



## Original article

# Stoma Reversal After Surgery for Complicated Acute Diverticulitis: A Multicentre Retrospective Study<sup>☆</sup>



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## A B S T R A C T

**Introduction:** The aim was to analyse the stoma reversal rate after surgery for complicated acute diverticulitis (CAD), and more specifically the end-stoma-reversal, as well as the delay, feasibility, complications and risk factors for stoma maintenance.

**Methods:** A multicentre retrospective study of patients who had undergone urgent surgery for CAD with stoma formation in 10 hospitals during a period of 6 years. The frequency of reversal over time and the factors affecting the decision for reversal were analysed.

**Results:** Out of 385 patients operated for CAD, 312 underwent stoma creation: 292 end colostomies and 20 diverting stomas. During follow-up, stoma reversal surgery was performed in 161 patients (51.6%) after a median of 9 months. The main causes for not performing stoma reversal were comorbidities and the death of the patient. Advanced age was an adverse factor in the multivariate analysis, and the actuarial rate of reversal was

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higher in men and in patients with no previous Hartmann's operation. Stoma reversal surgery was completed in all but 1 patient, and a loop ileostomy was associated in 4. Morbidity and mortality rates were 35.7% and 1.9%, respectively. A total of 8.4% of patients underwent re-operation, and 6% experienced an anastomotic leak. Twelve patients remained with a stoma after the attempted reconstruction surgery.

**Conclusions:** Surgery for CAD is frequently associated with an end stoma, which will ultimately not be reversed in almost 50% of patients. Moreover, reversal surgery is frequently delayed and is associated with significant morbidity and mortality.

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## Reconstrucción de la continuidad digestiva tras cirugía de la diverticulitis aguda complicada. Estudio retrospectivo multicéntrico

### R E S U M E N

#### Palabras clave:

Diverticulitis aguda  
Cierre de estoma  
Reconstrucción de Hartmann  
Intervención de Hartmann  
Complicaciones postoperatorias

**Introducción:** El objetivo del estudio es analizar la tasa de reconstrucción del estoma tras cirugía por diverticulitis aguda complicada (DAC), su demora, factibilidad, complicaciones y factores de riesgo de mantenerlo.

**Métodos:** Estudio retrospectivo multicéntrico de pacientes intervenidos mediante cirugía urgente por DAC con realización de un estoma en 10 hospitales durante 6 años. Se analiza la frecuencia de reconstrucción del estoma, fundamentalmente de los terminales, y el tiempo en que se produce, así como los factores relacionados con ella.

**Resultados:** De 385 pacientes intervenidos por DAC, a 312 (81%) se les realizó un estoma: 292 fueron colostomías terminales y 20 estomas derivativos. Durante el seguimiento, en 161 (51,6%), se intentó el cierre a una mediana de 9 meses. Las causas más frecuentes de no efectuarlo fueron la comorbilidad y el fallecimiento del paciente. La edad más avanzada se mostró factor adverso en el análisis multivariante y la tasa actuarial de reconstrucción fue mayor en hombres y en quienes no se realizó un Hartmann. La cirugía pudo completarse en todos menos en un paciente y en 4 se asoció un estoma derivativo. La morbimortalidad fue del 35,7 y 1,9%, respectivamente. Hubo un 8,4% de reintervenciones y un 6% de fallos de sutura, quedando 12 pacientes (7,9%) con un estoma tras el intento de reconstrucción.

**Conclusiones:** La cirugía de la DAC se asocia muy frecuentemente a la construcción de un estoma terminal, que en casi un 50% no se reconstruirá. Además, la intervención de reconstrucción tiene una demora notable y está asociada a una morbimortalidad nada despreciable.

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## Introduction

Despite changes in the operative management of complicated acute diverticulitis (CAD),<sup>1</sup> the Hartmann procedure remains the most widely used treatment.<sup>2,3</sup> However, aside from the controversy over the choice of technique and its impact on the initial results, these patients will require a second surgery to restore intestinal continuity, which itself has technical difficulties and inherent risks. In addition, up to 20%–50% of patients who undergo a Hartmann procedure for any indication will never be reconstructed.<sup>4</sup>

Although there are case series that deal with reconstruction,<sup>5–7</sup> the obvious difference between CAD and other indications, such as surgery for complicated colorectal cancer, ischaemia or trauma, to name just a few, makes a specific analysis interesting.

The objective of this study is to assess the stoma reconstruction rate, particularly for end colostomy reversal (ECT), after urgent surgery for CAD, its delay, feasibility and

complications, as well as the risk factors for stoma maintenance.

## Methods

We conducted a multicentre retrospective study within the Valencian Society of Surgery. Inclusion criteria included patients who had undergone emergency or deferred emergency surgery related to the failure of a conservative treatment after urgent hospitalization, a diagnosis of CAD and the creation of a stoma during initial surgery or after a reoperation due to postoperative complications. The study period was from January 2004 to December 2009 and data were collected at the end of 2012. The results of this initial surgery for CAD were recently published.<sup>8</sup> At each hospital involved, a surgeon in charge was given the study protocol and a computer file for data collection. The study was approved by the Clinical Research Ethics Committee at the General University Hospital of Valencia.

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