



## ORIGINAL ARTICLE

# Variability in complications and operative mortality after radical cystectomy in Spain<sup>☆</sup>



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### KEYWORDS

Radical cystectomy;  
Bladder cancer;  
Minimum basic data set;  
Morbidity;  
Mortality

### Abstract

**Background:** In the literature, mortality for radical cystectomy (RC) varies between 2.3% and 7.5%. In Spain, there are no published general data on morbidity and mortality.

**Objective:** To identify the complications and mortality of RC in Spain through an analysis of all procedures performed over a 3-year period and to study the geographic variability of these results.

**Material and methods:** We identified patients who underwent RC in the Spanish National Health System between 2011 and 2013 based on the minimum basic data set.

We analyzed the complications and mortality during hospitalization and at 30, 60 and 90 days.

We compared these results in the various autonomous communities, adjusted them by age, Charlson score and sex and subsequently added the hospital size.

**Results:** We studied 7999 patients who underwent RC in 197 hospitals of the Spanish National Health System. The mean age of the series was  $67.2 \pm 9.8$  years. The median stay was 15 days (IQR, 11–24). Some 47.2% of the patients had complications. The mean mortality in-hospital and at 30, 60 and 90 days was 4.7, 2.9, 5 and 6.2%, respectively. There was considerable variability in the mortality at 90 days among the communities (3.8–9.1%). When adjusting by the patient and hospital characteristics, there were still significant geographic variations (3.8–11.5%).

**Conclusions:** RC mortality in Spain at 90 days is similar to the rate in the literature. There are significant geographic variations unexplained by the characteristics of the patients or by those of the hospitals in which these operations were performed.

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**PALABRAS CLAVE**

Cistectomía radical;  
Cáncer de vejiga;  
Conjunto mínimo  
básico de datos;  
Morbilidad;  
Mortalidad

## Variabilidad en las complicaciones y la mortalidad quirúrgica tras cistectomía radical en España

### Resumen

**Introducción:** En la literatura la mortalidad de la cistectomía radical (CR) varía entre 2,3 y 7,5%. En España no hay publicados datos generales de morbimortalidad.

**Objetivo:** Identificar las complicaciones y mortalidad de la CR en España mediante un análisis de la totalidad de los procedimientos realizados en 3 años. Estudiar la variabilidad geográfica de estos resultados.

**Material y métodos:** Identificamos a los pacientes intervenidos de CR en España en el sistema nacional de salud entre 2011 y 2013 a partir del conjunto mínimo básico de datos.

Analizamos las complicaciones, la mortalidad durante el ingreso y a 30, 60 y 90 días.

Comparamos estos resultados en las distintas CCAA, ajustamos por edad, Charlson y sexo, y posteriormente añadimos el tamaño del hospital.

**Resultados:** Estudiamos a 7.999 pacientes intervenidos mediante CR en 197 hospitales del Sistema Nacional de Salud. La edad media de la serie fue 67,2 años  $\pm$  9,8. La mediana de la estancia fue de 15 días (RIQ: 11-24). El 47,2% de los pacientes presentaron complicaciones. La mortalidad media hospitalaria, a 30, 60 y a 90 días fue del 4,7; 2,9; 5 y 6,2%, respectivamente. Existe una gran variabilidad en la mortalidad a 90 días entre las CCAA (3,8-9,1%). Al ajustar por las características del paciente y del hospital, siguen observándose importantes variaciones geográficas (3,8-11,5%).

**Conclusiones:** La mortalidad de la CR en España a 90 días es similar a la de la literatura. Existen importantes variaciones geográficas no explicables por las características de los pacientes ni por las de los hospitales en los que se realizan estas intervenciones.

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## Introduction

Radical cystectomy (RC) is one of the interventions with greater morbidity and mortality.<sup>1</sup> Surgical results are determined by a number of factors among which patient characteristics, technical skill and clinic of the surgeon and anesthetist, and the whole hospital capacity to cope with the complications stand out.

This variability in results is supported in the literature with figures of 90-day mortality ranging from 2.3 to 7.5% according to the characteristics of the different series, be they of a single institution<sup>2</sup> or of multi-institutional prospective series.<sup>3</sup>

The series published in Spain give partial data of small series of a single institution<sup>4</sup> or selected centers<sup>5</sup> without any data of all Spanish hospitals.

## Objectives

In this article we identify the complications and mortality of RC from bladder cancer in Spain by analyzing all the procedures performed in a contemporary triennium. We studied the geographic variability of these existing results in the different autonomous communities (AC).

## Material and methods

A request was made to the Ministry of Health ([www.msssi.gob.es](http://www.msssi.gob.es)) of extraction of hospital discharges recorded by the Minimum Basic Data Set (MBDS) during

the years 2011, 2012 and 2013 in Spain, corresponding to patients whose main procedure during admission has been RC due to bladder cancer. The MBDS is a compulsory registry for all public hospitals containing demographic and clinical variables of hospital discharges. The search has been performed through codes of primary and secondary diagnosis at discharge corresponding to bladder neoplasm (ICD-9 CM 188.0–188.9) in combination with the RC procedure codes (ICD-9-CM 57.7) during the years 2011–2013. Our study included only public hospitals.

To quantify the long-term mortality, in addition, all admissions of MBDS after discharge were requested for these patients.

The variables collected by the MBDS are the following:

- Patient identification variables: Code of hospital, medical record number (MRN), personal internal code (PIC), province of residence, date of birth, sex, INE CCA code.
- Episode identification variables: admission date, discharge date, type of admission, type of discharge, funding scheme, date of operation, service.
- Clinical variables: main diagnosis, secondary diagnoses, procedures and code of morphology.

There has been a debugging of data and patients under 18 years of age have been excluded.

Hospitals were classified by size in group 1: <200 beds, group 2: 200–500 beds, group 3: 501–1000 beds, and group 4: more than 1000 beds. In addition, each hospital is assigned to a cluster type according to their resources, range of services, activity and teaching in one of the following groups:

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