

# Outpatient Management of Acute Diverticulitis. Where is the Border?

Ana Puerta, Angela Santana, Alberto Vilar, Juan Ocaña, Araceli Ballestero and Javier Die Trill\*

*Servicio de Cirugía General y Digestivo, Hospital Univeristario Ramón y Cajal, Spain*

\*Corresponding author: Javier Die Trill, Servicio de Cirugía General y Digestivo, Hospital Univeristario Ramón y Cajal, Madrid, Spain



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## ABSTRACT

**Introduction:** The outpatient management of non-complicated acute diverticulitis has demonstrated its efficacy and safety. The aim of this study is to analyze the failure rate of conservative treatment in patients with extraluminal air and/or pericolic abscess, which clinical relevance is still unknown; and the safety of this treatment in this group of patients.

**Materials and Methods:** A retrospective analysis of 59 patients with first episode of complicated acute diverticulitis and sigmoid involvement, medically treated on a third level hospital between 2007 and 2018, was made. Failure rate of conservative management, such as need of urgent surgery, was analyzed.

**Results:** The failure rate was 22% (13 patients). 18,2% of the patients with pericolic air as sole finding on the initial CT-scan (grade IA WSES) needed surgical rescue, as well as 14,3% of the patients with small abscess (grade IB). On the former group failure of medical management was observed in 33,3% of pelvic abscesses. In the >4 cm abscess group (WSES IIA) the failure rate was 33,3%; 40% of them requiring percutaneous drainage. The mean time to surgical rescue was 7 days (IQR: 6-19,5 days).

**Conclusions:** The success of outpatient management depends specially on an adequate patient selection. Based on our experience, and lacking better evidence published on the literature, it should be restricted to patients with no signs of complication such as extraluminal air or abscesses, guarantying our patients' safety.

## Introduction

Colonic diverticulosis is primarily seen in the Western population with prevalence increasing with age. At 40 years of age, approximately 10% of the Western population has diverticulosis, while this number increases up to 70% in octogenarians [1-3]. About 15% of patients will develop acute diverticulitis [3,4]. Of them, 75% will present with a simple form of acute diverticulitis, but up to 25% of patients will develop a complication derived from the inflammatory process (intraabdominal abscess, bowel obstruction, fistulae, or intestinal perforation), putting at risk the patient's life [1,4,5]. Besides, it is a frequent cause of hospitalization, increasing the healthcare costs significantly [4,6,7]. Outpatient management of non-complicated acute diverticulitis has demonstrated its efficacy and safety, becoming a reality in our daily practice [1, 8-15]. Nevertheless, the definition of "non-complicated" seems to be different between research groups.

Most acute diverticulitis classifications are based on the computed tomography (CT) scan findings such as presence of intraabdominal abscess or extraluminal air. The role of the extraluminal air, specially of pericolic localization, or small abscesses is not well established on the therapeutic guides, making it necessary to be careful when choosing an outpatient management in some cases. The aim of this study is to analyze the failure rate of conservative treatment in patients presenting with acute diverticulitis associated to extraluminal air and/or pericolic abscess and the safety of this treatment.

## Materials and Methods

A retrospective analysis was made, including 59 patients with first episode of complicated acute diverticulitis and sigmoid involvement, medically treated on a third level hospital between

2007 and 2018. Complicated acute diverticulitis was defined by the presence of extraluminal air or abscess, regardless of its size or location. The diagnosis was made using CT scan in all cases. The whole sample received an in-hospital treatment, based on intravenous antibiotherapy and parenteral nutrition. Demographic characteristics, acute diverticulitis grade based on the latest World Society of Emergency Surgery classification (WSES guidelines 2016), presence of extraluminal air, abscess (including size and location), in-hospital stay and conservative treatment failure (need of urgent surgery) were reviewed. Patients with a neoplasia underlying the inflammatory process were excluded from the analysis. Statistical analysis was performed using SPSS Statistics® v20 (SPSS, Inc., Chicago, IL). Chi-square and Fisher tests were used to analyze categorical variables. T-Student test was used to compare means for continuous variables with a normal distribution, whereas Wilcoxon test was used for means without normal distribution. Significance was  $p < 0,05$ .

## Results

The 62,7% of the patients were women (37 patients) and the median age was 61,5 years (IQR: 47,5-77 years). Eleven cases (18,6%) belonged to the IA stage of the WSES classification, given the presence of extraluminal air on CT-scan. 28 patients presented with a small abscess ( $\leq 4$ cm) associated to the inflammatory process (stage IB) and in 18 cases (30,5%) the abscess was bigger than 4 cm of major diameter (stage IIA). Only in two patients (3,4%) distant free gas was observed (stage IIB). The global failure rate of conservative treatment was 22%, with a need of urgent surgical rescue in 13 patients due to development of peritonism or abdominal sepsis. The median age of this subgroup was 53,5 years (IQR: 45-64,5 years), of which 10 patients were women (76,9%) and 3 males (23,1%). On the subgroup analysis based on WSES classification up to 18,2% of the patients with pericolic gas as sole finding on CT-scan (stage IA) needed further surgery. The failure rate of conservative treatment was 14,3% in patients with small abscess (stage IB). Within this group, medical treatment was insufficient in 33,3% of pelvic abscesses, while the failure rate of pericolic abscess was of 9,1% ( $p=0,1$ ). All patients were treated only with antibiotherapy.

On the abscess  $> 4$ cm group (stage IIA) the failure rate was 33,3%, with no differences between pericolic abscesses or pelvic abscesses (30% vs 37,5% respectively;  $p=1$ ). Of them, 40% needed percutaneous drainage. Both patients belonging to the stage IIB group (distant free gas), had a satisfactory response to medical treatment. The median time to surgical rescue was 7 days (IQR: 6-21 days). On the former group the median in-hospital stay was 22 days (IQR: 18 - 33 days) versus 11,5 days on the group of patients who responded to medical management ( $p=0,045$ ). There was no mortality associated to conservative management.

## Discussion

Non-complicated acute diverticulitis episodes are usually satisfactorily medically managed. Classically, patients were hospitalized to receive intravenous antibiotherapy and fluid therapy. Nevertheless, now a days, there is a tendency to opt for outpatient management, as it has been demonstrated in several randomized controlled trials in patients without major comorbidities [16-22]. In 2014 Biondo et al. [23] published the promising results of the DIVER trial, that demonstrated the efficacy of outpatient treatment of non-complicated acute diverticulitis and its reduction of sanitary costs. These findings were endorsed by several systematic reviews where a reduction of up to 80% on sanitary costs was observed, without influencing the results of this kind of therapy [24]. Nevertheless, we should not get carried away by optimism, because the success of this treatment relies on a careful patient selection. Thus, we should be cautious when prescribing an outpatient management for patients with extraluminal air or abscesses. Given the different modifications on the original Hinchey classification, the presence of extraluminal pericolic air or small ( $< 2-3$ cm) pericolic abscesses has been considered as non-complicated acute diverticulitis, being these forms suitable for ambulatory management depending on the authors [25,26].

The clinical relevance of the presence of extraluminal air on the diagnostic CT-scan without peritonism or signs of sepsis remains controversial [1]. Titos-García et al. [27] and Salinnen et al. [28] published their results regarding the medical treatment of patients with pericolic air, obtaining success rates of 90% and 99% respectively. In our study, both extraluminal air and pericolic abscess (independently from size) were considered complicated forms of acute diverticulitis, following the classification proposed by WSES on 2016 [29], excluding them from the current outpatient management protocol established in 2016, which has demonstrated to date an efficacy greater than 94%. The decision of maintaining such exclusion criteria is based on the results obtained on the present study. As previously said, we observed that patients with beforehand favorable clinical presentations finally required urgent surgery given the failure of conservative management in a significant percentage of cases. It is noteworthy that 1 out of 5 patients only with extraluminal air or that up to 10% of small pericolic abscesses needed surgical rescue, which were categories defined as "non-complicated" by some authors. Thus, even if the efficacy and safety of outpatient management of simple acute diverticulitis has been widely demonstrated, as well as its reduction of sanitary costs, it is not a therapeutic regimen that can be universally prescribed, being an adequate patient selection the main success factor. That is why we should be cautious when including on this treatment modality some cases which classification as non-complicated could be controversial. Main limitations of this study

are the small simple of patients and its retrospective character. More prospective and randomized studies are needed to establish the best and safest treatment for these patients. Until we have consistent evidence and based on our own experience, given the high failure rates of medical treatment, to preserve our patients' security, we recommend limiting outpatient management to cases of simple acute diverticulitis, namely the absence of any sing of complication such as extraluminal air or abscesses, independently from size or location.

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