



## Debugging surgical guidelines for acute diverticulitis

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### Abstract

Diverticular disease of the colon is a very important digestive disease and its management depends on the characteristics of the disease and the patient and the resources available. There are benefits and harms of open and laparoscopic Hartmann's procedure, laparoscopic peritoneal lavage, sigmoidectomy, and primary anastomosis. There are many gaps to be eliminated in the future, such as real risks, benefits, and cost-effectiveness in the application of each one. The decision to be made for each case of complicated diverticulitis often depends on the interaction and competence of the multidisciplinary team in charge.

### Keywords

Diverticular disease, acute diverticulitis, surgical treatment

### Introduction

Diverticular disease of the colon has a prevalence of about 20% in individuals younger than 40 years, exceeding 60% in people over 60 years of age. About 4% of them develop acute diverticulitis, among which the mortality rate can reach 35% [1].

The management of acute complicated diverticulitis is varied and depends on the characteristics of the disease, the patient, and the resources available [2]. Thus, it is important to consider disease stage, extent, and location of inflammation, the presence or absence of intraperitoneal collections, blocked or not, the presence of sepsis, patient clinical conditions and preferences of the surgeon [3].

This means that the various clinical pictures are very heterogeneous, removing the precision of the available guidelines and the strength of the scientific evidence sought to guide the treatment of acute diverticulitis.

### Surgical procedures

The diversity of disease and patient characteristics are reflected in the variety of management options and make meta-analyses not produce definitive evidence on the best conduct to be adopted. There are benefits and harms of open and laparoscopic Hartmann's procedure (HP)—sigmoidectomy and colostomy with



closure of the rectal stump, laparoscopic peritoneal lavage (LPL), and sigmoidectomy and primary anastomosis (SPA) [4]. The results will always depend on the best choice for each case, both in terms of clinical response and patient satisfaction with their quality of life [5]. It will be important to value the morbidity and mortality of the procedure adopted, but stomas and reoperations are still important elements in the final evaluation of the therapeutic course, as they increase its cost and complexity.

It is not uncommon, when trying to establish a guideline, through meta-analysis, to come across several publication bias, inconsistencies and imprecision of the papers, requiring extreme care from the team when selecting the material to be used [6].

In fact, the task of establishing a guide of surgical procedures is extremely difficult, due to the variable severity of the cases, the medical interpretations for each one, the conducts adopted and the patients' interpretations of such conducts [7].

It should be considered that almost all surgical cases of complicated diverticulitis have sigmoid involvement and that they are defined after unsuccessful treatment with cefuroxime and metronidazole. Attempts have been made to classify abscess formation (Hinchey classification): Stage I: pericolic or mesocolic abscess; Stage II: intra-abdominal or retroperitoneal abscess; Stage III: purulent peritonitis; Stage IV: fecal peritonitis [8].

The association of the clinical presentation of the case with the images obtained by computed tomography is essential for making the best therapeutic decision. Then, certain items in the various guidelines [1–3, 5–7] may merit further consideration to establish practical and objective standards for the surgical treatment of complicated diverticulitis:

1. We all know that simple peritoneal lavage, in case of diffuse peritonitis (Hinchey III and IV), will not be the definitive procedure, but it can save the life of the critically ill patient. Thus, it should perhaps not be considered as a surgical option, but as an exceptional procedure;
2. However, the drainage of a blocked collection (Hinchey I and II) and the installation of a vacuum aspiration system can be definitive or, at least, an essential step for the stabilization of the patient. It is an option to be considered, especially in patients with sepsis and very poor clinical conditions;
3. In patients with sepsis [9], not so unstable, HP is the best option;
4. HP is also the best choice for clinically debilitated patients, including those who are immunocompromised, even without sepsis;
5. If there is no sepsis and if the clinical conditions are acceptable, sigmoid resection with primary anastomosis should be the procedure chosen;
6. When SPA is adopted, a protective diverting ileostomy must be reserved only for special cases, in which the anastomosis does not seem safe due to inflammation of adjacent tissues;
7. Minimally invasive or open surgery is indifferent in terms of results, depending solely on the surgeon's preference.

## Discussion

Surgeons need to be aware of the advantages of SPA over HP or LPL in the management of patients with complicated diverticulitis without sepsis. These clinicians are encouraged to obtain additional training if they do not have the necessary skills to perform this procedure. However, surgeons, anesthesiologists, and intensivists must think together to determine the use of HP versus SPA in identifying patients with sepsis, poor clinical conditions, or immunocompromised patients.

Collaborative, patient-centered decision-making is encouraged in all settings, as the importance of quality of life with or without a stoma is weighed against the risks and benefits of these interventions. Patients (and families, if necessary) need to think more deeply about their health, values, and goals before choosing surgical management of their complicated diverticulitis with their surgeon.

Integrating patient-reported outcome measures (PROMs) [10] into the assessment framework could strengthen the argument for or against specific procedures.

There are many gaps to be eliminated in the future, such as real risks, benefits, and cost-effectiveness in the application of HP for complicated diverticulitis in fragile and immunocompromised patients, the quality of life of patients with a stoma, the real superiority of SPA, the consideration of clinical outcomes and costs until the outcome, recognizing that a greater financial commitment is required to train surgeons to practice SPA, especially through minimally invasive surgery, and that public and private institutions have paid special attention to this need.

We must always consider that even a systematic review focusing on high-quality and controlled studies would imply difficulties in providing more robust recommendations for surgical decision-making. For example, HP can remain the preferred option for patients with sepsis or immunosuppression since if we apply exploration of risk stratification tools or predictive models, the method will prove to be the most appropriate, mainly due to the surgical and anaesthetic time, disqualifying improve patient selection for alternative approaches, such as primary anastomosis with diversion. However, in certain cases, with special characteristics (young patient with good organic reserve), in the hands of a skilled surgeon, this may be the best choice.

It should be noted that the variability of patient characteristics and the breadth of clinical pictures of complicated diverticulitis can make these gaps eternal. A recent article supports this whole discussion, highlighting the difficulties of establishing guidelines for the treatment of acute diverticulitis [11].

## Conclusion

All published guidelines are valid and meritorious, but the decision to be made for each case of complicated diverticulitis often depends on the interaction and competence of the multidisciplinary team in charge.

## Abbreviations

HP: Hartmann's procedure

LPL: laparoscopic peritoneal lavage

SPA: sigmoidectomy and primary anastomosis

## Declarations

### Author contributions

VNF: Conceptualization, Investigation, Methodology, Writing—original draft.

### Conflicts of interest

The author declares no conflicts of interest.

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### Consent to participate

Not applicable.

### Consent to publication

Not applicable.

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