Does Cancer Risk in Colonic Polyps Unsuitable for Polypectomy Support the Need for Advanced Endoscopic Resections?

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BACKGROUND: There is a continuing debate on the best approach for endoscopically benign large polyps that are unsuitable for conventional endoscopic resection. This study aimed to estimate the cancer risk in patients with endoscopically benign unresectable colonic polyps referred for surgery.

STUDY DESIGN: We assessed patients with an endoscopic diagnosis of benign adenoma deemed not amenable to endoscopic removal, who underwent colectomy between 1997 and 2012. Patients with preoperative diagnoses of cancer, inherited polyposis syndrome, inflammatory bowel disease, and synchronous pathology requiring surgery were excluded.

RESULTS: There were 439 patients (220 [50.1%] men; median age 67 years [range 27 to 97 years]) who underwent colectomy. Of 439 patients, 346 (79%) underwent preoperative endoscopy at our institution. Most of the polyps were located in the right colon (394 of 439, 89.7%), with the majority in the cecum (199 of 394, 45.3%). Polyp morphology was as follows: sessile (n = 252, 57.4%), pedunculated (n = 109, 24.8%), and flat (n = 78, 17.8%). Endoscopic pathology revealed high-grade dysplasia in 88 (20%) patients. Mean colonoscopic and postoperative polyp sizes were 3.0 cm (range 0.3 to 10 cm) and 2.7 cm (range 0 to 11 cm), respectively ($p < 0.001$). Final surgical pathology revealed cancer in 37 patients (8%). Polyp location, morphology, and histologic types were similar between the benign and malignant polyps. Cancer stages were: stage I (23 patients), stage II (11 patients), and stage III (3 patients).

CONCLUSIONS: For the majority of endoscopically benign colonic polyps, an oncologic colonic resection may be unnecessary, so advanced endoscopic resection techniques or laparoscopic-assisted polypectomy should be considered. When bowel resection is needed, the resection should be performed, obeying oncologic principles and techniques. (J Am Coll Surg 2016;223:478–484. © 2016 by the American College of Surgeons. Published by Elsevier Inc. All rights reserved.)

Adenoma detection rates during colonoscopy range from 25% to 41%,[1] and of those, 2% to 5% contain cancer at the time of removal.[2] All colorectal cancers arise in benign precursors, offering the opportunity to prevent cancer by removing the precursor.[3] In fact, endoscopic polypectomy has been associated with decreased incidence of colorectal cancer and its related mortality.[4]

Although most colorectal polyps can be removed with either snare polypectomy or hot biopsy techniques,[2] some lesions may not be suitable for conventional colonoscopic removal. There is a continuing debate on the best approach for endoscopically benign large polyps that are not amenable to conventional endoscopic removal.[5,6] It is obviously better to remove a polyp containing cancer by oncologic resection; a benign polyp can be managed more conservatively with lower risk. In deciding which option is preferable, a prediction of the chance of cancer in the lesion becomes essential. The purpose of this study was to estimate the cancer risk in patients with endoscopically benign unresectable colonic polyps referred for surgery. We also planned to evaluate the predictive factors for malignancy.

METHODS

This study was approved by the institutional review board of the Cleveland Clinic Foundation. The names and

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Abbreviations and Acronyms
CELS = combined endoscopic laparoscopic surgery
EMR = endoscopic mucosal resection
ESD = endoscopic submucosal dissection
HGD = high grade dysplasia
LGD = low grade dysplasia
SSA/P = sessile serrated adenoma/polyp

record numbers of all patients who underwent colectomy for endoscopically unresectable colonic polyps between 1997 and 2012 were obtained from our prospectively maintained electronic cancer and laparoscopy databases. Pathology reports, details of surgery, and missing data were supplied by chart review. We excluded patients with a preoperative diagnosis of cancer, any hereditary polyposis syndrome, inflammatory bowel disease, other indications for colectomy such as diverticulitis and stricture, patients without preoperative pathology reports or a colonoscopy report, and those with rectal polyps.

Eligible patients were classified into 2 groups based on postoperative pathology reports: benign and malignant. In patients with more than 1 unresectable polyp, the largest one was accepted as the index polyp for the analysis (6 patients had 2 endoscopically unresectable polyps). Demographics, preoperative polyp morphology, endoscopic biopsy results, colonoscopy reports, operative outcomes, and final pathology were compared between the groups.

Analysis of the presenting polyps included morphology, size, location, histology, and grade of dysplasia for patients with benign polyps. For those with cancer, proximal and distal margins, number of metastatic and harvested lymph nodes, lymphovascular invasion, maximum size, grade of differentiation, and American Joint Committee on Cancer (AJCC) stage were analyzed. Laparoscopic cases requiring conversion to laparotomy were still considered laparoscopic in an intention-to-treat analysis.

Polyp morphology was classified into 3 groups based on colonoscopy reports: sessile, pedunculated, and flat. Polyp locations were obtained from colonoscopic landmarks and pathology reports. Polyps located at and proximal to the splenic flexure were defined as right-sided, and those distal to the splenic flexure were defined as left-sided. Polyp histology was graded according to the Vienna classification: low-grade and high-grade dysplasia (LGD and HGD, respectively).[7] In our institution, we do not use endoscopic pit pattern, chromoendoscopy, or narrow band imaging routinely in our polyp classification.

Categorical variables are reported as frequency (%), and quantitative variables are reported as median (interquartile range), except where otherwise noted. The significance of differences between groups of categorical variables was analyzed with Fisher's exact probability test or Pearson chi-square test; quantitative variables were analyzed with a Wilcoxon rank-sum test. Statistical significance was assumed when the p value (2-sided) was less than 0.05.

RESULTS

There were 439 patients who underwent colectomy for endoscopically unresectable colonic polyps. Their median age was 67 years (range 27 to 97 years), and 220 (50.1%) were men; 248 patients (56%) were older than 65 years. Of the 439 patients, 346 (79%) underwent preoperative colonoscopy in our institution.

Most of the polyps were located in the right colon (n = 394, 89.7%); the majority were in the cecum (n = 199, 45.3%) and ascending colon (n = 91, 20%). Preoperative histopathologic evaluation of colonic polyps showed that 116 were tubular, 234 were tubulovillous, and 55 were villous. In addition, there were 23 sessile serrated adenoma/polyps, (SSA/P), 5 hyperplastic polyps, 1 inflammatory polyp, and 8 with no residual polyp at the site. Polyp morphology was as follows: sessile (n = 252, 57.4 %), pedunculated (n = 109, 24.8%), and flat (n = 78, 7.8%). There were 88 (20%) patients with HGD. In 4 patients among the SSA/P patients, LGD was specified; in the remaining 324 (74%), there was no mention of degree of dysplasia, though in all adenomas we assumed low grade.

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%). The preoperative HGD rate was found to be significantly higher in patients who had cancer in the final pathology compared with benign polyps (n = 18 [48.0%] vs n = 70 [17.4%], $p < 0.001$).

The mean preoperative colonoscopic size of the polyps was 3.3 (±1.5) cm, with a median size of 3.0 cm (range 0.3 to 10 cm), and the mean surgical pathologic size of the polyps was 3.1 (±1.9) cm, with a median size of 2.7 cm (range 0 to 11 cm). Polyp size measurements at colonoscopy had a statistically significant non-zero Pearson correlation of $r = 0.46$ ($p < 0.001$) with the pathologic size measurements (Fig. 1).

The pathologic size of malignant polyps was larger than that of benign polyps ($p = 0.01$), but the scattergram comparing benign and malignant polyps with respect to the endoscopic polyp size showed an almost complete overlap (Fig. 2). A subgroup of 44 patients from all cohorts with polyps equal to or less than 2 cm in diameter