



Original article

Analysis of the Quality of Care in Surgical Treatment of Colorectal Cancer: National Study. Follow-up Results^{☆,☆☆}



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Objectives: Using the cases included in the study on the quality of care in colorectal cancer conducted by the Spanish Association of Surgeons in 2008, we present follow-up data.

Method: Multicenter, descriptive, longitudinal and prospective study of patients operated on a scheduled basis for colorectal cancer. 35 hospitals have contributed data on 334 patients. Follow-up data included: survival, recurrence and complications.

Results: Mean follow-up was 28.61±11.32 months. Follow-up by the surgeon was 69.2%, tumor recurrence was 23.6%, in 83.3% it was systemic; and 28.2% underwent salvage surgery. Overall survival was 76.6%, disease-free survival 65.6% (26.49±11.90 months). Tumor related mortality was 12.6%. Percentage of ventral hernias was 5.8% and intestinal obstruction was 3.5%.

Conclusions: Quality and results of follow-up of patients operated on for CRC in Spain are similar to those reported in the scientific literature. Areas for improvement included: follow-up, earlier diagnosis, increased adjuvant and neoadjuvant treatments and total mesorectal excision as standard surgery for rectal cancer.

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Análisis de la calidad asistencial en el tratamiento quirúrgico del cáncer colorrectal. Estudio de ámbito nacional. Resultados del seguimiento

RESUMEN

Palabras clave:

Cáncer de colon y recto
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Objetivos: Tomando como referencia la casuística del «Estudio sobre la calidad asistencial en el cáncer colorrectal», llevado a cabo por la Asociación Española de Cirujanos en el año 2008, se analiza el seguimiento de los pacientes.

Método: Estudio multicéntrico, descriptivo, prospectivo y longitudinal de pacientes intervenidos de forma programada por cáncer colorrectal (CCR). Han participado 35 hospitales, aportando 334 pacientes. Se han recogido datos del seguimiento: supervivencia, recidivas y complicaciones.

Resultados: Seguimiento medio $28,61 \pm 11,32$ meses. Seguimiento por Cirugía General 69,2%, recidiva tumoral fue del 23,6%, el 83,3% sistémica; el 28,2% fue sometido a cirugía de rescate. La supervivencia global fue del 76,6% y la supervivencia libre de enfermedad del 65,6% ($26,49 \pm 11,90$ meses). La mortalidad relativa fue del 12,6%. El porcentaje de eventraciones fue del 5,8% y la obstrucción intestinal del 3,5%.

Conclusiones: El nivel de calidad y los resultados del seguimiento de los pacientes intervenidos por CCR en España son similares a los observados en la literatura internacional.

Existen áreas de mejora: seguimiento, diagnóstico más temprano, aumentar tratamientos adyuvantes y neoadyuvantes y establecer la escisión total del mesorrecto como cirugía estándar en cáncer de recto.

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Introduction

Colorectal cancer (CRC) is the second most frequent neoplasm in developed countries. Although its incidence is on the rise, mortality rates have dropped in recent years, fundamentally due to scientific advances that have been able to improve diagnostic and treatment methods.¹

The Spanish Association of Surgeons has initiated a series of projects that, from a management perspective, aim to evaluate the current situation of the most relevant diseases in our setting, among them CRC.² Due to its prevalence, CRC is a “tracer” condition that allows us to determine the overall quality of healthcare in our country. In spite of its complexity, it is an illness that is treated at all medical care levels, which enables us to analyze the therapeutic management of patients and to compare our data with the results of international publications.

In the year 2000, a project was started to analyze the quality of healthcare in the surgical treatment of CRC.²⁻⁴ Continuing with this line of research, in 2008 the analysis was repeated with a new group of patients in a multi-center study, which was extended to include more study variables and follow-up.⁵

The aim of the present paper is to complement the data obtained from the 2008 study with information from the follow-up of the participating patients.

Methods

This was a prospective, multi-center, descriptive, longitudinal study with variables referring to the post-2-year follow-up stage of patients who had been treated surgically for CRC in the previous 2008 study.⁵

Two years after the start date of the study (1 February, 2008), we sent a questionnaire with 12 variables to the

participating Surgery Departments (50 hospitals from 15 Spanish *autonomous communities/provinces*, with 496 patients in 2008). The follow-up and its dates were evaluated, specifying whether this took place in the general surgery or oncology departments, or both, and whether it was in person, in the outpatient clinic or by telephonic interview.

Data were collected for tumor recurrence (colon/rectum), type (local, systemic or both) and rescue surgery. We analyzed their correlation with tumor stages, lymph node involvement, surgeon who performed the surgery (colorectal specialist or other), type of surgical resection in the case of rectal cancer (lower anterior resection, abdominoperineal resection, total mesorectal excision) as well as neoadjuvant/adjvant therapies.

Likewise, we recorded survival, disease-free survival (DFS), mortality, percentage of tumor-related deaths, later complications (intestinal obstruction and incisional hernias) and their relationship with the surgical technique used (open surgery vs laparoscopy).

Statistical analysis of the descriptive study showed that the qualitative variables are expressed by the number of cases (n), as well as by the percentage of the total number of cases of the variable in question.

The comparative analysis was performed using Pearson's chi-square test for categorical variables.

To perform these tests, the SPSS v.15.0 statistical program for Windows was used (Chicago, IL, USA). The differences were considered significant when the P value associated with the contrast statistical analysis was less than .05.

Results

Of the 50 participating centers including 496 patients in the 2008 study, 35 hospitals responded with the information of 341 patients (67.3% of the patients included in the first study).

Table 1 – Follow-up of CRC.

Follow-up	n (%)
Surgery	231 (69.7)
Office visit	214 (64.6)
Telephone	17 (5.1)
Oncology	166 (49.7)
Office visit	165 (49.4)
Telephone	1 (0.3)
Follow-up only by surgery	168 (50.3)
Follow-up only by oncology	103 (30.8)
Surgery+oncology	63 (18.9)

We obtained the follow-up data from 334 (97.9%) patients, and 7 patients (2.1%) had no follow-up after surgery. Mean follow-up±standard deviation was 28.61±11.32 months. Of these, 63.2% were treated for colon cancer and 37.7% for rectal cancer. 69.2% of the patients were followed-up by general surgery and 49.7% by oncology. 18.9% of the patients were reviewed by both the departments (Table 1).

The rate of tumor recurrence was 23.4%, most of which were systemic (83.3%). Rescue surgery was necessary for 28.2% of the patients with recurrence.

Of the 78 patients with recurrence, 59% were treated surgically for colon cancer and 41% for rectal cancer and the recurrences were fundamentally systemic in both groups (19.2% colon and 19% rectum). Most patients who were treated surgically for colon cancer with recurrence were in advanced stages (III and IV); 86.9% presented lymph node involvement and 60.9% received adjuvant treatment. In the rectum, we found that the majority of the patients presented tumors in stages II and III, 56.3% of the cases with positive lymph nodes; neoadjuvant treatment was administered in 43.8%, and 40.6% received adjuvant therapy (Table 2). Out of these patients, 53.1% underwent lower anterior resection (LAR), 37.5% abdominoperineal resection (APR) and 9.4% local resection of the tumor.

The type of rectal cancer recurrence observed according to the surgical technique included:

- 100% local recurrence for cases of simple excision: There were 3 cases of simple excision of rectal lesions, and all three recurred. Two were stage I at diagnosis, and one received pre- and postoperative chemotherapy (stage III; palliative treatment). None of the patients received radiotherapy.
- In cases with LAR, we found: 17.6% local relapse, 76.5% systemic relapse and 5.9% local and systemic relapse.
- In patients with APR, 0% of the cases had exclusively local recurrence, 91.7% had systemic and 8.3% had local and systemic recurrence.

Table 2 – Tumor Recurrence and Correlation With Disease Stage.

Type	Recurrence, n (%)	Colon cancer	Rectal cancer
Local	7 (9.0)	1 (0.5)	6 (4.8)
Systemic	65 (83.3)	40 (19.2)	24 (19.0)
Local+systemic	6 (7.7)	4 (1.9)	2 (1.6)
Stage I	4 (5.2)	1 (2.2)	3 (9.4)
Stage II	16 (20.5)	5 (10.9)	11 (34.4)
Stage III	29 (37.2)	15 (32.6)	14 (43.8)
Stage IV	29 (37.2)	25 (54.3)	4 (12.5)

Total mesorectal excision (TME) was complete in 65.6% of the patients with recurrent disease, incomplete in 15.6% and it was not performed in 18.8% of the cases, a percentage that included simple excisions (3 cases).

69.4% of the patients were treated by colorectal surgeons, and 23.8% of these cases had tumor recurrence. 55.6% of these patients had colon cancer and 44.4% were treated for rectal cancer. 92.7% were operated on by staff surgeons (not necessarily experts in colorectal surgery) and 22.62% of these had recurrence. 7.3% were operated on by residents, 33.3% of which had recurrence. No statistically significant differences were found between tumor recurrence and the type of surgeon performing the procedure ($P=.477/P=.314$).

During the follow-up period (28 months), overall survival was 76.6% with a DFS of 65.6% (26.49±11.90 months) and a tumor-specific mortality rate of 12.6%.

The percentage of incisional hernias and bowel obstruction was 5.8% and 3.5%, respectively. The rate of intestinal obstruction, tumor recurrence and overall survival were not affected by the approach used. Meanwhile, the rate of incisional hernias was lower in those patients who had been treated laparoscopically ($P<.001$) (Table 3).

Discussion

The Quality of Health Care Section of the Spanish Association of Surgeons, in collaboration with the Coloproctology Section, has intended to provide information about CRC surgery in our country.

During the study, mean follow-up was 28.61±11.32 months for a total of 334 patients, which represents 67.3% of the total included in the initial study from 2008. The international scientific literature recommends a minimal follow-up of 3 years, a period during which most recurrences appear.^{6,7}

The follow-up of the patients was done only by the oncology department in a high percentage of cases (30.8%);

Table 3 – Correlation Between Late Complications and Surgical Technique.

	Incisional hernias, n (%)	Bowel obstruction, n (%)	Tumor recurrence, n (%)	Overall survival, n (%)
Open surgery	18 (8.8)	9 (4.4)	52 (25.5)	150 (73.5)
Laparoscopic surgery	2 (1.6)	3 (2.4)	26 (20.5)	103 (81.1)
P	.008	.385	.229	.143

35.4% were not followed-up in the general surgery outpatient clinic, and 5.4% had telephonic follow-up. Therefore, 30.8% of the patients did not have office visits in the surgery department, which represents an important loss of patients. There is no consensus about the recommended follow-up of patients with CRC.⁸ Likewise, it has not been demonstrated that an intensive protocol is superior to other less exhaustive ones.^{9,10} Even so, we are of the opinion that surgically-treated patients should be monitored by their surgeons, even if they are reviewed by their oncologists. Most authors coincide in recommending a multidisciplinary follow-up adapted to the needs and characteristics of each patient.¹¹⁻¹³

The overall recurrence rate was 23.4%, which is very close to the percentages reported in the literature of 23%-26%.^{9,14,15} Rescue surgery was necessary in 28.2%, which is a percentage that is higher than the mean values observed (around 20%).¹⁶

For colon cancer, we obtained a local recurrence of 0.5%, which was far below the values reported in different series, ranging from 5% to 6%.^{15,17,18} Nevertheless, our data regarding the systemic recurrence of 19.2% is higher than that of these series (12%),^{15,17,18} probably because of the high percentage of cases in advanced stages at diagnosis (stage III 32.6%, stage IV 54.3%) with positive lymph nodes (86.9%) and the percentage of adjuvant treatment (60.9%).¹⁹⁻²¹

In rectal cancer, local recurrence was 4.76%. This value is similar to the rates found in the literature (local recurrence rate less than 10%^{21,22}/7.2%-7.7%¹⁸), although it is higher than that of the Viking Project²³ (3%). This is attributable to the fact that only 65.6% of our patients had a complete TME (clearly identified as a risk factor for local recurrence²⁴) and is related with the 9.4% of cases of local tumor excision for which local recurrence was 100%. For LAR and APR, the recurrences were mainly systemic (76.5% and 91.7%, respectively), which is in accordance with the literature.²⁵ The systemic recurrence rate (19%) surpassed the percentages reported both internationally (16%-18%¹⁵/16.3%¹⁷/9.1%-13.5%¹⁸) and nationally (Viking, 7%). As in colon cancer, advanced stage, lymph node involvement (56.3%) and the low use of neo/adjuvant therapy can justify these results. We thus found that the patients are diagnosed late (advanced stages) as a result of the insufficiency of population screening programs, high-risk consultations for detecting familial cases and not receiving the necessary adjuvant therapies in all cases. This probably indicates that not all patients are treated by multidisciplinary teams that included oncologists.

No statistically significant differences were observed between tumor recurrence and the profile of the surgeon who performed the procedure (colorectal surgery expert/non-expert/medical resident) although the non-randomized study design makes this data arguable, as it has been sufficiently dealt with in other publications.^{26,27}

Overall survival (76.6%), DFS (65.6%) as well as tumor-associated mortality (12.6%) were within published values (SG: 67.8%-84%/DFS: 66.8%-76.2%/mortality per tumor: 11.8%-18.14%).^{15,28}

Our study confirms that there is no difference in the appearance of bowel obstruction; the percentage is lower in the laparoscopic group, although without reaching statistical significance.¹⁷ The same is not true with incisional hernias, which are fewer in the laparoscopic group, with statistical

significance. The study is observational and does not intend to compare the approaches, but we confirmed that this influences neither survival nor percent of recurrences, which coincides with the literature.^{15,18,28,29}

Conclusions

The level of quality and the follow-up results of the patients treated surgically for CRC in Spain are, in general, similar to the data observed in the international literature.

There are areas for improvement, such as patient follow-up, and others that do not always depend on the surgeons, such as the implementation of early-diagnosis programs. Other areas that are susceptible to development include increasing adjuvant and neoadjuvant treatment (related to multidisciplinary teams) and establishing TME as a standard surgery in rectal cancer.

Conflict of Interests

The authors have no conflict of interests.

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