Multidisciplinary team meetings and their impact on survival in rectal cancer. Population-based analysis in Catalonia (Spain)

Abstract

Background: Multidisciplinary team meetings (MTMs) are considered a pillar of cancer care; however, evidence of the independent benefit of MTMs on survival in rectal cancer is controversial.

Methods: This population-based cohort analysis included patients undergoing surgery for primary rectal cancer with curative intent. We drew data derived from three clinical audits conducted in Catalonia from 2011 to 2020. The primary outcome was 2-year survival. Multivariable Cox regression analysis was used to assess the hazard ratio for death in patients whose cases were versus were not discussed in a preoperative MTM.

Results: A total of 5249 patients were included (66.1% male, 58.3% aged 60-79 years, 63.2% receiving anterior resection): 4096 cases were discussed in a preoperative MTM, and 1153 were not. Multivariable Cox proportional hazards regression analysis showed that the MTM group had better survival than those with no preoperative MTM (hazard ratio 1.22, 95% confidence interval 1.02-1.48), after adjusting for potential confounders.

Conclusions: Preoperative MTM may be associated with improved survival in patients with rectal cancer in Catalonia. Efforts to ensure universal access to MTMs for all newly diagnosed patients should be supported.

Key words: rectal cancer; population-based; survival analysis; clinical audit; multidisciplinary team meetings

INTRODUCTION

Colorectal cancer (CRC) is the third most frequent cancer worldwide (1), and despite improvements in survival, it remains the second leading cause of cancer death in Europe in general and specifically in Spain (2). Incidence is concentrated in people aged 70 years and older, though in recent years it has been increasing in younger adults as well (3). Rectal cancer accounts for approximately one third of all CRC.

The past decades have seen substantial progress in rectal cancer treatment and management, partly due to advancing knowledge of the anatomy and pathophysiology of the disease along with new surgical techniques. However, another major development is related to the delivery of cancer care, with a clear shift from a situation in which different specialties work separately within their own silos to a model based on multidisciplinary teams (MDs) of specialists working together for integrated care (4). This change is reflected especially in the central role of multidisciplinary team meetings (MTMs) as the main decision-making body (5). These periodic meetings are held between health care professionals from different medical specialties related to a specific tumor disease, with the aim of reaching consensus on the diagnosis, clinical treatment, and follow-up through personalized, evidence-based clinical decisions (6,7). This is particularly relevant in rectal cancer, where a combination of multimodal treatments and surgical options are available and are often delivered according to clinical findings and staging based on preoperative magnetic resonance imaging (MRI) (4,8).

Although MTMs have been promoted by accreditation and quality systems in cancer care (6,9), evidence for the independent effect of MTMs on survival in colorectal cancer remains controversial. Specifically in rectal cancer, no impact on survival has been demonstrated (4). Different studies have failed to find any independent benefit associated with MTMs for colorectal (10) and rectal cancer survival (11,12), whereas others have demonstrated a positive relationship between the MTM discussion and survival outcomes in patients with CRC for survival at three years (13,14) and five years (15,16). Limitations in study designs like the use of retrospective comparison groups during different time periods (before and after introduction of MTMs) (11,14), difficulties in adjusting for important potential confounders (17), and relatively small sample sizes (12) may have contributed to the inconsistent findings in the literature. Moreover, research to date has focused primarily on the general colorectal cancer population, with no distinction between those with colon and rectal cancer.

To improve the quality of cancer care, the Catalan cancer plan has systematically promoted MTMs since 2001 in Catalonia (Spain). These meetings include all medical and healthcare

professionals related to a specific cancer, such as medical oncologists, surgeons, radiologists, pathologists, and nurses (7,18). In addition, based on a full cycle of population-based clinical audits, a strategy of centralization of rectal cancer surgery in the public system of Catalonia was implemented in 2011 (19–21). This strategy reduced the service providers to authorized hospitals that receive a specific reimbursement for performing the complex surgery procedure.

The heterogeneous results of published research and the limited evidence in rectal cancer in particular support the need for further investigation of the impact of preoperative MTMs in patients with rectal cancer. The aim of this study was to assess the role of preoperative MTMs in rectal cancer, including the trends and the factors associated with access to this service modality and the association with survival in patients undergoing surgery with a curative intent.

METHODS

Study design

This multicenter retrospective population-based cohort study drew data derived from three mandatory clinical audits conducted between 2011 to 2020 at all public hospitals in Catalonia, under the auspices of the Catalan Cancer Plan. The audits capture the individual-level records of all people covered by the public healthcare system who underwent surgery for primary rectal cancer with curative intent in this region of Spain (20). The study was performed in accordance with the Declaration of Helsinki and was approved by the Clinical Research Ethics Committee of Bellvitge University Hospital (PR204/23). Reporting followed the STROBE guidelines for Strengthening the Reporting of Observational Studies in Epidemiology (22).

Study population and data sources

Using the Catalan Hospital Discharge Minimum Basic Data Set (HDMBD) and the International Classification of Diseases, 9th (ICD-9) and 10th revisions (ICD-10) **(Supplementary Table 1)**, we identified all patients aged 18 or older with primary rectal cancer who underwent surgery with a curative intent for the first time during three clinical audits periods: 2011-2012, 2015-2016 and 2019-2020, at any public hospital in Catalonia. Exclusion criteria were: extrarectal tumor site, primary surgery outside the study period, palliative treatment, benign pathology, and precancerous lesions. We also excluded patients in whom preoperative MTM discussion (yes/no) could not be determined based on clear statements in their medical records, as including these patients may have produced artifactual effects. Furthermore, the roughly 10% of patients receiving health care from private hospitals were not included.

Data were derived from a comprehensive review of patients' clinical records by trained external auditors, who retrieved the data for the three periods using the same purpose-designed form, with clear instructions and definitions. The instrument was previously validated, and methods are described in detail elsewhere (19).

Variables

Patient characteristics collected for the present study were: sex, age, American Society of Anesthesiologists (ASA) score; clinical pre-surgical staging based on the *TNM Classification of Malignant Tumors, 7th edition,* tumor site, classified according to distance between tumor and anal verge (distal rectum: 0-5 cm, middle rectum: 6-11 cm, and proximal rectum: 12-15 cm); and surgical and neoadjuvant treatment. The main explanatory variable was the performance (yes/no) of a preoperative MTM, and the main outcome of interest was two-year survival. We performed a linkage with the central registry of the insured population of Catalonia in May 2023 in order to update the vital status of all patients at two years from the date of surgery. The coverage rate of preoperative MTM was the secondary outcome.

Statistical analysis

First, we performed a descriptive analysis of the total study population by group (preoperative MTM and no preoperative MTM) and compared groups using the chi-squared test. Categorical variables, including patient age (<60, 60-79, ≥80 years), were expressed as absolute and relative frequencies. Next, a bivariable analysis was used to assess trends for each categorical variable in the different audit periods using the chi-squared test. Univariable and multivariable logistic regression were then carried out to examine the variables associated with preoperative versus no preoperative MTM, with results expressed as an odds ratio (OR) with 95% confidence intervals (CIs). For the survival analysis, a multivariable Cox proportional hazards model was used to calculate the hazard ratio (HR) with 95% CIs for differences in survival between the two groups. The date of surgery was use as the starting point for the survival analysis. We adjusted the model for the following covariates: sex, age group, ASA score, audit period, clinical pre-surgical staging (TNM), tumor site, and surgical procedure. A conditional overall survival analysis was carried out excluding patients who died within one month of surgery, as this allowed the exclusion of patients with a particularly poor prognosis. For all tests, two-tailed *p* values of less than 0.05 were considered statistically significant. Analyses were conducted using SPSS software, version 21.

RESULTS

Patient characteristics

An initial sample of 7362 patients were identified by the HDMBD between the first audit period (2011-12) and the last audit period (2019-2020). Presentation time in the preoperative MTM was unknown for 153 patients. The patient selection flow chart and reasons for exclusion are presented in **Figure 1.** The final sample comprised 5249 patients, whose characteristics are summarized in **Table 1**. Altogether, 4096 (78%) patients' cases were discussed at preoperative MTM, while 1153 (22%) were not. Most patients in both groups were men and aged 60 to 79 years. The most frequent tumor site was the middle rectum, and most underwent anterior resection.

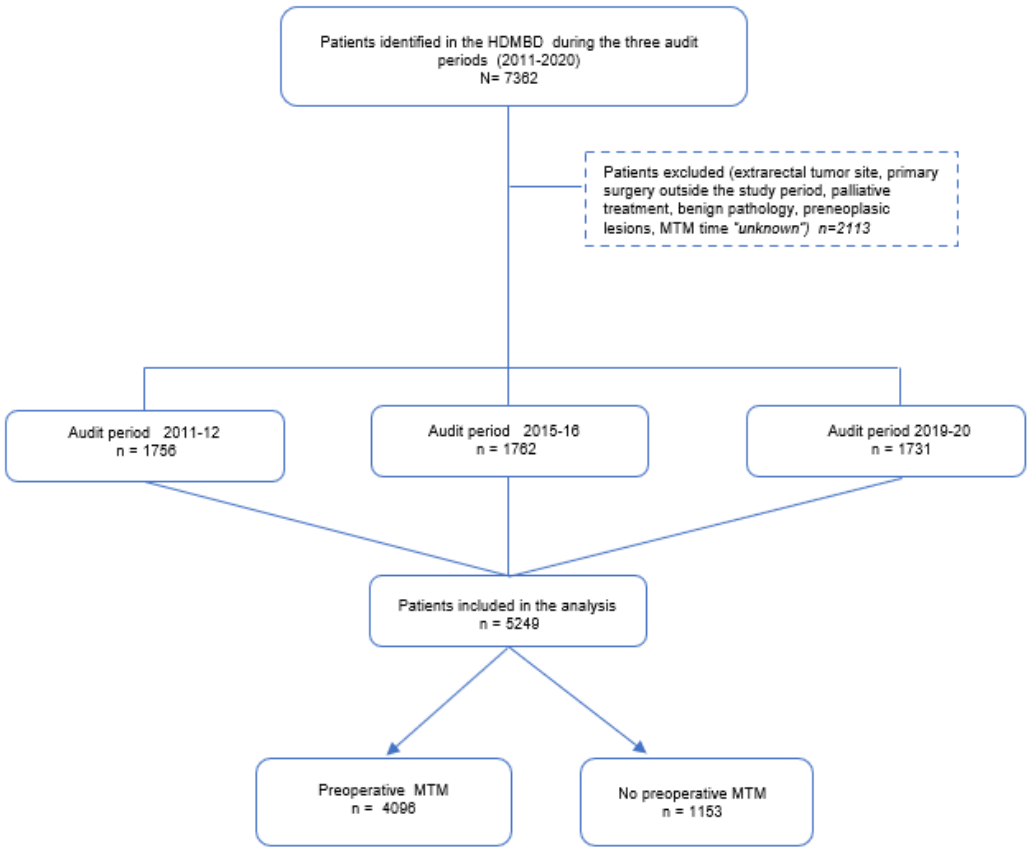
Table 1. Characteristics of the study sample according to case discussion in preoperative multidisciplinary team meeting

	Preoperative MTM (N = 4096)	No preoperative MTM (N = 1153)		Total (N = 5249)
Variables	**n (%)**	**N (%)**	**p**	**N (%)**
Sex				
Male	2746 (67)	723 (62.7)	**0.017**	3469 (66.1)
Female	1350 (33)	430 (37.3)		1780 (33.9)
Age (years)				
< 60	974 (23.8)	275 (23.9)	0.074	1249 (23.8)
60-79	2402 (58.6)	660 (57.2)		3062 (58.3)
≥ 80	720 (17.6)	217 (18.8)		937 (17.9)
ASA				
I	202 (4.9)	57 (4.9)	**<0.001**	259 (66.1)
II	2174 (53.1)	608 (52.7)		2782 (53.0)
III	1507 (36.8)	368 (31.9)		1875 (35.7)
IV	92 (2.2)	40 (3.5)		132 (2.5)
Unknown	121 (3)	80 (6.9)		201 (3.8)
Audit period				
2011-12	1187 (67.6)	569 (32.4)	**<0.001**	1756 (100)
2015-16	1402 (79.6)	360 (20.4)		1762 (100)
2019-20	1507 (87.1)	224 (12.9)		1731 (100)
Stage				
I	560 (13.7)	188 (16.3)	**<0.001**	748 (14.3)
II	672 (16.4)	187 (16.2)		859 (16.4)
III	2133 (52.1)	533 (46.2)		2666 (50.8)
IV	435 (10.6)	77 (6.7)		512 (9.8)
Unknown	296 (7.2)	168 (14.6)		464 (8.8)
T stage				
T0	16 (0.4)	10 (0.9)	**<0.001**	26 (0.5)
T1	135 (3.3)	72 (6.2)		207 (3.9)
T2	613 (15.0)	187 (16.2)		800 (15.2)
T3	2670 (65.2)	690 (59.8)		3360 (64.0)
T4	644 (15.7)	182 (15.8)		826 (15.7)

Tis	10 (0.2)	10 (0.9)		20 (0.4)
Tx	2 (0.0)	0 (0.0)		2 (0.0)
Unknown	6 (0.1)	2 (0.2)		8 (0.2)
Tumor site				
Proximal rectum (12-15 cm)	953 (23.3)	290 (25.2)	**<0.001**	1243 (23.7)
Middle rectum (7-11 cm)	1778 (43.4)	461 (40)		2239 (42.7)
Distal rectum (0-6 cm)	1269 (31)	324 (28.1)		1593 (30.3)
Unknown	96 (2.3)	78 (6.8)		174 (3.3)
Neoadjuvant treatment				
Yes	2607 (63.6)	569 (49.3)	**<0.001**	3176 (60.5)
No	1489 (36.4)	584 (50.7)		2073 (39.5)
Surgical operation				
Local surgery	182 (4.4)	91 (7.9)	**<0.001**	273 (5.2)
Anterior resection	2599 (63.5)	720 (62.4)		3319 (63.2)
Transanal mesorectal excision	285 (7.0)	102 (8.8)		387 (7.4)
Abdominoperineal resection	791 (19.3)	168 (14.6)		959 (18.3)
Hartmann procedure	183 (4.5)	49 (4.2)		232 (4.4)
Others	56 (1.4)	23 (2.0)		79 (1.5)

ASA American Society of Anesthesiologists (ASA) score, MTM multidisciplinary team meeting, *statistical significance, p <0.05

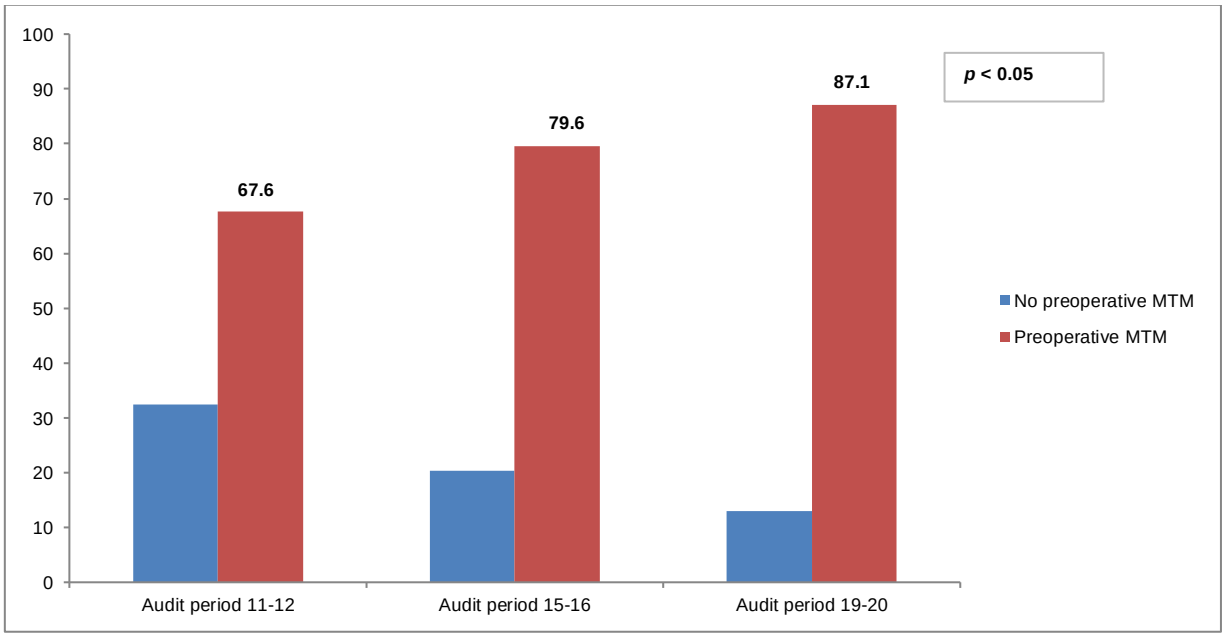
Figure 1. Patient selection flow chart. The study sample was divided into preoperative MTM and no preoperative MTM. Exclusion criteria are listed. HDMBD Catalonian Hospital Discharge Minimum Basic Data, MTM Multidisciplinary team Meeting



Coverage trends for preoperative MTMs

The number of patients who underwent primary rectal cancer surgery in each audit remained steady over time. However, the coverage rate of patients whose case was discussed at preoperative MTM increased significantly over time, from 67.6% during the first audit period to 87.1% during the last (chi-squared p <0.05). This trend was independent of stage, tumor site, and neoadjuvant treatment (chi-squared p <0.01) **(Supplementary table 2). Figure 2** illustrates the coverage trends over time.

Figure 2. Coverage of preoperative MTMs over 3 study periods



Factors associated with case discussion at preoperative MTM

In the multivariable analysis, patients were significantly more likely to have their case discussed at preoperative MTM in the 2019-20 audit period (adjusted OR [aOR] 3.93, 95% CI 3.27-4.73; table 2) and the 2015-16 audit period (aOR 2.01; 95% CI 1.70-2.36; table 2) compared with the first audit period. Similarly, the likelihood of preoperative MTM discussion increased with clinical stage (taking stage I as a reference, stage II: aOR 1.35, 95% CI 1.06-1.72; stage III: aOR 1.40; 95% CI 1.15-1.71; stage IV: aOR 2.33, 95% CI 1.72 -3.16; table 2). Age was not associated with discussion at preoperative MTM (p > 0.05; table 2).

Table 2. Factors associated with case discussion in preoperative multidisciplinary team meeting

		Univariable analysis		Multivariable analysis	
Variable	N	**OR (95% CI)**	***p***	**OR (95% CI)**	***p***
Sex					
Female	1780	1		1	
Male	3469	1.21 (1.06-1.37)	<0.001*	1.15 (0.99-1.33)	0.054
Age (years)					
< 60	1249	1		1	
60 - 79	3062	1.03 (0.88-1.21)	0.74	1.10 (0.93-1.31)	0.26
≥ 80	937	0.94 (0.77-1.18)	0.53	1.02 (0.82-1.28)	0.84
ASA					
I	259	1		1	
II	2782	1.01 (0.74-1.37)	0.96	0.98 (0.71-1.36)	0.92
III	1875	1.16 (0.84-1.58)	0.37	1.09 (0.78-1.54)	0.61
IV	132	0.65 (0.40-1.04)	0.074	0.72 (0.43-1.19)	0.2
Unknown	201	0.43 (0.28-0.64)	<0.001*	0.64 (0.42 -0.99)	**0.046***
Audit period					
2011-12	1756	1		1	
2015-16	1762	1.87 (1.60-2.18)	<0.001*	2.01 (1.70-2.36)	**<0.001***
2019-20	1731	3.22 (2.72-3.83)	<0.001*	3.93 (3.27-4.73)	**<0.001***
Stage					
I	748	1		1	
II	859	1.21 (0.96-1.52)	0.11	1.35 (1.06-1.72)	**0.015***
III	2666	1.34 (1.11-1.63)	0.002*	1.40 (1.15-1.71)	**0.001***
IV	512	1.90 (1.41-2.54)	<0.001*	2.33 (1.72-3.16)	**<0.001***
Unknown	464	0.59 (0.46-0.76)	<0.001*	0.47 (0.36-0.61)	**<0.001***
Tumor site					
Proximal rectum (12-15 cm)	1243	1		1	
Middle rectum (7-11 cm)	2239	1.17 (0.99-1.39)	0.06	1.08 (0.91-1.29)	0.36
Distal rectum (0-6 cm)	1593	1.19 (1-1.43)	0.06	1.16 (0.96-1.4)	0.12
Unknown	174	0.38 (0.27-0.52)	<0.001*	0.38 (0.26-0.54)	**<0.001***

SA American Society of Anesthesiologists (ASA) score, MTM multidisciplinary team meeting, OR odds ratio, CI confidence Interval, 95%. *statistical significance, p <0.05

Impact of the preoperative MTM

The multivariable Cox proportional hazards regression analysis showed that preoperative MTM discussion was an independently predictive of two-year survival (adjusted HR [aHR] 1.22, 95% CI 1.02-1.48; table 3). **Figure 3** shows the corresponding survival curves for the two groups. Compared with the third audit period, significantly lower survival was observed in 2011-12 (HR

1.29, 95% CI 1.08–1.55; table 3); however, the statistical significance did not hold in the adjusted model (aHR, 1.16, 95% CI 0.95-1.41; table 3). Higher ASA classification, higher clinical stage, abdominoperineal resection, Hartmann procedure, and other types of surgical procedures were independently associated with lower survival at two years.

Once we excluded the patients who died within a month of surgery (resulting sample n=5190), preoperative MTM discussion remained an independent protective factor for two-year survival (aHR 1.27, 95% CI 1.05-1.54). Overall, the multivariable adjustment barely changed the HRs **(Supplementary table 3).**

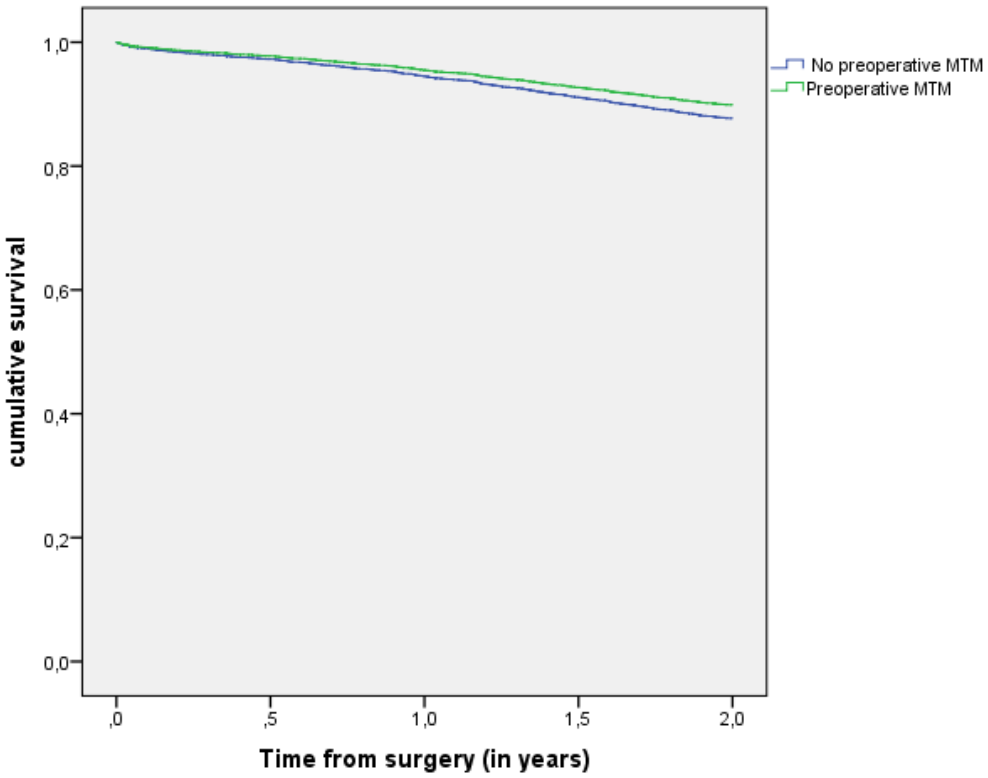
Table 3. Impact of the preoperative multidisciplinary team meeting on two-year mortality

		Univariable analysis		Multivariable analysis	
Variable	N	**HR (95% CI)**	***p***	**HR (95% CI)**	***p***
Preoperative MTM					
Yes	4096	1		1	
No	1153	1.17 (0.98-1.39)	0.08	1.22 (1.02-1.48)	**0.029***
Sex					
Female	1780	1		1	
Male	3469	1.02 (0.87-1.20)	0.78	0.96 (0.81-1.12)	0.58
Age (years)					
< 60	1249	1		1	
60-79	3062	1.76 (1.39-2.22)	<0.001*	1.58 (1.24-2.00)	**<0.001***
≥ 80	937	3.92 (3.07-5.01)	<0.001*	3.08 (2.37-3.99)	**<0.001***
ASA					
I	259	1		1	
II	2782	1.80 (1.03-3.14)	0.039*	1.39 (0.79-2.45)	0.25
III	1875	3.88 (2.23-6.76)	<0.001*	2.40 (1.36-4.23)	**0.002***
IV	132	7.46 (3.99-13.92)	<0.001*	4.22 (2.27-7.99)	**<0.001***
Unknown	201	4.18 (2.23-7.81)	<0.001*	2.67 (1.41-5.03)	**0.002***
Audit period					
2019-20	1731	1		1	
2011-12	1756	1.29 (1.08-1.55)	0.006*	1.16 (0.95-1.41)	0.147
2015-16	1762	1.01 (0.83-1.22)	0.948	0.95 (0.78-1.15)	0.571
Stage					
I	748	1		1	
II	859	1.48 (1.07-2.05)	0.018*	1.25 (0.90-1.75)	0.19
III	2666	1.52 (1.15-2.01)	0.003*	1.54 (1.15-2.07)	**0.004***
IV	512	4.27 (3.15-5.78)	<0.001*	4.06 (2.96-5.58)	**<0.001***
Unknown	464	1.95 (1.38-2.77)	<0.001*	1.94 (1.35-2.79)	**<0.001***
Tumor site					
Proximal rectum (12-15cm)	1243	1		1	
Middle rectum (7-11cm)	2239	1.10 (0.90-1.34)	0.34	1.12 (0.91-1.38)	0.28
Distal rectum (0-6cm)	1593	1.21 (0.98-1.49)	0.078	1.04 (0.82-1.32)	0.75
Unknown	174	1.31 (0.87-1.98)	0.21	0.79 (0.51-1.22)	0.28
Surgical operation					
Anterior resection	3319	1		1	
Local surgery	273	0.83 (0.55-1.25)	0.38	0.94 (0.60-1.46)	0.77
Transanal mesorectal	387	0.98 (0.71-1.36)	0.91	1.16 (0.83-1.63)	0.39

excision					
Abdominoperineal resection	959	1.79 (1.50-2.15)	<0.001*	1.64 (1.32-2.02)	**<0.001***
Hartmann procedure	232	3.13 (2.41-4.05)	<0.001*	2.12 (1.62-2.77)	**<0.001***
Others	79	3.37 (2.25-5.05)	<0.001*	3.42 (2.27-5.18)	**<0.001***

ASA American Society of Anesthesiologists (ASA) score, MTM multidisciplinary team meeting, HR hazard ratio, CI confidence Interval, 95%. *statistical significance, p <0.05

Figure 3. Overall survival according to performance of preoperative multidisciplinary team meeting (MTM)



DISCUSSION

In this population-based retrospective cohort study, the lack of discussion of the case at a preoperative MTM led to a 22% higher likelihood of dying to two years, after adjusting for patients' age, sex, ASA scale, audit period, TNM stage, tumor site and type of surgical procedure. The odds of being discussed in the preoperative MTM were higher in patients with more advanced tumor stage and in the most recent audit periods. These outcomes were observed in a population setting in which surgery for rectal cancer has been centralized from the first audit period of the study (20).

The results of our study are concordant with previous population-based studies that have demonstrated a positive independent relationship between MTM discussion and survival outcomes in patients with CRC (13,15–17). For instance, in France, Rollet et al.'s (16) study in 3999 CRC patients found that those who were not discussed at the MTM had 2.8 times lower overall survival (OS) compared with those who were; this association became markedly weaker (but still significant) after excluding patients who died within three months of the diagnosis. In Taiwan, a nationwide cohort study in 25,766 patients reported that MTM discussion improved patient survival by 10% in the CRC population (17). In Scotland, a population-based study including 586 patients also showed an association between MTM and improved survival, but only in patients with advanced CRC (15). In China, Li et al.'s population-based study showed that having an MTM was an independent predictor of better OS (23), and a recently published meta-analysis showed the protective effect of MTM discussions in CRC patients, although 8 of the 15 included studies showed no significant effect (24). The different probabilities of survival may be explained, in part, by the characteristics of the population, as most previous studies have focused on the general CRC population or have been restricted to patients with advanced or metastatic disease. Moreover, there are inherent healthcare system differences between settings, which limit a generalized comparison. To the best of our knowledge, ours in one of the largest studies on this topic to date, adding to the existing literature that addresses the benefit of preoperative MTM on survival in a surgically treated rectal cancer population.

Other studies have failed to demonstrate an independent benefit for MTMs on survival in patients with CRC (10–12). However, the comparison of groups in different time periods (before and after introduction of MTMs) may have confounded the findings due to changes over time in treatment protocols and surgical procedures, among others (11). In addition, these studies were relatively small and not population-based (10–12). Nevertheless, even faced with non-significant findings, the authors of these studies maintain a positive stance toward the practice/integration of MTMs in cancer care. For example, Basso and colleagues (10) indicated that it would be simplistic to conclude that MTMs do not have an impact on survival, because their analysis showed that MTM discussion in patients who underwent liver resection for colorectal liver metastases led to higher surgical rates in patients with more advanced diseases and reduced the median duration of chemotherapy and post-operative morbidities. Thus, the benefits of MTM discussions go beyond the survival outcome and encompass better coordination among the health professionals involved in care. In addition, they highlighted the fact that patients whose case was not discussed at an MTM underwent more surgery despite evidence of disease progression—a well-known predictor of a negative

prognosis—compared to patients with MTM discussion, suggesting a less organized clinical pathway. Likewise, Palmer et al. (12) concluded that MTMs increased the proportion of patients receiving neoadjuvant treatment and improved cancer-specific endpoints, thus improving local control and survival in rectal cancer patients.

Our results show a significant, positive association between MTMs and survival. However, this is probably not a direct causal effect, but rather the result of a set of factors implicit in MTMs, such as improved coordination and organization of a specialized team and interdisciplinary work (25), greater adherence to multidisciplinary clinical guidelines (5,26), and greater concentration of cases derived from the centralization policy in Catalonia (20). These factors work together in improving outcomes (27).

The results show a clear and significantly increasing trend in coverage rates between the first and last audit period (67.6% to 87.1%); however, these rates are somewhat lower than those reported elsewhere. For example, in Belgium reported a 91% coverage rate of MTM discussion in rectal cancer patients in 2011 (28), the same rate reported in the Netherlands for CRC patients in 2015-2016 (29). These figures contrast with the 67.6% and 79.6% coverage observed in our study, respectively, for the same years. Our results are more consistent with the increased coverage reported in France, where the proportion of cases discussed in MTMs rose from 66% in 2005-2006 to 88% in 2010-2014 (16). In Belgium, the high coverage rates may be a result of the specific inclusion of these meetings in the reimbursement system since 2003 (28). In the same line, in France the law now stipulates that the MTM is a mandatory condition in patients receiving chemotherapy, radiotherapy, and cancer surgery (16). On the other hand, in Catalonia MTMs are neither regulated by law nor financially supported. The remarkable increase in the coverage rate, then, is more likely due to the progressive implementation of multidisciplinary care, which has been promoted by the national cancer plan since 2005 and by the Catalan cancer plan since 2001, in alignment with the policy statement on multidisciplinary cancer care in Europe, which defines MTMs as the core component in cancer care organization (7). Furthermore, the improved coverage could be partly driven by the contribution that clinical audits have had on the quality of care in rectal cancer (19,20); these audits since 2011 may help explain the increasing coverage of MTM in our region and its better registration in patients' health records, the source of our data in this study.

Unlike the three population-based studies previously mentioned (16,26,27) in our cohort, more advanced disease increased the probability preoperative MTM, and very advanced age (≥

80 years) was not a risk factor for no preoperative MTM. However, these differences could be related to the fact that our study did not include patients under palliative treatment, which probably limited the inclusion of very old patients in addition to those with a terminal prognosis, inflating the prevalence of patients with stage I, II and III disease. Despite this, the lack of association with age and stage in our analysis is a positive outcome, in accordance with the Catalan guidelines for cancer care (18) and several other national guidelines from countries like Australia (31) and the USA (32), which call for discussion of all newly diagnosed patients with CRC in an MTM, independently of age or stage.

The results of our study should be interpreted in light of its potential limitations, beginning with its retrospective nature. To minimize possible inaccuracies in data collection, a team of trained professionals used purpose-designed instruments designed to improve the quality and standardization of the data collected. Secondly, around 10% of patients with rectal cancer in Catalonia undergo surgery in private centers, which were not included in the study. However, our study did include the nearly 90% of the population from the public health care system and was representative of the population. Third, no data were collected systematically about the characteristics of the health professionals attending the meetings or on the decisions made. Despite these limitations, this study represents one of the largest population-based cohort studies investigating the impact of MTMs in rectal cancer patients. Moreover, unlike other studies, we adjusted for important potential confounders such as the surgical technique, which is one of the most important factors related to survival in rectal cancer patients.

CONCLUSIONS

Our results suggest that preoperative MTMs may be associated with improved survival in patients with rectal cancer in Catalonia. This probably is not a direct causal effect, but rather the result of a set of factors implicit in MTMs. However, our results support the importance of universal access to mandatory MTMs in all newly diagnosed patients.

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