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The relationship between colon polyps and colonic diverticulosis: a retrospective review

Jennifer Ray[a], Zhang Zidong[b], Jason Yuan[c], Megan Quan[c], Christine Hachem[d]

University of Washington; Saint Louis University School of Medicine; Saint Louis University Hospital, USA

Abstract

Background Colonic diverticulosis and colon polyps are common findings on colonoscopy. There is currently no consensus regarding a possible connection between the development of polyps and diverticulosis. Multiple research studies have sought to analyze whether the presence of both conditions is associated with the development of colorectal cancer. Our study aims to add to this body of data and to better assess the relationship between diverticulosis and colon polyps.

Methods A retrospective chart review was performed of all patients who underwent screening and diagnostic colonoscopies between January 2011 and December 2020. Data collection included patient demographics; number, pathology, and location of colon polyps; incidence of colon cancer; and presence and location of colonic diverticulosis.

Results Our study demonstrated that the overall presence of diverticulosis in any location increases the likelihood of having nearby colon polyps, regardless of subtype. The presence of left colonic diverticulosis was particularly associated with adjacent adenomatous and non-adenomatous colon polyps.

Conclusions Colonic diverticulosis in any location may lead to an increased incidence of adenomatous colon polyps. It is important to perform careful examination of the mucosa surrounding colon diverticulosis to avoid missing colon polyps.

Keywords Colonic diverticulosis, colon polyps, colon cancer, screening colonoscopy

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Introduction

Diverticulosis of the colon describes a herniation of the colon wall in an area of weakness in the mesentery. Diverticulosis is extremely common, occurring in over 40% of the population over 60 years old, and its prevalence increases with age [1,2]. It is typically asymptomatic, though complications such as diverticulitis or gastrointestinal bleeding may occur.

Colorectal polyps are abnormal growths arising from the colon lumen. They vary in pathologic phenotype from benign hyperplastic polyps to adenomatous or villous polyps, considered pre-cancerous. Like diverticulosis, the incidence of colorectal polyps also increases with age. Both conditions have a higher prevalence among western and industrialized countries. These similar epidemiologic characteristics have led to the investigation of a possible shared pathophysiologic mechanism [3]. Diets low in fiber and high in saturated fats, as well as a slow colonic transit time, have been identified as common risk factors [4]. Histopathologic studies have suggested that chronic inflammation underlying diverticular disease development may also predispose colonic mucosa to polyp formation [5].

There is currently no consensus regarding the relationship between the 2 conditions. Muhammad *et al* determined that patients with diverticulosis have a higher risk of developing colorectal polyps compared to those without [4]. Baker *et al* found a lower rate of colorectal cancer (CRC), but an increased rate of polyp detection in patients with diverticulosis compared to

[a]Division of Gastroenterology and Hepatology, University of Washington (Jennifer Ray); [b]Department of Health and Clinical Outcomes Research, Saint Louis University School of Medicine (Zhang Zidong); [c]Saint Louis University School of Medicine (Jason Yuan, Megan Quan); [d]Division of Gastroenterology and Hepatology, Saint Louis University Hospital (Christine Hachem), USA

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Correspondence to: Jennifer Ray, Division of Gastroenterology and Hepatology, Harborview Medical Center, University of Washington, USA, e-mail: jray001@uw.edu

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a control population [3]. Levine *et al* found a lower frequency of adenomatous polyps in colonic segments containing diverticulosis and proposed a possible protective effect of diverticulosis against the development of concurrent neoplasia [6]. Our study aimed to further elucidate the significance of coexisting colonic polyps and diverticulosis, and to evaluate the proximity of diverticulosis to colon polyps and the histopathology of these polyps. Primary outcomes included the presence of colonic diverticulosis and its proximity to colon polyps, and polyp type and size (sub-centimeter vs. polyps over 10 mm in size.) Secondary outcomes included other pathologic findings of the colon.

Patients and methods

We performed a retrospective chart review of all patients who underwent colonoscopy between January 2011 and December 2020 at Saint Louis University Hospital in St. Louis, Missouri. Data were collected for Current Procedural Terminology (CPT) codes in the Provation MD Physician Documentation Software Program. All screening and diagnostic colonoscopy CPT codes in this time range were collected. Incomplete colonoscopies and flexible sigmoidoscopies were excluded. All CPT codes for diverticulosis were extracted into a list that was cross-matched with CPT codes for colon polyps and mass lesions. Duplicate colonoscopies from the same patient were excluded from this study.

The patient population included both male and female patients from 18-90 years of age who underwent colonoscopy during this time. The upper age limit of 90 years was selected because of the low number of patients receiving colonoscopies over this age. Patient characteristics such as age, body mass index (BMI), history of inflammatory bowel disease, family history of CRC, and procedure indication were documented. Each colonoscopy that matched the criteria of having both diverticulosis and polyps was evaluated to determine the spatial relationship of colon polyps with the presence of diverticula. The location of the diverticula and polyps, number of polyps, and pathology were recorded. The colon was divided into 9 segments: cecum, ascending colon, hepatic flexure, transverse colon, splenic flexure, descending colon, sigmoid colon, recto-sigmoid colon, and rectum. The left colon was defined as the rectum, sigmoid, descending, and splenic flexure, and the right colon was defined as the transverse, hepatic flexure, ascending, and cecum. If there was no segment specified, these were classified as either right, left, or pan-colonic diverticulosis. The data were then divided according to the presence or absence of polyps and diverticulosis, in relation to several patient factors including age, BMI, sex, and high-risk factors for CRC: history of inflammatory bowel disease, personal or family history of colon cancer, and history of advanced polyp. Possible confounding factors included age, sex and BMI, which were controlled for in the analysis of the association of diverticulosis and the presence of colon polyps in the adjusted odds ratio (aOR) analysis. Adjacent polyps were defined as polyps within the same colon segment as the diverticulosis, as most reports do not quantify exact distances between these 2 entities.

Table 1 Demographics

Baseline characteristics	Value
N=2595	
Sex	
Male	1324 (51.0%)
Female	1271 (49.0%)
Body mass index (kg/m^2)	
Unavailable	134 (5.2%)
<25	524 (20.2%)
25-30	805 (31.0%)
>30	1132 (43.6%)
Indications for colonoscopy	
Not available	11 (0.4%)
Routing screening without other indication	1194 (46.0%)
Personal history of polyps	718 (27.7%)
Hematochezia/melena	181 (7.0%)
Anemia	100 (3.9%)
Personal history of colorectal cancer	31 (1.2%)
Family history of colorectal cancer	118 (4.5%)
Inflammatory bowel disease	15 (0.6%)
Weight loss	9 (0.3%)
Abnormal imaging	39 (1.5%)
Change in bowel habits	9 (0.3%)
Diarrhea	48 (1.8%)
Abdominal pain	40 (1.5%)
Rectal bleeding	39 (1.5%)
Diverticulitis	21 (0.8%)
Fecal occult blood positivity	12 (0.5%)
Therapy of polyp	31 (1.2%)
All other indications	8 (0.3%)
Bowel Prep Score	
Not available	60 (2.3%)
Poor 0	86 (3.3%)
Fair 1	574 (22.1%)
Good 2	1316 (50.7%)
Excellent 3	559 (21.5%)
Diverticulosis location by region	
Not available	11 (0.4%)
Cecum	637 (24.5%)
Ascending	930 (35.8%)
Hepatic flexure	611 (23.5%)
Transverse	898 (34.6%)
Splenic flexure	609 (23.5%)
Descending	1236 (47.6%)
Sigmoid	2180 (83.2%)
Rectosigmoid	688 (26.5%)
Rectum	596 (23.0%)

Statistical analysis

The incidence of diverticulosis in each of the 9 colon segments was determined, in relation to whether polyps were present in any segment during colonoscopy examination. Risk ratios and differences with 95% confidence intervals (CI) of diverticulosis incidence over polyp presence were calculated at each colon segment accordingly. Furthermore, the incidence rates of diverticulosis per segment were determined under the conditions that hyperplastic polyps or adenomas were found, respectively, and by size of polyps at each segment (size <10 vs. ≥10 mm).

Patient characteristics were compared by whether diverticulosis and a polyp were found during endoscopic examination. Distribution of patient characteristics was assessed using the 2-tailed chi-square test. Risk ratios over polyp and diverticulosis presences were also assessed using the 2-tailed chi-square test. Risk difference was assessed using the Wald equality test. Multiple logistic regression models were constructed to quantify the adjusted associations of diverticulosis incidence and polyp presence, as mentioned above, after controlling for patients' demographic and clinical factors (see Methods, third paragraph). All statistical tests were 2-tailed with an α of 0.05. All analyses were performed using SAS v9.4 (SAS Institute, Cary, NC).

Results

Our study identified 2595 screening and diagnostic colonoscopies that reported findings of colonic diverticulosis. Of these, 59 patients did not have a specified location of colonic diverticulosis and 43 patients had reported left- or right-sided diverticulosis. The baseline characteristics for this study are outlined in Table 1. Of the 2595 patients, 51% were men. The most common indication for colonoscopy was colon cancer screening (46%) and the most common location for diverticulosis was in the sigmoid colon (83%). Patient demographics were then analyzed in relation to the presence of colon polyps and, separately, colonic diverticulosis (Table 2). The presence of colonic diverticulosis itself was not statistically significant for a specific age group, personal or family history of colon cancer, or history of inflammatory bowel disease. However, a BMI <30 kg/m^2 was associated with a greater incidence of diverticulosis. Demographic analysis in relation to the presence of colon polyps found that polyps were most often associated with the age group 50-69 years.

With regard to the spatial relationship of colon polyps with diverticulosis, there was a statistically significant association of polyps adjacent to diverticulosis involving the rectum and transverse colon (Table 3). Of these colon segments with polyps adjacent to diverticulosis, the rectum and transverse colon had largely hyperplastic polyps (P<0.001) on pathology evaluation, while adenomatous colon polyps were more often located in the transverse colon (Table 3). Regarding polyp size, there was a statistically significant trend for transverse colon polyps adjacent to colon diverticulosis to be over 10 mm in size (P=0.0178), compared to other segments with polyps and adjacent diverticulosis (data not shown).

Table 4 represents the association between advanced or adenomatous colon polyps and the incidence of CRC with

Table 2 Patient demographics by colon polyps and diverticulosis

Demographic and clinical characteristics	No polyp %	Any polyp regardless of location %	P-value	No diverticulosis %	Any diverticulosis regardless of location %	P-value
Age, years			0.0048			0.8276
<50	5.5	4.8		6.4	5.2	
50-59	33.2	38.2		37.2	34.5	
60-69	36.1	37.9		36.2	36.6	
≥70	25.3	19.2		20.2	23.7	
Sex			0.3597			0.5339
Female	49.5	47.6		52.1	48.9	
Male	50.5	52.5		47.9	51.1	
Body mass index (kg/m^2)			0.7299			0.0086
≤30	57.0	56.3		43.6	57.3	
>30	43.0	43.7		56.4	42.7	
Risk level for CRC			0.0852			0.8169
High	64.9	61.3		62.8	63.9	
Low	35.1	38.7		37.2	36.1	
Risk features						
History of IBD			0.1973			0.6105
No	98.9	99.3		100.0	99.0	
Yes	0.7	0.1		0.0	0.6	
N/A	0.4	0.5		0.0	0.5	
History of colon cancer			0.7579			0.6268
No	98.8	98.9		100.0	98.8	
Yes	1.2	1.1		0.0	1.2	
Family history of colon cancer			0.6981			0.7589
No	91.0	91.8		92.6	91.2	
Yes	8.5	7.6		7.5	8.3	
N/A	0.4	0.5		0.0	0.5	

CRC, colorectal cancer; IBD, inflammatory bowel disease; N/A, not available

Table 3 Colon diverticulosis and colon polyps by pathology and location

Polyps	Rate of any diverticulosis found during colonoscopy (N=2493) %	n	Risk ratio (95%CI)	P-value	Risk difference (95%CI)	P-value
		Hyperplastic polyps:				
Rectum			1.410 (1.177–1.690)	<0.001	0.093 (0.038–0.149)	0.001
no polyp found	22.8	567.7				
hyperplastic polyp (s) found	32.1	800.8				
Rectosigmoid			0.975 (0.737–1.290)	0.8596	-0.007 (-0.082–0.069)	0.8586
no polyp found	27.6	689.1				
hyperplastic polyp (s) found	27.0	671.9				
Sigmoid			1.033 (0.992–1.075)	0.1449	0.028 (-0.007–0.063)	0.1180
no polyp found	86.2	2149.7				
hyperplastic polyp (s) found	89.0	2219.8				
Descending			1.144 (0.989–1.323)	0.0904	0.071 (-0.011–0.152)	0.0881
no polyp found	49.2	1225.3				
hyperplastic polyp (s) found	56.2	1401.3				
Splenic flexure			0.510 (0.139–1.868)	0.4110	-0.120 (-0.283–0.043)	0.1487
no polyp found	24.5	611.0				
hyperplastic polyp (s) found	12.5	311.6				
Transverse			1.274 (1.089–1.490)	0.0044	0.096 (0.028–0.165)	0.0058
no polyp found	35.2	876.8				
hyperplastic polyp (s) found	44.8	1116.9				
Hepatic flexure			0.815 (0.236–2.821)	>0.99	-0.045 (-0.294–0.203)	0.7205
no polyp found	24.5	611.8				
hyperplastic polyp (s) found	20.0	498.6				
Ascending			1.051 (0.832–1.328)	0.6810	0.019 (-0.072–0.110)	0.6835
no polyp found	37.2	928.1				
hyperplastic polyp (s) found	39.1	975.5				
Cecum			0.892 (0.577–1.378)	0.5987	-0.028 (-0.128–0.072)	0.5851
no polyp found	25.6	639.2				
hyperplastic polyp (s) found	22.9	569.9				
		Adenomatous polyps				
Rectum			1.057 (0.770–1.453)	0.7327	0.014 (-0.066–0.094)	0.7370
no polyp found	23.8	594.3				
adenoma found	25.2	628.5				
Rectosigmoid			1.048 (0.660–1.664)	0.8449	0.013 (-0.121–0.147)	0.8470
no polyp found	27.6	687.3				
adenoma found	28.9	720.2				
Sigmoid			1.020 (0.974–1.067)	0.4239	0.017 (-0.023–0.057)	0.4031
no polyp found	86.5	2155.2				
adenoma found	88.2	2197.6				
Descending			1.056 (0.935–1.192)	0.3936	0.027 (-0.036–0.090)	0.3933
no polyp found	49.3	1228.6				
adenoma found	52.0	1296.6				
Splenic flexure			1.579 (0.791–3.152)	0.3914	0.141 (-0.124–0.406)	0.2968
no polyp found	24.4	607.0				
adenoma found	38.5	958.8				
Transverse			1.276 (1.142–1.425)	<0.001	0.093 (0.048–0.138)	<0.001
no polyp found	33.7	840.6				
adenoma found	43.0	1072.5				
Hepatic flexure			1.007 (0.677–1.496)	0.9741	0.002 (-0.096–0.099)	0.9741
no polyp found	24.5	611.0				
adenoma found	24.7	615.3				

(*Contd...*)

Table 3 (*Continued*)

Polyps	Rate of any diverticulosis found during colonoscopy (N=2493) %	n	Risk ratio (95%CI)	P-value	Risk difference (95%CI)	P-value
Ascending			0.996 (0.882–1.125)	0.9526	-0.001 (-0.047–0.044)	0.9526
no polyp found	37.4	931.1				
adenoma found	37.2	927.6				
Cecum			1.086 (0.907–1.300)	0.3769	0.022 (-0.027–0.070)	0.3856
no polyp found	25.2	629.2				
adenoma found	27.4	682.8				

Table 4 Demographics of advanced polyps with diverticulosis and incidence of colorectal cancer

Demographic and clinical characteristics	Any adenoma (including TVA, SSA, VA)	P-value	Any polyp	P-value	Any colon cancer	P-value
	Adjusted OR (95%CI)		Adjusted OR (95%CI)		Adjusted OR (95%CI)	
Any left diverticulosis	1.322 (1.007-1.736)	0.0444	1.663 (1.203-2.299)	0.0021	0.900 (0.270-3.008)	0.8647
Age: <50 vs. 50-59 years	0.689 (0.471-1.010)	0.0191	0.754 (0.500-1.136)	0.6364	0.826 (0.102-6.675)	0.6608
Age: 60-69 vs. 50-59 years	1.036 (0.860-1.248)	0.2794	0.891 (0.729-1.088)	0.2268	1.064 (0.407-2.781)	0.8224
Age: ≥70 vs. 50-59 years	1.180 (0.956-1.456)	0.0097	0.641 (0.505-0.813)	0.0105	2.040 (0.821-5.071)	0.1129
Male vs. Female	1.237 (1.056-1.449)	0.0085	1.070 (0.900-1.273)	0.4420	0.463 (0.214-1.001)	0.0503
BMI: >30 vs. ≤30 kg/m^2	1.089 (0.927-1.279)	0.2993	0.994 (0.833-1.185)	0.9429	0.555 (0.250-1.234)	0.1487
High risk for CRC	1.066 (0.904-1.255)	0.4479	1.187 (0.992-1.419)	0.0610	0.781 (0.353-1.724)	0.5398
Any right diverticulosis	1.018 (0.870-1.192)	0.8194	1.098 (0.924-1.304)	0.2874	0.599 (0.279-1.289)	0.1900
Age: <50 vs. 50-59 years	0.690 (0.471-1.010)	0.0182	0.755 (0.501-1.137)	0.6205	0.827 (0.102-6.684)	0.6575
Age: 60-69 vs. 50-59 years	1.039 (0.863-1.252)	0.2752	0.896 (0.733-1.094)	0.2218	1.069 (0.409-2.793)	0.8217
Age: ≥70 vs. 50-59 years	1.188 (0.963-1.466)	0.0083	0.648 (0.511-0.822)	0.0129	2.067 (0.831-5.140)	0.1078
Male vs. female	1.232 (1.052-1.443)	0.0097	1.062 (0.893-1.263)	0.4982	0.473 (0.218-1.023)	0.0570
BMI: >30 vs. ≤30 kg/m^2	1.090 (0.929-1.280)	0.2911	0.997 (0.836-1.189)	0.9760	0.556 (0.250-1.234)	0.1490
High risk for CRC	1.071 (0.909-1.261)	0.4123	1.194 (0.999–1.427)	0.0516	0.777 (0.352–1.713)	0.5311
Any diverticulosis regardless of location	2.335 (1.447-3.769)	<0.001	2.573 (1.421-4.659)	0.0018	0.293 (0.086-0.997)	0.0495
Age: <50 vs. 50-59 years	0.690 (0.471-1.011)	0.0190	0.755 (0.501-1.139)	0.6298	0.826 (0.102-6.682)	0.6520
Age: 60-69 vs. 50-59 years	1.038 (0.862-1.251)	0.2782	0.894 (0.732-1.093)	0.2248	1.078 (0.412-2.819)	0.8306
Age: ≥70 vs. 50-59 years	1.185 (0.960-1.463)	0.0090	0.646 (0.509-0.820)	0.0121	2.089 (0.841-5.189)	0.1038
Male vs. Female	1.232 (1.051-1.443)	0.0099	1.062 (0.893-1.264)	0.4942	0.463 (0.214-1.002)	0.0506
BMI: >30 vs. ≤30 kg/m^2	1.107 (0.942-1.300)	0.2185	1.010 (0.846-1.205)	0.9121	0.530 (0.238-1.181)	0.1203
High risk for CRC	1.072 (0.910-1.263)	0.4070	1.198 (1.002-1.433)	0.0479	0.787 (0.357-1.736)	0.5527

OR, odds ratio; CI, confidence interval; BMI, body mass index; CRC, colorectal cancer; TVA, tubulovillous adenoma; SSA, sessile serrated adenoma; VA, villous adenoma

the presence of diverticulosis, after adjusting for patient demographics and confounding clinical factors. The factors analyzed included patients' age, sex, and BMI. Patients considered high risk for CRC included patients with history of inflammatory bowel disease, family history of CRC, history of adenomas or prior CRC (Table 4). For both left- and right-sided diverticulosis, patients less than 50 years old and patients over 70 had a higher incidence of adenomatous colon polyps. Patients at high risk for CRC had a greater risk of any colon polyp (P=0.048). It was noted that male patients were more likely to have adenomatous colon polyps, but overall there was no difference between men and women in the polyps found or incidence of colon cancer (aOR 1.232, 95%CI 1.051-1.443; P=0.0099). Patients with colonic diverticulosis, regardless of location, had a higher prevalence of adenomatous colon polyps. This was compared to all colon segments without diverticulosis. However, there was a lower incidence of CRC, despite the higher prevalence of adenomatous polyps (P<0.05).

Diverticulosis was then divided into right and left colon for evaluation of advanced polyps, demographics as above, and

Table 5 Univariate analysis: diverticulosis, colon polyps, and incidence of colorectal cancer

Factors	No diverticulosis	Any diverticulosis regardless of location	Risk ratio (95%CI)	P-value	Risk difference (95%CI)	P-value
Rate of adenoma	24.5	43.0	1.757 (1.228-2.513)	<0.001	0.185 (0.096-0.274)	<0.001
Rate of polyp	13.8	28.8	2.085 (1.254-3.466)	0.0015	0.150 (0.078-0.222)	<0.001
Rate of colon cancer	3.2	1.1	0.338 (0.105-1.095)	0.1648	-0.021 (-0.057-0.015)	0.2471
	No left diverticulosis	Any left diverticulosis	Risk ratio (95%CI)	P-value	Risk difference (95%CI)	P-value
Rate of adenoma	36.1	43.0	1.189 (1.001-1.411)	0.0383	0.068 (0.005-0.131)	0.0336
Rate of polyp	20.1	29.2	1.452 (1.124-1.875)	0.0025	0.091 (0.038-0.144)	<0.001
Rate of colon cancer	1.2	1.2	0.955 (0.292-3.126)	>0.99	-0.001 (-0.015-0.014)	0.9408
	No right diverticulosis	Any right diverticulosis	Risk ratio (95%CI)	P-value	Risk difference (95%CI)	P-value
Rate of adenoma	42	42.7	1.017 (0.929-1.113)	0.7157	0.007 (-0.031-0.045)	0.7158
Rate of polyp	27.5	29.3	1.067 (0.944-1.206)	0.3016	0.018 (-0.017-0.053)	0.3023
Rate of colon cancer	1.4	0.9	0.601 (0.283-1.280)	0.1820	-0.006 (-0.014-0.002)	0.1720

CI, confidence interval

incidence of CRC. Left colon diverticulosis was associated with a higher risk of any colon polyp (both adenomatous and non-adenomatous colon polyps) (Table 4). Interestingly, there was no greater association of left colon diverticulosis with adjacent polyps and incidence of CRC (P=0.0085, aOR 1.237, 95%CI 0.900-1.273). Q. There is inconsistency between the P-value and the confidence intervals, please re-calculate. Right colon diverticulosis was not associated with a higher risk of CRC or polyps (Table 4). Univariate analysis demonstrated a significant association between left colon diverticulosis and higher rates of both adenomatous and non-adenomatous colon polyps (Table 5). CRC was not associated with colon diverticulosis, regardless of location.

Discussion

Our data suggest that diverticulosis in any location in the large intestine may be associated with a greater likelihood of an adenomatous colon polyp. This remains statistically significant after controlling for patient variables, such as patients' age, sex, BMI, and risk factors for CRC. Interestingly, the presence of diverticulosis with adjacent advanced adenomatous polyps did not yield an increased incidence of CRC. A recently published meta-analysis also demonstrated the dose-dependent relationship between BMI increase and risk of diverticular disease, while our study demonstrated that a lower BMI was associated with a greater risk of polyps with diverticulosis [7]. These findings are probably due to the smaller sample size in our study. Further limitations of our study include its retrospective methodology, where not all variables could be controlled.

In analyzing specific patient factors for both right- and left-sided diverticulosis with adjacent colon polyps, left diverticular disease was associated with both adenomatous and non-adenomatous colon polyps, but not a higher risk of CRC. Again, this is probably related to the sample size. In addition, our data illustrate that most of the diverticulosis associated with colon polyps was localized to the rectum, transverse colon and cecum. This is intriguing, as the left colon is typically the most common location for diverticular disease, which would in theory house the most polyps. However, our data show more right colon predominance for localization of both colon polyps and adjacent diverticulosis. This finding may reflect the angulation of the sigmoid colon and perhaps a greater likelihood of overlooking polyps. However, it may also reflect incorrect localization of polyps, as the prior literature indicates that gastroenterologists can be incorrect in predicting the location of the colon cancer and our data is based on gastroenterologists' suspected location of colonic neoplasms [8].

Our research seeks to add to the body of literature evaluating the relationship of colon diverticulosis and colon polyps. Colonic diverticular disease can signify a harbinger of CRC if a thorough examination is not performed. Therefore, it is imperative to modify our clinical practice and investigate the mucosa surrounding colonic diverticulosis. To help prevent polyp formation, lifestyle modifications, such as high fiber diet, regular exercise, and healthy diet, should be recommended. Overall, more studies are needed to investigate this interesting relationship.

Summary Box

What is already known:

- Diverticulosis and colon polyps are common findings during a colonoscopy
- The presence of colon polyps can lead to an increased risk of colorectal cancer (CRC)
- There is no consensus on the relationship between colonic diverticulosis and colon polyps

What the new findings are:

- The presence of colonic diverticulosis in any location was associated with a greater incidence of adjacent colon polyps
- There was a greater presence of both polyps with diverticulosis in the right colon
- Despite the higher prevalence of colon diverticulosis with adjacent adenomatous colon polyps, there was no greater incidence of CRC

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