

Diagnosis and treatment of colonic diverticulitis

Natmir Mena¹ ¹ Clinic of Visceral Surgery, Hospital of Wallis, Spitalzentrum Oberwallis, Naters, SwitzerlandCorresponding author: Natmir Mena (dr.natmir.mena@gmail.com)

Summary

Colonic diverticulosis is a common condition and the most frequent occasional finding during fibrocolonoscopy in asymptomatic patients in Western countries. The incidence rate of diverticulitis is relatively high. The descending and sigmoid colon are the predominant locations of the disease. The study aimed to analyze the diagnosis and treatment outcomes of a single institution series of 104 consecutive patients with colonic diverticulitis treated at the Clinic of Visceral Surgery, Hospital of Wallis, Switzerland, between January 1, 2023, and December 31, 2023. The mean age of patients was 63.37 years (± 14.79). The diagnosis was based on clinical symptoms, leukocytosis, elevated CRP levels, diagnostic imaging (abdominal ultrasound, computed tomography) and fibrocolonoscopy. Treatment schemes included analgesics and antibiotics in all the cases and elective or emergency surgery – in 32 cases. The study demonstrated that an individualized treatment approach based on accurate laboratory and imaging diagnostics was both safe and effective.

Key words: Colonic diverticulitis, diagnosis, drug therapy, elective surgery, emergency surgery

Introduction

Diverticulosis is a widespread condition affecting over 70% of individuals aged ≥ 80 in Western nations (Humphrey et al. 2024). Diverticulitis is the most frequent complication of left colon diverticula, thus primarily affecting the sigmoid and descending colon (González et al. 2024; Long et al. 2024). Its most common clinical presentation includes abdominal pain and left lower abdominal quadrant tenderness.

Gunby and Strate from the University of Washington School of Medicine, Seattle, Washington, provided a recent evidence-based, clinically relevant overview of new aspects of the epidemiology and diagnosis of acute colonic diverticulitis (Gunby and Strate 2024). The decision on the treatment method (conservative or surgical) depends on the disease severity, the presence of complications and the underlying comorbid conditions.

Kruis and Leifeld published a comprehensive review discussing some important issues related to diverticulosis, diverticular diseases and diverticulitis, such as diagnostic imaging – ultrasound (US), computed tomography (CT), or their combination; outpatient care versus in-hospital treatment; antibiotic usage; indications for surgery; relapse prevention (Kruis and Leifeld 2022).



Academic editor: Pencho Tonchev

Received: 18 December 2024

Accepted: 9 January 2025

Published: 10 March 2025

Citation: Mena N (2025) Diagnosis and treatment of colonic diverticulitis. Journal of Biomedical and Clinical Research 18(1): 55–66. <https://doi.org/10.3897/jbcr.e144785>

Copyright: © Natmir Mena.

This is an open access article distributed under terms of the Creative Commons Attribution License (Attribution 4.0 International – CC BY 4.0).

Acute diverticulitis accounts for approximately one-third of all emergency hospital admissions annually in Western countries. The number of outpatient treatment cases is even more significant due to our improved understanding of the risk stratification and the disease progression natural history (Domas et al. 2024).

Our study aimed to analyze the results of diagnosing and treating patients with acute and chronic colonic diverticulitis.

Material and methods

One hundred and four consecutive patients with acute and chronic colonic diverticulitis were included in a single-centre retrospective study. All of them were admitted to the Clinic of Visceral Surgery at the Hospital of Wallis, Spitalzentrum Oberwallis, Switzerland, between January 1st, 2023 and December 31st, 2023.

Fifty patients were male (mean age 61.04 ± 14.59 years, range 30–94 years), and 54 were female (mean age 65.85 ± 14.72 years, range 32–87 years). The mean age in the whole series was 63.37 years (± 14.79). Acute conditions accounted for 79.8% ($n = 83$, male/female = 41/42), while chronic diverticulitis was found in 20.2% ($n = 21$, male/female = 9/12). All the patients presented with abdominal pain at the time of admission.

Diagnosis was based on routine laboratory findings such as leukocytosis ($12 \times 10^9/L - 18 \times 10^9/L$) and elevated C-reactive protein levels (50 mg/dL–200 mg/dL). Diagnostic imaging (US and CT scan) was essential for confirming the suspected diverticulitis. Chronic patients received fibrocolonoscopy (FCS) routinely. FCS was performed in acute cases between the fourth and sixth week after the completion of conservative treatment. CT scan images of colonic stenosis after chronic diverticulitis and in relapsing diverticulitis are shown in Fig. 1 and Fig. 2.

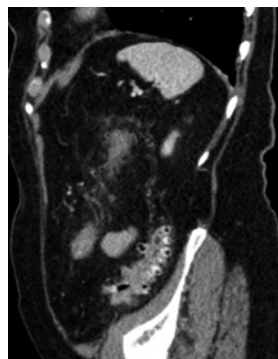


Figure 1. CT image of colon stenosis after chronic diverticulitis

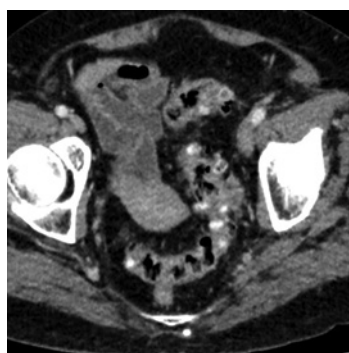


Figure 2. CT image in relapsing diverticulitis.

The preoperative and postoperative FCS images are demonstrated in Fig. 3 and Fig. 4.

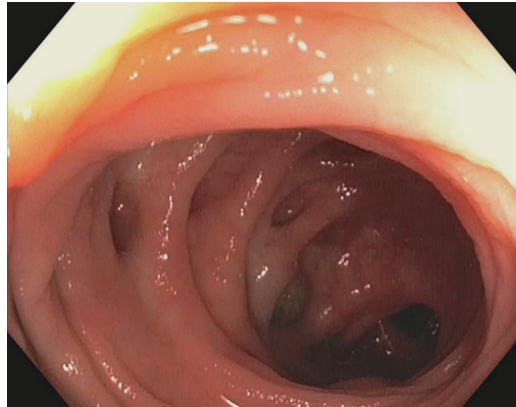


Figure 3. Preoperative fibrocolonoscopy in chronic diverticulitis.

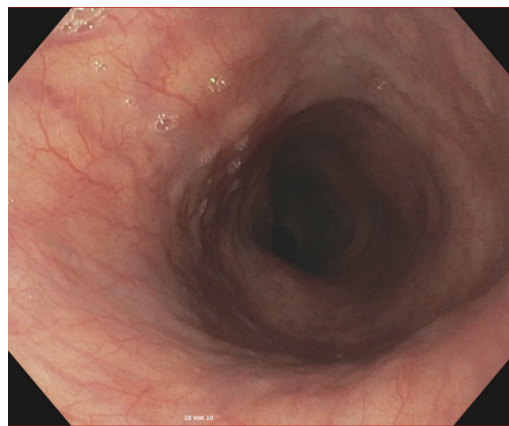


Figure 4. Fibrocolonoscopy three months after the operation.

All clinical, laboratory and instrumental data supported the implementation of an individual therapeutic approach to one of the three scenarios: seventy-two patients (86.8%, male/female = 34/38) received definitive conservative treatment. Surgery was performed in 32 patients (13.2%, male/female = 16/16). Emergency and elective procedures were given to 11 (10.6%, male/female = 6/5) and 21 patients (20.2%, male/female = 10/11). No patients have undergone operative treatment after conservative therapy during hospitalization.

The intervention was initiated laparoscopically in all the 32 surgical cases. Conversion to open surgery was indicated in 8 emergency patients (male/female = 5/3) and 3 elective ones (male/female = 2/1). Hartmann's procedure was performed on 2 women out of the total group of 11 emergency cases. Laparoscopic large-intestine passage restoration was accomplished in 3 months after the first operation. The remaining 9 patients received primary anastomosis.

Two of the 21 elective patients received divert loop ileostomies with restoration within the next four and six weeks. None of these patients remained with a permanent stomy.

The laparoscopic images before colon resection and after anastomosis using indocyanine green (ICG) are illustrated in Fig. 5. and Fig. 6, respectively.



Figure 5. Laparoscopy prior to colon resection by using indocyanine green.

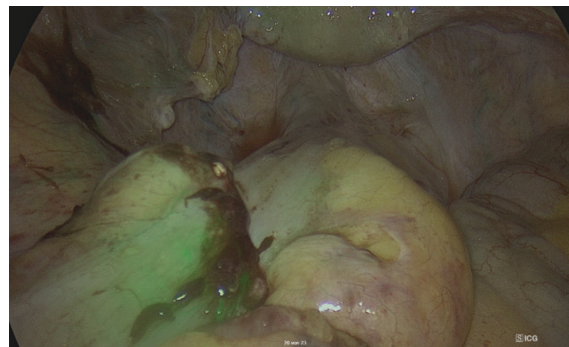


Figure 6. Laparoscopy after colon anastomosis by using indocyanine green.

The data about early and late postoperative results were collected, focusing on wound infections and anastomotic leakage.

Results

The distribution of patients by age and site of colonic diverticulitis is demonstrated in Table 1 and Fig. 7, respectively.

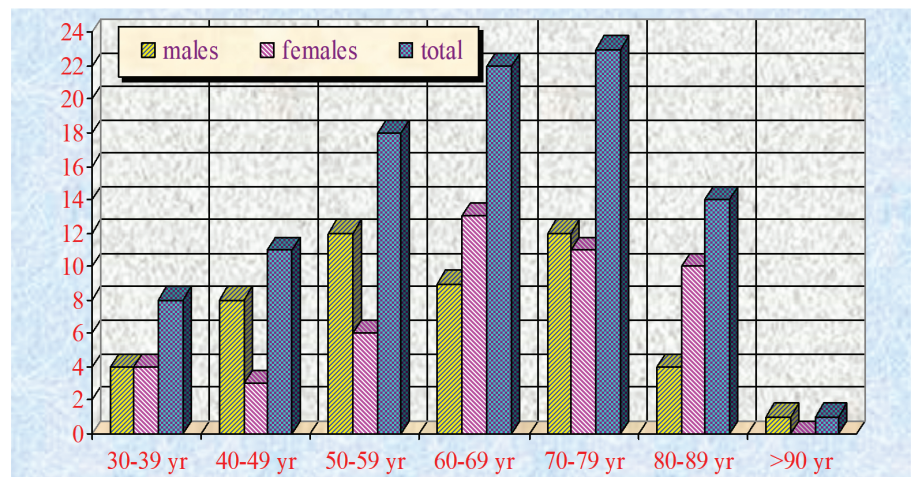


Figure 7. Age distribution of colonic diverticulitis patients

Table 1. Localization of colonic diverticulitis.

Localization	males		females		total	
	N	%	N	%	N	%
Sigmoid colon	37	74.0	45	83.3	82	78.8
Descending colon	7	14.0	4	7.4	11	10.6
Transverse colon	3	6.0	3	5.56	6	5.8
Ascending colon	3	6.0	2	3.7	5	4.8

Both US and CT revealed inflammation of the colon diverticula in all the cases. The different types of surgical procedures are presented in Table 2.

Table 2. Operative treatment of colonic diverticulitis.

Type of procedure	males		females		total	
	N	%	N	%	N	%
Elective surgery	10	20.0	11	20.4	21	20.2
Emergency surgery	6	12.0	5	9.3	11	10.6
Elective laparoscopic surgery	9	18.0	10	18.5	19	18.3
Elective laparoscopic and open surgery	1	2.0	1	1.9	2	1.9
Emergency laparoscopic surgery	1	2.0	2	3.7	3	2.9
Emergency laparoscopic and open surgery	5	10.0	3	5.6	8	7.7
Elective laparoscopic sigmoidectomy	9	18.0	10	18.5	19	18.3
Emergency laparoscopic sigmoidectomy	1	2.0	1	1.9	2	1.9
Elective left hemicolectomy	0	0	2	3.7	2	1.9
Emergency right hemicolectomy	0	0	1	1.9	1	1.0
Lavage and drainage because of acute peritonitis	5	10.0	5	9.4	10	9.6

Patients with clinical signs of peritoneal involvement and free gas in the abdominal cavity underwent emergency surgery. Otherwise, conservative treatment was initiated.

The sigmoid colon was the most common diverticulitis site.

All the patients received analgesics such as novalgine, dafalgin or brufen. All the 21 patients undergoing elective operations did not receive any antibiotics. The remaining 83 patients received antibiotics such as co-amoxicillin (n = 37), piperacillin-tazobactam (n = 36), or cefuroxime combined with metronidazole (n = 10). Uncomplicated cases of diverticulitis were treated with co-amoxicillin, while complicated ones were given piperacillin-tazobactam.

No mortality was registered in the early postoperative period.

The postoperative complications are demonstrated in Table 3. Specific postoperative morbidity was registered in 18.8% (n = 6/32).

Table 3. Postoperative complications.

Complication	males		females		total	
	N	%	N	%	N	%
Wound infection after laparoscopic and open surgery	4	8.0	0	0	4	3.8
Anastomosis leakage after sigmoidectomy	0	0	2	3.7	2	1.9

Table 4. Classification of diverticular disease (CDD).

Type	Pathological findings	males		females		total	
		N	%	N	%	N	%
1	Uncomplicated diverticular disease/diverticulitis						
1a	Diverticulitis/diverticular disease without phlegmonous reaction of the surrounding tissue	2	4.0	2	3.7	4	3.9
1b	Diverticulitis with phlegmonous reaction of the surrounding tissue	21	42.0	27	50.0	48	46.2
2	Complicated diverticulitis						
2a	Microabscess covert perforation, small abscess (≤ 3 cm)	4	8.0	6	11.1	10	9.6
2b	Macroabscess paracolic or mesocolic abscess (>3 cm)	7	14.0	3	5.6	10	9.6
2c	Overt perforation, generalized peritonitis	5	10.0	3	5.6	8	7.7
2c1	Purulent peritonitis	1	2.0	0	0	1	1.0
2c2	Faecal peritonitis	0	0	0	0	0	0
3	Chronic diverticular disease						
3a	Persistent/recurrent symptoms associated with diverticulitis	5	10.0	7	13.0	12	11.5
3b	Recurrent diverticulitis without complications	1	2.0	0	0	1	1.0
3c	Recurrent diverticulitis with complications	4	8.0	6	11.1	12	11.5
4	Diverticular haemorrhage	0	0	0	0	0	0

Table 4 presents the patients’ clinical characteristics according to CDD (Classification of Diverticular Disease) (Kruis et al. 2022).

The operative time for laparoscopic procedures ranged from 105 to 130 min. (mean 118.15 min. \pm 13.92 min.), while the duration of laparoscopic converted to open surgeries was significantly longer, ranging from 140 to 160 min. (mean 144.70 min. \pm 17.23) ($t = 4.4$; $p < 0.001$).

Discussion

The adequate approach to patients with acute or chronic recurrent colonic diverticulitis needs proper answers to several questions concerning diagnostics, outpatient or in-hospital treatment, types of surgical procedures (laparoscopic or open), conservative or surgical treatment, incidence rate and management of postoperative complications. Even nowadays, some of these questions provoke debates, and the answers are controversial.

1. Diagnostic procedures in acute diverticulitis

According to the data from the literature and our knowledge and institutional experience, laboratory tests and diagnostic imaging methods are reliable means for confirming the diagnosis of diverticulitis.

The results from a retrospective study of 82 adult acute diverticulitis patients demonstrated that C-reactive protein, neutrophil/lymphocyte ratio, and systemic immune-inflammatory index were statistically significant early predictors of complicated acute colonic diverticulitis compared to leukocyte count and the percentage of immature granulocytes (Aydın et al. 2024). Previous studies have also shown the importance of elevated C-reactive protein levels and leukocyte count in diverticulitis patients (Long et al. 2024).

Imaging modalities such as abdominal and pelvic CT, magnetic resonance imaging, or ultrasound are routinely used for diagnosis.

In a multicenter retrospective study conducted at four Korean tertiary hospitals between June 2003 and December 2020, 104 colonic diverticulitis patients under 20 years were diagnosed using abdominal CT scans (Han et al. 2024). The average age of the patients was 17.24 years (± 2.4), with a slightly higher prevalence of males (62%) compared to females (42%). The cecum and ascending colon involvement was found in the majority of cases ($n = 103/104$), while only a single patient presented with sigmoid colon diverticulitis. Solitary lesions were detected in 89.42% of the cases ($n = 93$). Eight recurrence episodes (7.84%) were observed during a mean follow-up period of 34.01 months (± 41.52).

In a retrospective study of 562 consecutive acute diverticulitis patients from a tertiary referral centre in Finland, Mäntymäki et al. (2024) reanalyzed 439 of the CT images. They found significant differences between the initial and final reports in 22 (in 5.0%) (Mäntymäki et al. 2024), which led to a change in the management scheme for 20 patients.

Reanalysis changed the initial assessment in 4.0% of uncomplicated patients and 9.1% of complicated acute diverticulitis patients.

A case report by Shumarova et al. (2024) described a 63-year-old woman with sigmoid stenosis caused by diverticulosis, mimicking advanced colorectal cancer. Contrast-enhanced CT of the abdomen and pelvis revealed a circumferentially and irregularly thickened intestinal bowel wall up to 15 mm ~11 cm from the anorectal line along a ~6 cm concentrically stenosing lumen. Sigmoidectomy confirmed complicated colonic diverticulitis with exacerbation, abscess formation, and spread of the inflammatory process involving pericolic tissues, the right ovary, and lymph nodes with mixed reactive lymphadenitis.

2. Outpatient or in-hospital treatment of acute diverticulitis

A systematic review and meta-analysis of publications retrieved from PubMed, MEDLINE, EMBASE, and CENTRAL databases up to December 1, 2023, compared the outcomes of outpatient versus inpatient treatment, as well as the use of antibiotics versus no antibiotics in patients with diverticulitis (Mohamedahmed et al. 2024). Twelve studies analyzed the results of 1,021 outpatients and 1,265 inpatients with uncomplicated acute diverticulitis.

Both groups had no significant differences regarding treatment failure, emergency surgical resection, elective resection, disease recurrence, or mortality rate. The antibiotics usage was the objective of another 12 studies on 3,875 cases of acute diverticulitis. The antibiotic group ($n = 1,876$) demonstrated a statistically significantly higher disease recurrence rate ($p = 0.001$) and more extended hospital stays ($p = 0.004$) compared with the non-antibiotic group ($n = 2,008$).

3. Types of surgical procedures in cases of diverticulitis

The elective or emergent laparoscopic sigmoid resections were a routine procedure in our series.

In a retrospective, single-centre study in Salzburg, Austria, 83 consecutive patients with sigmoid diverticulitis (52 males and 31 females) underwent elective minimally invasive sigmoid colectomy from January 2016 to December 2020 (Presl et al. 2024). Conventional laparoscopic surgery was carried out in 42 patients at a mean age of 58.17 years (± 12.34), comprising 28 men and 14 women. Robotic-assisted surgery was performed on 41 patients at a mean age of 54.46 years (± 12.36), including 24 males and 17 females. The postoperative hospital stay was statistically significantly longer in the laparoscopic than in the robotic-assisted surgery group (8.48 vs. 6.41 days; $p = 0.017$). Additionally, the mean length of the resected bowel segment was statistically significantly more considerable in the laparoscopic group (16.04 ± 4.33 cm vs. 14.31 ± 8.12 cm; $p = 0.005$). Complications occurred in 10 patients in the laparoscopic and 4 in the robotic-assisted group (23.81% vs. 9.75%), respectively ($p = 0.271$).

Between July 1, 2014, and December 31, 2020, 47,294 diverticulitis patients with a mean age of 68.5 years (± 15) were admitted for emergency hospital treatment in Uppsala, Sweden (Christos et al. 2024). Surgical treatment was performed in 2,035 cases, including laparoscopic peritoneal lavage (Group 1, $n = 427$; mean age of 62.3 years ± 14.9) and sigmoid resection (Group 2, $n = 1,608$; mean age of 69.4 years ± 12.8) ($p < 0.001$). The patients in Group 1 had a lower rate of comorbidity and fewer prior abdominal surgeries than those in Group 2 ($p < 0.01$). The mean overall postoperative hospital stay was 13.8 days (± 11.6), and it was significantly shorter in Group 1 (9.4 ± 8.5 vs 14.9 ± 12 days; $p < 0.001$).

The choice between Hartmann's procedure and primary anastomosis with diverting loop ileostomy was the topic of a retrospective, population-based cohort study including 35,774 cases of acute diverticulitis treated in the USA from January 2011 to December 2019 (Rios Diaz et al. 2024). Hartmann's procedure was received by 93.46% of patients ($n = 33,433$; male/female = 16,454/16,979; mean age of 60.94 years) during primary colorectal anastomosis with diverting loop ileostomy was done in 6.54% of all operations ($n = 2,342$; male/female = 1,146/1,196; mean age of 58.03 years). The primary anastomosis was associated with statistically significantly higher rates of one-year closure of the stoma (83.6% vs. 53.4%; $p < 0.001$) and shorter time-to-closure (median 72 days vs. 115 days; $p < 0.001$) as well as with more unplanned readmissions (HR – 2.83; range 2.83–3.37 at 95% confidence interval; $p < 0.001$) and less complications after the stoma closure (OR – 0.51; range 0.42–0.63 at 95% confidence interval; $p < 0.001$).

Le et al. analyzed the results of 9,124 emergent colectomies indicated by diverticulitis between 2015 and 2020 (Le et al. 2024). Open surgery was performed in 82.68% ($n = 7,544$; mean age of 48.5 years), while 1,580 patients (17.32%; mean age of 45.5 years) had a minimally invasive procedure ($p < 0.001$). The open surgery group, compared to the laparoscopic group, demonstrated higher rates of total colectomy as a procedure (3.0% vs 1.5%; $p = 0.001$) and ileostomy/colostomy (84.8% vs 35.8%; $p < 0.001$), shorter operative time (128 min. vs. 158 min.; $p < 0.001$) but longer postoperative hospital stay (9 days vs 7 days; $p < 0.001$).

We accomplished laparoscopic operations in a total of 32 patients. The elective laparoscopic surgeries were 89.5% ($n = 19$), but those converted to open procedures were 10.5% ($n = 2$). The emergency laparoscopic operations were 27.3% ($n = 3$), while those converted to open procedures were 72.7% ($n = 8$).

The mean hospital length of stay after the elective surgery was 4.5 days (range, four to six days) and that after the emergency surgery was 7.4 days (seven to nine days range).

4. Conservative or surgical treatment of acute diverticulitis

Studies on acute diverticulitis differ in the relative ratio of patients undergoing conservative or surgical treatment.

We performed conservative treatment in 69.2% (n = 72) of our patients with diverticulitis. Elective surgery was applied in 21 patients within different time intervals after the conservative treatment. Eleven patients underwent emergency surgery.

Our percentage is similar to that of Lauricella et al. They published an ambidirectional cohort study of 319 patients with right-sided colonic diverticulitis (Lauricella et al. 2024). Non-operative treatment was performed in 223 cases (69.91%), while 33 patients (10.34%) underwent surgery. Among the surgical cases, three patients had chronic and 30 had acute diverticulitis. CT identified uncomplicated diverticulitis in 9 and complicated diverticulitis in 21 patients. Right hemicolectomy was accomplished in 30 (90.91%) and ileocecectomy – in three patients (9.09% of the cases). Postoperative complications occurred in nine patients (in 27.27% of the cases).

Jedidi et al. published a retrospective study on 40 patients with right-sided acute diverticulitis (mean age of 42 years \pm 14; male/female = 20/20) (Jedidi et al. 2024). Conservative management was used in 14 patients, while 26 patients underwent surgery (Jedidi et al. 2024). Diverticulectomy was performed in 21 (in 80.77%), right hemicolectomy – in three (in 11.54%), and ileal resection – in two patients (in 7.69% of the cases).

A review of 18 studies from *MEDLINE* and *PubMed* databases up to 2021, involving a total of 422 patients with right colonic diverticulitis, found that non-operative management was performed in 184 patients (43.60%), while surgery was carried out in 238 patients (56.40%) (Epifani et al. 2021). Seven patients (2.94%) were indicated for surgery after failed non-operative management. Open surgery was used in 122 patients (51.26%), and laparoscopic surgery – in 70 patients (in 29.41% of the cases), with a conversion rate of 28.6%. Procedures included diverticulectomy (n = 30) and right hemicolectomy (n = 151). The recurrence rate was low (5.45%).

A retrospective study conducted in Miyagi, Japan, compared the efficacy of cefmetazole and tazobactam/piperacillin in 62 and 20 hospitalized, immunocompetent Japanese patients with uncomplicated community-onset colonic diverticulitis during the period between April 2019 and March 2022 (Hoshino et al. 2024). After matching the propensity score, 16 patients remained in each group. The incidence of liver dysfunction was statistically significantly lower in the cefmetazole group ($p = 0.018$).

5. Postoperative morbidity

The incidence rate of postoperative complications was very low in our patients (18.8%; n = 6).

Within a retrospective national cohort study in France, early postoperative anastomotic leakage or pelvic abscess occurred in 327 out of 4 441 left colonic diverticulitis patients (in 7.36%), while symptomatic anastomotic stenosis was observed in 82 patients (in 1.85% of the cases) (Hamel et al. 2024). The study identified anastomotic leakage or pelvic abscess as a significant independent risk factor for symptomatic anastomotic stenosis (odds ratio of 3.41; between 1.75 and 6.66 at 95% confidence interval).

Conclusion

Our promising results are similar to most recently published data and, in certain aspects, even better in some aspects. The significant advantages of our approach consist in the initial performance of the laparoscopic surgery and the timely accomplishment of the protective ileostomy, a shorter hospital stay, followed by passage restitution. A permanent stoma was left in none of our patients. There was no mortality in the whole series at all.

Our results convincingly demonstrate that individualized and adequate conservative and surgical treatment of patients with acute and chronic colonic diverticulitis based on timely and precise laboratory and imaging diagnosis is sufficiently safe and effective.

Additional information

Conflict of interest

The author has declared that no competing interests exist.

Ethical statements

The author declared that no clinical trials were used in the present study.

The author declared that no experiments on humans or human tissues were performed for the present study.

The author declared that no informed consent was obtained from the humans, donors or donors' representatives participating in the study.

The author declared that no experiments on animals were performed for the present study.

The author declared that no commercially available immortalised human and animal cell lines were used in the present study.

Funding

No funding was reported.

Author contributions

The author solely contributed to this work.

Author ORCIDs

Natmir Mena  <https://orcid.org/0000-0002-6522-625X>

Data availability

All of the data that support the findings of this study are available in the main text.

References

- Aydın S, Ünal Y, Başpınar A, Altın S, Bezirci R, Cebeci E, Balık R (2024) The role of infectious parameters in the early prediction of complicated colonic diverticulitis. *Ulusal Travma ve Acil Cerrahi Dergisi* 30: 27–32. <https://doi.org/10.14744/tjtes.2023.42573>
- Christos K, Filip S, Wilhelm G (2024) Evaluation of laparoscopic peritoneal lavage for perforated diverticulitis: a national registry-based study. *British Journal of Surgery* 111: 109. <https://doi.org/10.1093/bjs/znae109>
- Domas E, Starks K, Kanneganti S (2024) Current management of diverticulitis. *Surgical Clinics of North America* 104: 529–543. <https://doi.org/10.1016/j.suc.2023.12.001>
- Epifani A, Cassini D, Cirocchi R, Accardo C, Di Candido F, Ardu M, Baldazzi G (2021) Right-sided diverticulitis in Western countries: a review. *World Journal of Gastrointestinal Surgery* 13: 1721–1735. <https://doi.org/10.4240/wjgs.v13.i12.1721>
- González J, De León L, Jara P, De La Poza J, Movilla A, García L, Schiever J, Delgado D (2024) Non-antibiotic treatment of uncomplicated acute diverticulitis is applicable and safe in our environment. A prospective multicenter study. *Revista Espanola de Enfermedades Digestivas* 116: 140–147. <https://doi.org/10.17235/reed.2023.9737/2023>
- Gunby S, Strate L (2024) Acute colonic diverticulitis. *Annals of Internal Medicine* 177: 33–48. <https://doi.org/10.7326/AITC202403190>
- Hamel J, Alves A, Beyer-Bergot L, Zerbib P, Bridoux V, Manceau G, Panis Y, Buscail E, Khaoudy I, Gaillard M, Viennet M, Thobie A, Menahem B, Eveno C, Bonnel C, Mabrut JY, Badic B, Godet C, Eid Y, Duchalais E, Lakkis Z, Cotte E, Laforest A, Defourneaux V, Maggiorri L, Rebibo L, Christou N, Talal A, Mege D, Aubert M, Bonnamy C, Germain A, Mauvais F, Tresallet C, Roudie J, Laurent A, Trilling B, Bertrand M, Massalou D, Romain B, Tranchart H, Ouaiissi M, Pellegrin A, Sabbagh C, Venara A, French Surgical Association (2024) Stenosis of the colorectal anastomosis after surgery for diverticulitis: A national retrospective cohort study. *Colorectal Disease* 26: 1437–1446. <https://doi.org/10.1111/codi.17076>
- Han J, Son J, Oh C (2024) Features of colonic diverticulitis in children and adolescents: a multicenter study. *Asian Journal of Surgery* 47: 2195–2199. <https://doi.org/10.1016/j.asjsur.2024.02.049>
- Hoshino Y, Ito R, Kikuchi M, Takahashi K, Ishimoto M (2024) Efficacy of cefmetazole in immunocompetent patients with uncomplicated colonic diverticulitis: a propensity score matching analysis. *Journal of Infection and Chemotherapy* 30: 118–122. <https://doi.org/10.1016/j.jiac.2023.09.019>
- Humphrey H, Sibley P, Walker E, Keller D, Pata F, Vimalachandran D, Daniels I, McDermott F (2024) Genetic, epigenetic and environmental factors in diverticular disease: systematic review. *BJS Open* 8: 032. <https://doi.org/10.1093/bjsopen/zrae032>
- Jedidi L, Mabrouk A, Ghali H, Ben Dhaou A, Ben Lahouel S, Daldoul S, Latiri H, Mousa M (2024) Right-sided acute diverticulitis in a North African country: presentation and management in one surgical center. *World Journal of Surgery* 48: 1509–1514. <https://doi.org/10.1002/wjs.12172>
- Kruis W, Leifeld L (2022) Kolondivertikel und Divertikulitis. *Deutsche Medizinische Wochenschrift* 147: 119–131. <https://doi.org/10.1055/a-1484-1968>
- Kruis W, Germer CT, Böhm S, Dumoulin FL, Frieling T, Hampe J, Keller J, Kreis ME, Meining A, Labenz J, Lock JF, Ritz JP, Schreyer A, Leifeld L, [German Society of Gastroenterology, Digestive and Metabolic Diseases (DGVS) and the German Society of General and Visceral Surgery (DGAV) (AWMF-Register 021-20)] (2022) German guideline diverticular disease/diverticulitis: Part I: Methods, pathogenesis, epidemiology, clinical

- characteristics (definitions), natural course, diagnosis and classification. *United European Gastroenterology Journal* 10: 923–939. <https://doi.org/10.1002/ueg2.12309>
- Lauricella S, Brucchi F, Palmisano D, Baldazzi G, Bottero L, Cassini D, Giuseppe Faillace G (2024) Right-sided colonic diverticulitis. Short and long-term surgical outcomes and 2-year quality of life. *World Journal of Surgery* 48: 484–492. <https://doi.org/10.1002/wjs.12065>
- Mäntymäki L, Grönroos J, Aronen A, Karvonen J, Ukkonen M (2024) Is reassessment of computed tomography reports worthwhile in acute diverticulitis? *Digestive Surgery* 41: 37–41. <https://doi.org/10.1159/000536158>
- Mohamedahmed AY, Zaman S, Das N, Kakaniaris G, Vakis S, Eccersley J, Thomas P, Husain N (2024) Systematic review and meta-analysis of the management of acute uncomplicated diverticulitis: time to change traditional practice. *International Journal of Colorectal Disease* 39: 47. <https://doi.org/10.1007/s00384-024-04618-7>
- Presl J, Ehgartner M, Schabl L, Singhartinger F, Gantschnigg A, Wallner E, Jäger T, Emmanuel K, Kessler H, Koch O (2024) Robotic surgery versus conventional laparoscopy in sigmoid colectomy for diverticular disease – a comparison of operative trauma and cost-effectiveness: retrospective, single-center analysis. *Langenbeck's Archives of Surgery* 409: 200. <https://doi.org/10.1007/s00423-024-03382-0>
- Rios Diaz A, Bevilacqua L, Habarth-Morales T, Zalewski A, Metcalfe D, Costanzo C, Yeo C, Palazzo F (2024) Primary anastomosis with diverting loop ileostomy vs. Hartmann's procedure for acute diverticulitis: what happens after discharge? Results of a nationwide analysis. *Surgical Endoscopy* 38: 2777–2787. <https://doi.org/10.1007/s00464-024-10752-8>
- Shumarova S, Koichev A, Sokolov M (2024) Sigmoid stenosis caused by diverticulosis mimicking advanced colorectal cancer. *Journal of Surgical Case Reports* 4: 255. <https://doi.org/10.1093/jscr/rjae255>