

## Diverticular Disease: Diagnostic and Therapeutic Approach

Felipe Huerta Dueñas

Hospital de Especialidades, Centro Médico Nacional de Occidente, Instituto Mexicano del Seguro Social, México.

### ABSTRACT

Diverticular disease is a common gastrointestinal condition that primarily affects the colon. It is characterized by the presence of small pouches or diverticula in the wall of the colon. Although diverticular disease can affect people of different ages, it is more prevalent as we age. Understanding this disease's epidemiology, pathophysiology, diagnosis, and treatment is essential to provide optimal management to patients. Continued research in this field is needed to improve prevention, diagnosis and treatment options, to reduce the burden of diverticular disease and improve patients' quality of life.

**KEYWORDS:** Diverticular disease, diagnosis, treatment

### ARTICLE DETAILS

**Published On:**  
**03 August 2023**

**Available on:**  
<https://ijmscr.org/>

### INTRODUCTION

Diverticular disease is a common gastrointestinal condition that primarily affects the colon. It is characterized by the presence of small pouches or diverticula in the wall of the colon. Although diverticular disease can affect people of different ages, it is more prevalent as we age. The prevalence of diverticular disease has increased in recent decades becoming a significant public health problem worldwide.<sup>1</sup>

Diverticular disease has become a topic of clinical interest due to its association with gastrointestinal symptoms, potential complications, and the need for an appropriate therapeutic approach. Understanding the epidemiology, pathophysiology, diagnosis, and treatment of diverticular disease is crucial to optimal patient management and improving their quality of life.<sup>2</sup>

### DIVERTICULAR DISEASE

#### Definition

Diverticular disease refers to the presence of diverticula in the colon's wall. Diverticula are small protrusions or pouches that form due to weakness of the muscle layer of the colon wall. They can appear in different parts of the colon. In Western countries, they are more frequent in the sigmoid and left colon; meanwhile in Japan and other eastern populations, the right colon is more affected.<sup>3</sup>

Diverticular disease range in different clinical conditions as follows. Asymptomatic diverticulosis consists of colonic diverticula in the absence of clinical manifestations and is generally identified incidentally in most patients. Symptomatic uncomplicated diverticular disease occurs in 25% of patients with diverticulosis and refers to chronic and

unspecific symptoms such as abdominal pain and changes in bowel habits, similar to irritable bowel syndrome. Diverticulitis is defined as the inflammation of the diverticula and is sub-classified as complicated when abscess, fistula, obstruction or perforation are present.<sup>4</sup>

#### Physiopathology

The formation of diverticula in diverticular disease is related to multiple factors, including weakness of the muscle layer of the colon wall, increased intraluminal pressure, and a low-fiber diet. Lack of fiber in the diet can result in harder stools and slower bowel transit, which increases pressure in the colon and weakens the muscle wall. As diverticula form, fecal matter and bacteria can build up inside, leading to inflammation and infection, increasing the risk of complications such as perforation or fistula formation.<sup>5</sup>

Other factors associated are connective tissue abnormalities, gut microbial dysbiosis, fecal stasis, low physical activity, smoking, and use of NSAIDs, corticoids and opiate analgesics.<sup>3</sup>

#### Diagnosis

The diagnosis of diverticular disease is based on clinical evaluation, the patient's medical history, and diagnostic test findings. Patients with symptomatic uncomplicated diverticular disease often present with symptoms such as abdominal pain, changes in bowel habits, bloating, and flatulence. It is essential to rule out other conditions that may present similar symptoms, such as irritable bowel syndrome or inflammatory bowel disease.<sup>6</sup>

Diagnostic tests used to evaluate diverticular disease include colonoscopy, computed tomography (CT) and contrasted radiological studies. Although colonoscopy allows to directly

## Diverticular Disease: Diagnostic and Therapeutic Approach

visualize the mucosa of the colon and detect the presence of diverticula, as well as rule out the presence of polyps or malignant lesions and offer intervention in case of bleeding, it should be avoided in acute diverticulitis due to increased risk of perforation. Abdominal CT is a useful tool to evaluate the presence of diverticulitis and its complications, such as abscesses or perforations. Contrast radiological studies, such as barium enema are efficient in diverticular findings but not appropriate imaging techniques in acute diverticulitis.<sup>7,8</sup> Serum markers such as CRP leukocytosis, procalcitonin and fecal calprotectin guide to the presence of proinflammatory process associated with diverticulitis. CRP is highly related to severity; meanwhile faecal calprotectin decreases in response to treatment.<sup>3</sup>

Modified Hinchey Classification stages diverticular disease according to clinical and imaging findings: 0) Mild clinical diverticulitis with thickening of the colonic wall. Ia) Confined pericolic inflammation. Ib) Pericolic or mesocolic abscess. II) Pelvic, distant intraabdominal or retroperitoneal abscess. III) Purulent peritonitis. And IV) Fecal peritonitis.<sup>9,10</sup>

### Treatment

Treatment of diverticular disease depends on symptoms' severity and complications' presence. In mild cases of symptomatic uncomplicated diverticular disease, the main focus is to adopt lifestyle and dietary changes to prevent disease progression and reduce symptoms. A high-fiber diet and vigorous physical activity are recommended to promote bowel regularity and reduce pressure in the colon.<sup>1,3</sup>

The use of Mesalamine Rifaximin and probiotics could be effective in reducing intensity and frequency of symptoms, although effectiveness in reducing the progression and recurrence of the pathology is not well described.<sup>3,4</sup>

In cases of acute diverticulitis, management depends on the severity and presence of comorbidities. Immunocompetent patients with uncomplicated acute diverticulitis can be treated with outpatient broad-spectrum antibiotics such as ciprofloxacin with metronidazole.<sup>3</sup>

Patients with complicated acute diverticulitis require hospitalization and intravenous antibiotics. Those patients with abscesses bigger than 4cm might require percutaneous drainage and cases of purulent and fecal peritonitis must undergo an urgent surgical approach.<sup>3,9,10</sup>

Surgery may involve resection of the affected segment of the colon, with primary anastomosis or the creation of a temporary or permanent Hartmann procedure, depending on individualized characteristics and evaluation. The choice of surgical technique depends on several factors, including the severity of the disease, the presence of complications, and the patient's overall health. Laparoscopic surgery has shown to be a safe and effective option in treating diverticular disease, offering advantages such as smaller incisions, less postoperative pain, and faster recovery compared to open surgery.<sup>7,11</sup>

### Complications

Diverticular disease can be associated with various complications, ranging from mild to life-threatening. Acute diverticulitis is a common complication, characterized by inflammation and infection of the diverticula. This can lead to severe symptoms such as systemic inflammatory response syndrome and acute abdomen. In extreme cases, acute diverticulitis can lead to complications such as abscesses, fistula formation or perforation of the colon.<sup>3</sup>

The presence of recurrent episodes, serious complications, or cases that do not respond to conservative treatment may indicate the need for surgical intervention. However, the surgery itself may be associated with complications, such as wound infections, bleeding, bowel obstruction, and anastomotic leak. It is important to weigh the benefits and risks of surgery in each case and make informed decisions in consultation with the medical team.<sup>12</sup>

## DISCUSSION

Diverticular disease is a common condition that affects the colon and can cause significant symptoms and serious complications. The therapeutic approach to diverticular disease depends on the severity of symptoms and the presence of complications. For asymptomatic and mild uncomplicated disease cases, a high-fiber diet and lifestyle changes in association with selected pharmacologic approaches are recommended to prevent disease progression and relief of symptoms. In case of acute inflammation or complicated cases, antibiotics are needed and in severe or recurrent cases, surgery may be necessary.<sup>1</sup>

Laparoscopic surgery has proven to be a safe and effective option in the treatment of diverticular disease, with favorable results in terms of reduced complications and recovery time. However, the decision to perform a surgical intervention should be based on carefully evaluating each case.<sup>7,11</sup>

## CONCLUSION

Future research in the field of diverticular disease should focus on identifying modifiable risk factors, optimizing prevention strategies, and improving diagnostic and therapeutic approaches.

The diagnostic and surgical approach to diverticular disease has evolved in recent years, providing more effective treatment options and improving patients' quality of life. Accurate diagnosis, based on clinical evaluation and appropriate diagnostic tests, is critical for optimal disease management. Adopting lifestyle changes, such as a high-fiber diet and weight management, can help prevent disease progression and reduce symptoms.

In acute diverticulitis, antibiotic treatment can relieve symptoms and control complications. However, surgery may be necessary in situations that are severe, recurrent, or do not respond to conservative treatment. Laparoscopic surgery has become a preferred option due to its benefits in terms of lower morbidity and shorter recovery time.

## Diverticular Disease: Diagnostic and Therapeutic Approach

Importantly, the treatment of diverticular disease should be individualized, considering the severity of symptoms, the presence of complications, and the general health of the patient. Decision-making should be based on a comprehensive assessment, considering all clinical aspects and patient preferences.

In conclusion, diverticular disease is a common gastrointestinal condition that requires a proper diagnostic and therapeutic approach. Understanding this disease's epidemiology, pathophysiology, diagnosis, and treatment is essential to provide optimal management to patients. Continued research in this field is needed to improve prevention, diagnosis and treatment options, to reduce the burden of diverticular disease and improve patients' quality of life.

### REFERENCES

- I. Kushwaha, N., & Kushwaha, S. S. (2022). Pathophysiology, Symptoms and Evolving Treatment for Colonic Diverticular Disease: A Review. *Journal of Pharmaceutical Care*, 136-145.
- II. Kruis, W., Germer, C. T., Böhm, S., Dumoulin, F. L., Frieling, T., Hampe, J., ... & 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 II: Conservative, interventional and surgical management. *United European Gastroenterology Journal*, 10(9), 940-957.
- III. Tursi A, Scarpignato C, Strate LL, Lanas A, Kruis W, Lahat A, Danese S. (2020). Colonic diverticular disease. *Nat Rev Dis Primers*. 6(1):20.
- IV. Rezapour M, Ali S, Stollman N (2018). Diverticular Disease: An Update on Pathogenesis and Management. *Gut Liver*. 12(2):125-132.
- V. Barbaro, M. R., Cremon, C., Fuschi, D., Marasco, G., Palombo, M., Stanghellini, V., & Barbara, G. (2022). Pathophysiology of diverticular disease: from diverticula formation to symptom generation. *International Journal of Molecular Sciences*, 23(12), 6698.
- VI. Calini, G., Abd El Aziz, M. A., Paolini, L., Abdalla, S., Rottoli, M., Mari, G., & Larson, D. W. (2023). Symptomatic Uncomplicated Diverticular Disease (SUDD): Practical Guidance and Challenges for Clinical Management. *Clinical and Experimental Gastroenterology*, 29-43.
- VII. You, H., Sweeny, A., Cooper, M. L., Von Papen, M., & Innes, J. (2019). The management of diverticulitis: a review of the guidelines. *Medical Journal of Australia*, 211(9), 421-427.
- VIII. Valvano, M., Vezzaro, V., Fabiani, S., Capannolo, A., Sgamma, E., Cesaro, N., ... & Latella, G. (2023). The connection between diverticulosis and colonic superficial neoplastic lesions in patients who underwent screening colonoscopy. *International Journal of Colorectal Disease*, 38(1), 1-8.
- IX. Curran T, Kwaan MR. (2020). Controversies in the Management of Diverticulitis. *Adv Surg*. 54:1-16.
- X. Roccatagliata ND, Rodriguez LD, Guardo L, Larrañaga VN, Espil G, Vallejos J. (2020). Hinchey's (Diverticulitis) Classification Review and its therapeutic Implacations. *Rev Argent Radiol*. 84:123-129.
- XI. Dossa, F., Acuna, S. A., Baxter, N. N., & Bayoumi, A. M. (2020). Optimal operative strategy for Hinchey III sigmoid diverticulitis: a decision analysis. *Diseases of the Colon & Rectum*, 63(8), 1108-1117.
- XII. Ginesi, M., & Steinhagen, E. (2022, June). A brave new world: Colorectal anastomosis in trauma, diverticulitis, peritonitis, and colonic obstruction. In *Seminars in Colon and Rectal Surgery* (Vol. 33, No. 2, p. 100881). WB Saunders.