattern is essential for performing ESD technique for larger colorectal LSTs to ensure proper case selection (8,9). In addition, we do not perform any biopsies before endoscopic treatment because biopsies may cause fibrosis and that could cause non-lifting sign even for intramucosal neoplasm, and make subsequent resection more difficult. We believe that use of colonic pit pattern analysis (8,9) can help triage colonic polyps to the most appropriate treatment while avoiding the fibrosis that can be induced by endoscopic biopsies, and have adopted its use in all colonoscopies

including screening.

Conclusions

In the West, patients with colonic polyps are not amenable to complete endoscopic resection with polypectomy or EMR traditionally undergo surgical resection. The article by Gorgun *et al.* suggests the majority of these lesions are benign and do not require lymph node dissection. Colorectal ESD would allow many of these patients to avoid the complications of surgery and maintain their quality of life, but due to the technical challenge of performing ESD there has been limited practice of ESD in the West. But that might be changing soon, there are now Western endoscopists who have been well trained in ESD under expert Japanese guidance that are performing ESD with high en-bloc resection and low complication rates, and we are optimistic they can move forward colorectal ESD in the West (12-15).

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