Utility of Colonoscopy to Exclude Underlying Malignant Polyps After Resolution of Uncomplicated Diverticulitis

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Clinical Question: Is routine colonoscopy to exclude malignant polyps after acute diverticulitis supported by the current evidence?

Evidence: No statistically significant difference exists in the detection rate of a colorectal malignant polyp in patients with image-proven uncomplicated diverticulitis compared with the general, asymptomatic population.

Recommendation: After resolution of image-proven uncomplicated diverticulitis, routine colonoscopy is not necessary in patients with normal colonoscopy findings within 3 years of the index event.

Diverticulitis is a common disorder particularly in Western countries.[1] Despite the evidence that exists regarding assessment and management of acute diverticulitis, practice patterns often rely on decades-old anecdotal literature. In this review, we discuss the routine practice of performing a colonoscopy to exclude malignant polyps after an episode of acute diverticulitis.

According to the Centers for Disease Control and Prevention National Hospital Discharge Survey, diverticulitis accounts for 814,000 hospitalizations in the United States annually.[2] Diverticula result from weakened muscle layers in the colonic wall at points where blood vessels traverse from the serosa to deeper layers and can also be caused by diets low in fiber and intestinal motility factors (eg, constipation). Diverticulitis occurs when a micro- or macroperforation develops in a diverticulum as a result of increased intraluminal pressure due to fecal matter obstruction at the diverticulum neck. In three-quarters of patients, the inflammation stays local and is contained by pericolic fat and mesentery, whereas the remaining one-fourth may go on to develop complications, such as abscess, perforation, fistula, or obstruction. The diagnosis of complicated vs uncomplicated diverticulitis, based historically on clinical severity, now depends on the results of radiologic examinations, including ultrasonography and computed tomography (CT), along with symptoms of severity. Patients with uncomplicated diverticulitis are generally able to tolerate some oral intake, including oral antibiotics to manage gram-negative and anaerobic organisms. Complicated diverticulitis is defined by diagnostic evidence of abscess, fistula, obstruction, or perforation.

Hospitalization is typically recommended for patients who cannot tolerate oral intake, are dehydrated, are not responding to oral antibiotics, have significant comorbidities, have worsening symptoms, or would benefit from surgical consultation, intervention, or monitoring.[3] After resolution of an episode of diverticulitis, the standard of care is to perform a colonoscopy to exclude diagnoses that mimic diverticulitis—notably, colorectal cancer. This recommendation arose during a time when the diagnosis rested on clinical suspicion and radiographic imaging with barium.[4] Computed tomography, with a substantially higher sensitivity than barium enema[5] at diagnosing cancer and other abdominal pathologic conditions, is now the primary modality used to define complicated diverticulitis, with low interobserver variability and a sensitivity and specificity approaching 99%.[6] Computed tomographic findings in complicated diverticulitis include abscess, fistula, stricture, extensive stranding, obstruction, or air (ie, perforation); colonic wall thickening and mass lesions are concerning radiologic features for neoplasia.

The current Clinical Guideline Task Force of the American Society of Colon and Rectal Surgeons recommends that "after resolution of acute diverticulitis, perform colonoscopy in 6 to 8 weeks following resolution, to confirm diagnosis; if this is first episode or recent colonoscopy has not been done"

(Grade 1c).[7] In our experience, a colonoscopy performed at this juncture has low yield and raises questions about the cost-effectiveness and value added. In addition, a lack of data exist to support the contemporary practice of colonoscopy after an episode of diverticulitis.

The Evidence

We reviewed the literature from 1984 to 2015 to determine the yield of colonoscopy in detecting colonic neoplasia in association with diverticulitis. In the general population, the prevalence of colorectal cancer is 0.68%.[8]

A systematic review by Daniels et al[9] examined patients aged 18 years or older who had recent ultrasonography- or CT-proven diagnosis of left-sided diverticulitis (distal to splenic flexure) and a primary outcome of advanced neoplasia on subsequent colonoscopy.[9] Studies included in their review were published between 2000 and 2010. Advanced colonic neoplasia is an advanced adenoma greater than or equal to 10 mm or greater than or equal to 25% villous features on histologic examination or high-grade dysplasia, or specimens confirming colorectal carcinoma on pathologic examination.

All trials[10-17] included in the present review were retrospective cohort studies, with the exception of Chabok et al,[11] which was a prospective comparative study in which the acceptance and diagnostic accuracy of CT colonography vs colonoscopy were compared. All studies used an indirect comparison, analyzed published data on screening examinations, and included high- and average-risk asymptomatic patients. A total of 1796 patients were included, with a mean age of 60 years. All patients had an image-proven diagnosis of diverticulitis with follow-up colonoscopy. Not all studies described outcomes regarding complete vs incomplete colonoscopy; however, cecal intubation rates were relatively high, ranging from 85.4%[15] to 93.4%.[16] Adverse events were not consistently reported across all studies. A total of 363 of 1796 patients (20.2%) had at least 1 polyp. The reviewed studies included an interval of 4 weeks to 11 years between the diagnosis of diverticulitis and subsequent colonoscopy. A prolonged interlude from index event to follow-up colonoscopy could have contributed to the interval development of cancer. Although not all studies reported on both colorectal cancer and advanced adenomas, those that did found 45 of 915 patients (4.9%) to have an advanced colonic neoplasia detected on follow-up colonoscopy.

Areas of concern for the present review include the undocumented quality of colonoscopy. Metrics of a quality colonoscopy include the cecal intubation rate and adequacy of bowel cleansing on endoscopic visualization. Of the studies we reviewed, 3 had cecal intubation rates greater than 90%.[11,12,16] Incomplete examination, during which the cecum was not reached, whether it was secondary to technical difficulties from luminal narrowing, spasm, muscular hypertrophy, or reduced mucosal visualization from retained feculent material, could have underestimated the neoplasia rate. The primary area of concern and reason for colonoscopy after an episode of diverticulitis is to view the area of diverticular inflammation, which could mask adenomas or cancer. Ultimately, a low-quality study due to poor preparation or incomplete examination is of low utility owing to the risk of missed adenomas and the potential for interval development of disease. As noted previously, the long interval between the diverticular event and colonoscopy increases the risk for adenomatous and cancerous growths.

The studies in the present review lacked control groups, which made it difficult to justly answer whether the colorectal malignant polyp rate after an episode of radiologically proven acute uncomplicated diverticulitis differs from the general asymptomatic population. In addition, no studies reported colonoscopies before the index episode of diverticulitis, which could alter the risk for cancer if patients had previous diagnoses of either premalignant polyps or disease. Thus, the incidence rate of neoplasia could be higher in patients who had not undergone colonoscopy, which would have affected the

incidence of neoplasia described in these studies. Advanced age is a recognized risk factor for advanced neoplasia, and older age could lead to an overestimation of reported prevalence. In all but 1 study in which age was not reported, the reviewed studies analyzed patients aged 23 to 95 years, with a mean age of 60 years.

In 2014, a systematic review by Sharma et al[18] addressed colonoscopy after diverticulitis diagnosis. The authors reviewed 11 studies[12,14-17,19-24] in an effort to define the yield of nonmalignant colorectal polyps and colorectal cancer during routine colonic evaluation after resolution of the inciting event. The diagnostic evaluations included colonoscopy, flexible sigmoidoscopy, CT colonography, and contrast barium enema, and the timing of the follow-up examination ranged from 6 weeks to 2 years after the index attack. The diagnosis of diverticulitis was established largely by CT in all studies but 2, one in which ultrasonography and CT were used in all patients,[19] and another that used either ultrasonography or CT for diagnosis.[12] Studies were excluded if the diagnosis of diverticulitis was made solely on clinical grounds, if there was no follow-up colonic evaluation documented, and if an emergency operation was performed. In 3 of the 11 studies,[16,19,23] patients were not stratified into complicated or uncomplicated disease. Across 8 studies,[12,14,15,17,20-22,24] a pooled population of 1497 of 1575 patients (95.0%) had uncomplicated disease.

Likewise, the pooled proportional rate for colorectal malignant polyps in patients with uncomplicated diverticulitis was 0.7% (95% CI, 0.3-1.4). None of the 11 studies specifically reported the histologic polyp type; thus, the proportion of nonmalignant colorectal polyps was not known among those who underwent polypectomy via follow-up endoscopy for uncomplicated diverticulitis. The pooled proportional rate for colorectal malignant polyps in patients with complicated disease was 10.8% (95% CI, 5.2-21). As previously stated, the prevalence of colorectal cancer in the general population is around 0.68% in the asymptomatic screening population; thus, comparing 0.7% with 0.68% suggests that the odds of detecting a colorectal malignant polyp in patients with radiologically proven uncomplicated diverticulitis are not statistically significantly different from the general, asymptomatic population.

In September 2015, an international, expert-based, consensus statement regarding the management of acute diverticulitis, based on a Delphi study, was published in *JAMA Surgery*.[25] This panel consisted of well-published colorectal surgeons who were identified as experts from around the world. Regarding the practice of colonoscopy after resolution of acute uncomplicated diverticulitis, the consensus opinion was that colonoscopy is needed in a select patient population but not in every patient. O'Leary et al[25] cited the systematic review published by Sharma et al[18] as high-level evidence supporting their consensus statement.

Conclusion

The malignancy rate detected by colonoscopy after image-proven uncomplicated diverticulitis is low. Circumstances in which there is an indication for follow-up colonoscopy include complicated diverticulitis, radiologic findings suspicious for malignant polyps, and a protracted clinical course. It is also indicated in patients who have not yet undergone age-appropriate colorectal cancer screening. We suggest that if a patient has had a complete colonoscopy in the 3 years before the index attack of diverticulitis, no clear benefit exists to perform another colonoscopy to rule out an underlying malignant polyp. A consideration for future research could be a large population study evaluating rates of colorectal cancer and comparing patients who had a colonoscopy after resolution of an episode of diverticulitis with those who did not. Current data do not support performing a colonoscopy after image-proven uncomplicated diverticulitis. Our health care dollars may be better spent on appropriate age- and symptom-related colon cancer screening because colorectal cancer outcomes are improved with early diagnosis. (doi:10.7556/jaoa.2015.147)

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