

Extended Abstract: Long-Term Outcome of Elective Surgery – Symptoms, Cicatricial Hernia and Ileostomy/Colostomy Rate

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Key Words

Uncomplicated diverticulitis • Recurrence rate • Bowel resection • Anastomosis

Introduction

The correlation between recurrence rates and extent of bowel resection and/or level of anastomosis may still be considered as a controversial issue in surgery for uncomplicated diverticulitis. The rate of recurrent diverticulitis following surgical resection ranges between 1 and 10% [1–5] and recurrence may be related to the extent of bowel resection but much more to the level of the anastomosis above the anus. Rates are significantly decreased in cases where the distal line of resection is placed in the upper rectum rather than in the distal sigmoid colon [6]. Severe persistent abdominal symptoms disturbing normal daily activities are a known complication in patients operated for recurrent diverticulitis and may occur in 15–25% of patients [7, 8]. In the literature there is only little information about these symptoms. Some authors relate them to coexisting diseases like irritable bowel syndrome which has a prevalence of up to 14% in patients with known di-

verticular disease [9]. Patients undergoing surgery for diverticular disease must be aware that an operative intervention may not resolve all pre-existing symptoms or may even compose new, preoperatively unknown, symptoms.

Epidemiology and Pathogenesis

Colonic diverticulosis is observed in a constantly increasing number of people [1]. Recent studies indicate an age depending prevalence of about 10% in patients younger than 40 years old and up to over 60% in patients older than 80 years [10–12]. Pathogenesis of diverticula is currently explained by a combination of a low fiber diet in Western countries resulting in so-called low-volume stools, which may provoke in a vulnerable high pressure zone in the sigmoid colon the progressive development of sack-like herniation through the colonic wall at physiological tissular weak points [13, 14]. These pseudodiverticulae immerse in numbers varying from single to several hundred mostly in the sigmoid, although their formation may occur everywhere in the colon.

Natural History and Symptoms

It is important to clarify the different expression often used when talking about diverticula: Diverticulosis only describes the presence of diverticula in the colon and while a majority of diverticula carrying patients remain completely asymptomatic throughout their lifetime. About 10–25% will become symptomatic [11] with manifest diverticular disease or symptomatic diverticulosis. However, the most common manifestation is acute diverticulitis, presenting typically with lower left quadrant abdominal pain, elevated white blood cell counts and fever.

Symptomatic diverticula can also manifest themselves less specifically and without acute inflammation, mostly with abdominal distension, diarrhea or constipation and abdominal pain, making a correct clinical diagnosis often difficult.

Complications of acute diverticulitis may be bowel perforation, abscess and fistula formation as well as stenosis of the affected colon.

Recurrent diverticulitis after an initial conservative treatment is observed in up to 34% [15, 16]. Older studies suggested that episodes tend to get worse over time; however, recent studies have proven contradictory results, most patients with complicated disease, especially perforation, present this at their first episode [17–20].

Diagnosis

Diverticulosis is nowadays most commonly diagnosed while routine colonoscopy, often as an incidental finding. Triple contrast CT scan is the gold standard imaging technique to confirm a suspected acute diverticulitis with highest rates of sensitivity and specificity approaching nearly 100% [21, 22].

Furthermore, CT scan allows obtaining preoperative disease classification according to Hansen and Stock [23] especially with the intention to clearly differentiate between uncomplicated and complicated disease.

Treatment

Standard treatment of uncomplicated acute diverticulitis is intravenous or per oral broad-spectrum antibiotics and short bowel rest in patients with mild and uncomplicated disease often as an outpatient treatment [24, 25].

Complicated disease with perforation and with peritonitis generally requires emergency laparotomy, and based on intraoperative findings, a Hartmann's procedure or resection of the diseased colon with primary anastomosis and probably a protective ileostomy. Recent studies also show favorable results of laparoscopic abdominal lavage and drainage with possibility of elective surgery after resolution of the acute inflammatory episode [26, 27].

An abscess in the pelvic or paracolic region with a diameter of 5 or more centimeters may successfully be drained percutaneously by ultrasonic or CT guidance [28].

Elective surgery for recurrent diverticulitis is controversially discussed in the literature. A few years ago several associations, as the American Society of Colon and Rectal Surgeons (ASCRS), recommended elective sigmoidectomy after 2 episodes of uncomplicated diverticulitis [29], in young patients even after a single episode. However, recent studies showing a mostly benign and nonprogressing evolution of recurrent uncomplicated diverticulitis [19, 20] have changed these guidelines with the actual recommendation to decide indications for surgery on an individual basis and not to offer interventions to patients which did not have had 4 episodes [30].

A continuous amelioration of laparoscopic techniques has allowed this approach to become the standard for sigmoid resection [31–33].

Recurrent Diverticulitis and Persistent Symptoms

Different studies demonstrate a rate of recurrent diverticulitis after successful surgery in 1–10% of the patients [1–5, 7, 8]. The correlation between decreased recurrence rate and a lower resection line in the upper rectum rather than in the lower sigmoid has already been proven by Benn et al. [6]. Wolff et al. [34] showed that recurrences do not depend on the number of proximal diverticula left in situ at elective surgery.

Parks and Connell [35] first described persistent symptoms after a 3 stage procedure for perforated diverticulitis in 1970, and Munson et al. [36] found that 27% of the patients undergoing elective surgery presented with persistent symptoms such as abdominal distension, crampy abdominal pain, frequent diarrhea or constipation.

Personal Experience

We performed a retrospective study with follow-up by systematic telephone interviews of all patients undergoing elective colectomy for recurrent diverticulitis between 2003 and 2008 at our department. Especially the prevalence of permanent ileostomy/colostomy rates, cicatricial hernia and persistent symptoms were evaluated by a structured questionnaire. A total of 109 patients underwent elective surgery during that 5-year period in Fribourg hospital. Ninety-three patients (60 male, 33 female) could be contacted for the interview with a median follow-up of 69 (22–99) months. Six patients had died (of nondiverticulitis-related causes) and 10 were lost for follow-up.

Recurrent diverticulitis occurred in 2 (2.2%) patients, a protective ileostomy and a temporary terminal colostomy were realized in 10 (10.7%) and in 1 (1%) patient, respectively. All those 11 patients underwent successful restoration of bowel continuity after a few months [8].

At the time of the last follow-up, 7 (7.5%) patients developed cicatricial hernia and 14 (15%) patients complained about severe persistent symptoms (painful diarrhea, painful abdominal cramps and painful constipation >1 times a week). There were no significant differences concerning incidence of persistent symptoms, ileostomy/colostomy rate or development of cicatricial hernia comparing the groups undergoing an open (11 patients) or laparoscopic intervention (82 patients) [8].

Conclusions

Our own study shows that the majority of patients had successful surgery and that the recurrence rate of acute diverticulitis was low with most patients demonstrating a normalization of bowel habits. Generally, patients were very pleased with the operative results. However, a significant subgroup of patients complained about persistent symptoms, which were highly influencing their normal daily activities. Nearly half of these patients with persisting symptoms would refuse, retrospectively, to undergo the same operation again [8].

The reasons of such persistent symptoms remain uncertain; a possible explanation may be a coexisting irritable bowel syndrome, which is found in up to 14% of patients presenting diverticular disease [9].

Breen et al. [37] showed that 60% of patients with no histological evidence of chronic or acute inflammation in the resected colon complained about a range of continuing symptoms, while symptoms occurred only in 15% of patients with histologically confirmed diverticulitis. This may indicate that initial abdominal symptoms in some patients, especially those with no proven acute inflammatory disease, may be due to other pathologies than diverticular disease. It seems that exactly those patients are at high risk of developing persistent symptoms after successful surgery.

As a consequence, we think that the indication for elective surgery for recurrent diverticulitis must be applied very carefully on an individual basis. Furthermore, all patients selected for surgery must be informed in detail about the inherent risks of such interventions, especially about the possibility of a nonresolution or even aggravation of the experienced gastrointestinal symptoms.

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