

Collaborative case conferences in rectal cancer: case series in a tertiary care centre

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ABSTRACT

Background In many hospitals, resource barriers preclude the use of preoperative multidisciplinary cancer conferences (mccs) for consecutive patients with cancer. Collaborative cancer conferences (cccs) are modified mccs that might overcome such barriers.

Methods We established a ccc at an academic tertiary care centre to review preoperative plans for patients with rectal cancer. Attendees included only surgeons who perform colorectal cancer procedures and a radiologist with expertise in cross-sectional imaging. Individual reviews began with the primary surgeon presenting the case information and initial treatment recommendations. Cross-sectional images were then reviewed, the case was discussed, and consensus on ccc-treatment recommendations was achieved. Outcomes for the present study were changes in treatment recommendations defined as “major” (that is, redirection of patient to preoperative radiation from straight-to-surgery or uncertain plan, or redirection of the patient to straight-to-surgery from preoperative radiation or plan uncertain) or as “minor” (that is, referral to a multidisciplinary cancer clinic, request additional tests, change type of neoadjuvant therapy, change type of surgery). Chart reviews provided relevant patient, tumour, and treatment information.

Results Between September 2011 and September 2012, 101 rectal cancer patients were discussed at a ccc. Of the 35 management plans (34.7%) that were changed as a result, 8 had major changes, and 27 had minor changes. Available patient and tumour factors did not predict for a change in treatment recommendation.

Conclusions Preoperative cccls at a tertiary-care centre changed treatment recommendations for one third of patients with rectal cancer. Given that no specific factor predicted for a treatment plan change, it is likely prudent that all rectal cancer patients undergo some form of collaborative review.

Key Words Colorectal or anal neoplasia

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BACKGROUND

Multidisciplinary cancer conferences (mccs) for individual patients are meant to ensure the ordering and review of appropriate diagnostic tests and to provide optimal treatment recommendations¹. The use of mccs has been described in a variety of cancer subspecialties, including breast, lung, gynecologic, and esophageal cancers^{2–5}. A systematic review by Lamb *et al.*⁶ reported changes in cancer care management after discussion at an mcc in 2%–52% of cases. Major organizations including the Commission on Cancer⁷ and the National Comprehensive Cancer Network (<http://www.nccn.org/about/>) in the United States recommend mccs for all patients with cancer.

In Ontario, provincial guidelines outline, for each disease site, the components of good-quality mccs and the specialists who should be in attendance⁸. For example, for patients with rectal cancer, the guidelines encourage mcc review before surgery for all patients, with representation from surgery, medical oncology, radiation oncology, pathology, and radiology⁸.

In Ontario (and likely in other geographic areas), mcc reviews occur for only a small proportion of cancer patients, and little information is available about the use of preoperative mccs for consecutive patients⁹. Resource limitations are likely the main cause in those situations, especially for the most frequent cancer operations (for example, breast and colorectal procedures). In Ontario,

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most medical and radiation oncologists are sited in regional cancer centres, and most cancer operations occur in non-academic community hospitals¹⁰. Medical and radiation oncology input into every case of breast or colorectal cancer would strain current workloads for those specialties and demand direct contact with treating surgeons to ensure consideration of nuanced patient information that might influence recommendations, likely delaying care. Notably, when MCCs do occur in Ontario, they typically do not involve the systematic review of consecutive cases treated in a hospital or region. Rather, they deal with the presentation of interesting or challenging cases.

We recently reported on a modified MCC called a “collaborative cancer conference” (CCC) used in Local Health Integration Network 4 (LHIN4) in Ontario¹¹. The CCCs consider patients being planned for rectal cancer surgery and are initiated by a referring surgeon working in a LHIN4 hospital. Thus, they do not consider consecutive patients treated in the LHIN4 region, and nearly all the cases come from non-academic sites. Reviews occur over the Internet and involve only a referring surgeon, a reviewing surgeon, and (when needed) a radiologist. The study found that changes in treatment recommendations from initial choice to post-CCC review occurred in 53% of cases and that no patient or tumour factor predicted for a change in recommendation. During the study, the surgeons acting as reviewers were sited at a tertiary care centre [Juravinski Hospital (JH)] affiliated with a medical school (McMaster University). The high rate of change in management plan observed in that study encouraged us to evaluate preoperative CCC reviews for consecutive patients with rectal or complex colon cancer treated by academic surgeons with expertise in colorectal cancer surgery. We hypothesized that the rate of change in treatment recommendations after CCC review would be substantively lower than the rate observed in the earlier study because consecutive cases would likely include many routine cases. That is, changes would be less likely to be needed.

METHODS

Setting

This pilot study was initiated at the JH in Hamilton, Ontario, by 4 surgeons with a clinical focus on colorectal disease (3 colorectal surgeons and 1 surgical oncologist). The JH is affiliated with McMaster University and has a colorectal cancer surgery volume that is among the highest in the province of Ontario (population: 13 million). The JH is in the health administrative region known as LHIN4 (population: 1.3 million). In LHIN4, 11 hospitals provide adult colorectal cancer surgery, and surgeons at the JH often receive referrals from other LHIN4 surgeons or from surgeons in other parts of the province to assume the primary surgical care of patients with complex colorectal cancer.

The JH is sited next to the Juravinski Cancer Centre, where most LHIN4 radiation and medical oncologists are sited, and where most radiation and chemotherapy for LHIN4 patients are provided. At the Juravinski Cancer Centre, a weekly 1-hour gastrointestinal MCC is attended by radiologists, pathologists, surgeons, and medical and radiation oncologists. Typically, 4–6 interesting cases involving any gastrointestinal site or any aspect of diagnosis

or treatment from across LHIN4 will be discussed at those sessions. No capacity to perform preoperative reviews for consecutive gastrointestinal cases from the JH or all LHIN4 hospitals is available. Surgeons at the JH and oncologists at the Juravinski Cancer Centre also accommodate requests from outside physicians for “multidisciplinary cancer clinics,” in which an individual patient will receive a concurrent consultation with an appropriate surgeon, medical oncologist, and radiation oncologist. Such clinics are thus more resource-intensive than a MCC, in which cases are relatively quickly reviewed in a conference-like setting.

CCC Logistics and Data Collection

We established a weekly 1-hour CCC to review consecutive patients with rectal or complex colon cancer treated at the JH. The offices of the 4 participating JH surgeons forwarded identifying case information to a research assistant by 12h00 on the Friday before the Monday CCC. Lists would be forwarded to all participants and to a radiologist with expertise in gastrointestinal imaging (to allow time for radiology review of images before the CCC).

Approximately 5–10 colorectal cases were discussed weekly at the CCC. (That number of cases could in no way be reviewed at the current Juravinski Cancer Centre weekly 1-hour gastrointestinal MCC; for that round, cases from across LHIN4, for all disease sites, and for both primary and recurrent disease are included, and thus the cases discussed are typically those that are clinically interesting or that present management difficulties.) As the CCC evolved, surgeons occasionally requested review of patients with complex benign colorectal issues, but here, we present results only for patients with rectal adenocarcinoma. *A priori*, we decided to present results for the first approximately 100 rectal adenocarcinoma cases undergoing CCC review. Cases were reviewed from September 2011 to September 2012.

When a patient was reviewed at the CCC, the primary surgeon presented relevant history, physical exam findings, test results, and initial treatment recommendations. Actual cross-sectional imaging [for example, computed tomography or magnetic resonance imaging (MRI)] was then reviewed by the radiologist, and a full discussion by the group followed. The goal was for the CCC to achieve consensus on final treatment recommendations. A rotating surgeon-chair used a standard form (Table 1) to record relevant patient demographics, initial and final CCC treatment recommendations, and potential reasons for changes in the treatment recommendations. Medical and radiation oncologists from the Juravinski Cancer Centre were welcome to attend any of the CCC sessions. Only 1 medical oncologist attended a few sessions at the beginning of the pilot, and thus medical and radiation oncologist input ostensibly occurred during subsequent formal consultations.

Identifying information from the CCC forms allowed the cases to be linked to hospital and Juravinski Cancer Centre charts. Further data were collected from relevant clinical and operative notes and test and pathology reports.

Study Outcomes, Analyses, and Ethics

The main study outcomes were changes in treatment recommendations, defined either as “major” (that is, redirection of the patient to preoperative radiation from

straight-to-surgery or plan uncertain, or redirection of the patient to straight-to-surgery from preoperative radiation or plan uncertain) or as “minor” [that is, referral to a multidisciplinary cancer clinic (patient would undergo consultation with an additional surgeon and oncologists),

request for additional tests (for example, biopsy or MRI), change in the type of neoadjuvant therapy (for example, long-course chemoradiation to short-course radiation), change in the type of surgery (for example, low anterior to likely abdominoperineal resection)].

TABLE I Facilitator sheet for patient case presentation

| Date: _____ | Age: _____ | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------------|--------------------------|----|-----------|--------------|--------------------------|--------------------------|--------------------------|----------|--------------------------|--------------------------|--------------------------|-----------|--------------------------|--------------------------|--------------------------|--------------|--|--|--|
| Case no.: _____ | Sex: _____ | | | | | | | | | | | | | | | | | | | | |
| Primary rectal cancer? <input type="checkbox"/> Yes <input type="checkbox"/> No, _____ | Stage: <input type="checkbox"/> I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> N/A | | | | | | | | | | | | | | | | | | | | |
| Section 1 – Initial Treatment Plan | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Straight to surgery <input type="checkbox"/> Straight to radiation <input type="checkbox"/> Uncertain | | | | | | | | | | | | | | | | | | | | | |
| Notes: _____ | | | | | | | | | | | | | | | | | | | | | |
| If none of the above, outline treatment plan below/other notes: For example, further investigation required, other treatment elements _____ _____ | | | | | | | | | | | | | | | | | | | | | |
| Section 2 – Final Treatment Recommendation | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Straight to surgery <input type="checkbox"/> Straight to radiation <input type="checkbox"/> Different type than initially recommended <input type="checkbox"/> Different type than initially recommended | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Other (details): _____ _____ | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Further investigation required <input type="checkbox"/> Referral to Juravinski Cancer Centre Multidisciplinary Clinic | | | | | | | | | | | | | | | | | | | | | |
| Notes: _____ | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> Change to initial treatment plan <input type="checkbox"/> No change to initial treatment plan <input type="checkbox"/> Major <input type="checkbox"/> Minor | | | | | | | | | | | | | | | | | | | | | |
| Major change in treatment plan due to: | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%;">Yes</th> <th style="width: 20%;">No</th> <th style="width: 20%;">Uncertain</th> </tr> </thead> <tbody> <tr> <td>Positive CRM</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Stage II</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Stage III</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Other: _____</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | | Yes | No | Uncertain | Positive CRM | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Stage II | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Stage III | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Other: _____ | | | |
| | Yes | No | Uncertain | | | | | | | | | | | | | | | | | | |
| Positive CRM | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | |
| Stage II | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | |
| Stage III | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | | | | | | | | | | | | | |
| Other: _____ | | | | | | | | | | | | | | | | | | | | | |
| Major changes: switch to/addition of Sx or Rad; change in Sx type Minor changes: change in Rad type; addition of further investigations/other Tx elements/referral to JCC MDC Version date: 21 November 2013 | | | | | | | | | | | | | | | | | | | | | |

N/A = not available; CRM = circumferential resection margin; Sx = surgery; Rad = radiation therapy; Tx = therapy; JCC = Juravinski Cancer Centre; MDC = multidisciplinary clinic.

To observe trends in the rates of major or minor changes to treatment recommendations, the study period was divided into 4 sub-periods of approximately equal length. Cases were grouped into those with and without a major or minor treatment plan change, and the associated patient data were then analyzed based on those groups. Categorical variables are reported as frequencies, and continuous variables, as medians with standard deviations. Comparisons between groups used the Wilcoxon rank sum and chi-square tests or the Fisher exact t-test, as appropriate. We used the IBM SPSS Statistics software application (version 20.0; IBM, Armonk, NY, U.S.A.) and a significance level of $p < 0.05$. The study received ethics approval from the Hamilton Health Sciences Research Ethics Board.

RESULTS

From September 2011 to September 2012, 101 patients with rectal cancer were discussed at 35 cccs. Review of hospital records established that all patients with rectal cancer surgically treated at the JH underwent ccc review. Toward the later months of the pilot, 3 additional surgeons from a second teaching hospital in Hamilton started to attend the ccc with the 4 JH surgeons. The former 3 surgeons contributed 15 consecutive cases to the review.

In 66 of the 101 cases reviewed (65.3%), no changes were made to the treatment plan presented by the primary surgeon. Of those “no change” cases, 31 went directly to surgery, 32 went directly to radiation, and treatment recommendations for 3 patients remained uncertain despite ccc review (Table II). Of the 35 “change” cases (34.7%), 8 had major and 27 had minor treatment recommendation changes. The major changes included 5 patients diverted from “straight to radiation” to “straight to surgery” and 3 patients diverted from “straight to surgery” to “straight to radiation.” The minor changes included 2 cases for which attendance at a multidisciplinary cancer clinic

TABLE II Final treatment recommendations from Collaborative Cancer Conference, by change or no change to primary surgeon’s initial recommendation

| Variable | Change to recommendation (n) | |
|----------------------------------|------------------------------|-----------------|
| | No | Yes |
| Patients presented | 66 | 35 |
| Straight to surgery | 31 | 5 |
| Straight to radiation therapy | 32 | 3 |
| Referral to JCC MCC ^a | 0 | 2 |
| Other ^b | 3 ^c | 25 ^d |

^a A full multidisciplinary review, including physical exam with second surgeon and medical and radiation oncology review.

^b Uncertain, additional tests, change type of radiation, change type of surgery.

^c In these 3 cases with an initial treatment recommendation of uncertain, the recommendation remained uncertain.

^d In these 25 cases, changes included 14 additional tests, 6 changes to the type of radiation, 5 changes to the type of surgery.

JCC MCC = Juravinski Cancer Centre multidisciplinary cancer conference.

was recommended, 14 cases in which additional tests were recommended (for example, biopsy of a liver lesion or inguinal node, liver MRI), 6 cases in which a change in neoadjuvant strategy was recommended, and 5 cases in which a change to the surgery type was recommended. Pelvic MRI to better assess margins was recommended in only 2 of the 14 cases for which additional tests were recommended. During the 4 sub-periods, rates of change were similar; the rate of change was, respectively, 47% and 36% in the first and final sub-periods (Figure 1).

Table III compares patient, tumour, treatment, and outcome factors in the groups without and with changes in treatment recommendations after ccc review. The median age of the patients was 63 years, and 58 of the 101 patients were men. No factor was predictive of a change in treatment recommendations after ccc review. For example, tumour stage, use of preoperative radiation, type of surgery, and positive radial margin rate did not predict for a change to the treatment recommendation.

DISCUSSION AND CONCLUSIONS

In this study of 101 consecutive rectal cancer cases treated by academic surgeons with expertise in colorectal cancer surgery, changes to the initial treatment plan proposed by the primary surgeon were made in 35% of cases after ccc review. A recent paper published by our group that looked at non-academic surgeons operating in non-academic hospitals in the LHIN4 region of Ontario demonstrated that treatment recommendations were changed in 53% of cases after a virtual ccc review¹¹. For the present study, we had hypothesized that treatment recommendations would be changed at a lower rate than that 53%. In the earlier study, surgeons selected the cases for review and thus likely included relatively difficult cases. In the present study, surgeons agreed to present consecutive cases, and thus the study cohort would likely include a number of relatively “routine” cases. We surmised that such cases would be less likely to lead to a treatment recommendation change. We

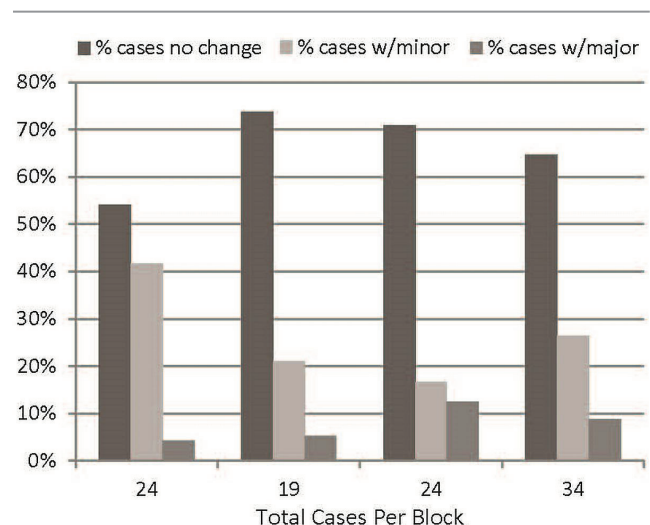


FIGURE 1 Changes in treatment plans over time.

TABLE III Patient, tumour, treatment, and outcome factors, by change or no change to primary surgeon's initial recommendation

| Factor | Change to recommendation | | Total | P Value |
|---|--------------------------|--------------|---------------|---------|
| | No | Yes | | |
| Patients presented [<i>n</i> (%)] | 66 (65.3) | 35 (34.7) | 101 (100.0) | — |
| Median patient age (years) | 65 | 61 | 63 | 0.445 |
| Patient sex [<i>n</i> (%) men] | 37 (56.1) | 21 (60.0) | 58 (57.4) | 0.703 |
| Stage [<i>n</i> (%) ^a | | | | |
| I | 19 (28.8) | 12 (34.3) | 31 (30.7) | 0.769 |
| II | 14 (21.2) | 7 (20.0) | 21 (20.8) | |
| III | 21 (31.8) | 8 (22.9) | 29 (28.7) | |
| IV | 12 (18.2) | 8 (22.9) | 20 (19.8) | |
| Preoperative RT received [<i>n</i> / <i>N</i> (%) ^b] | 37/65 (56.1) | 15/34 (48.4) | 52/99 (100.0) | 0.433 |
| Surgery received [<i>n</i> / <i>N</i> (%) ^b] | | | | |
| Low anterior resection or Hartmann | 40/65 (61.5) | 16/34 (47.1) | 56/99 (56.6) | 0.099 |
| Abdominoperineal resection | 13/65 (20.0) | 5/34 (14.7) | 18/99 (18.2) | |
| No major surgery | 12/65 (18.5) | 13/34 (38.2) | 25/99 (25.3) | |
| Positive radial margin (%) ^{b,c} | 9.8 | 5.6 | 8.7 | 0.582 |

^a Based on clinical information.^b Treatment and outcome data not available for 2 of the 101 patients.^c Includes distance ≤1 mm and no distance reported but margin deemed positive in report.

RT = radiation therapy.

were surprised to find that collaborative review by a group of surgeons with expertise in colorectal cancer surgery and working in an academic centre still resulted in changes to the treatment recommendation in 35% of cases—which we do not consider to be clinically dissimilar to a rate of 53%. Moreover, no patient, tumour, or treatment factor predicted for a change in management, and rates of change were similar during the entire approximately 1-year period of the study. Our findings suggest the importance of some form of preoperative collaborative review for all patients being planned for rectal cancer surgery—and likely for other types of cancer surgery.

In most jurisdictions, resource barriers preclude the consecutive review of patients being planned for major cancer surgery. We suggest that cccs for consecutive cases can overcome those barriers. Commenting on innovation uptake, Rogers¹² differentiated homophilic interactions (for example, surgeon-to-surgeon) and heterophilic interactions (for example, surgeon-to-medical oncologist). Rogers suggested that the type of information transferred will vary for homophilic and heterophilic interactions and that both interaction types have strengths and weaknesses. Collaborative cancer conferences could involve disease-oriented same specialty-to-same specialty case review (for example, surgeons treating hepatobiliary or colorectal malignancies) with appropriate support—typically by a radiologist. We posit that, in contrast to a traditional mcc, a ccc involving surgeons and a radiologist will result in the efficient transfer of more surgeon-relevant information and thus an ability to effectively review relatively more cases in a set time. We further suggest that cccs of consecutive patients could complement traditional mcs in two important ways. First, traditional mcs would facilitate

multidisciplinary input when requested for a specific case by an individual clinician. Second, mcs could be a forum for the review of a random sample of patients in a given disease site over a set period of time for quality assurance purposes. It is likely that resource limitations, the necessity for preoperative review of consecutive patients undergoing cancer surgeries, and the baseline expertise of clinicians treating patients with cancer will encourage varying configurations of cccs and mcs. More research is required into how such an infrastructure could be organized and evaluated for optimal patient care at a population level.

Our study does have weaknesses. First, it was conducted in a single institution, and results might not be generalizable to other hospitals and geographic areas. However, we reported similar results in a study involving surgeons from all 11 LHIN4 hospitals, as did a study at the Roswell Park Cancer Institute involving surgeons participating in a gastrointestinal mcc¹³. Our results are also in line with those of a systematic review of mcs⁶. Second, our cccs involved only surgeons with expertise in colorectal cancer surgery and a radiologist. The resulting final treatment recommendations—changed or not—might have been different if the cases had been presented in a traditional mcc. However, the speciality-focused nature of the ccc highlights the importance of conducting more research in the area of mcs. Questions could include these: What is the purpose of the mcc (that is, individual case care or ongoing quality assurance)? What format can enhance mcc function (for example, ccc or mcc format, or both)? How should mcs be evaluated?

Finally, although cccs resulted in changes to the treatment recommendations in 35% of cases, we cannot determine which factors led to those changes, whether

treatment recommendations were followed, or whether changes led to improvements in long-term outcomes such as survival. Many studies in the area of MCC research unfortunately suffer from the same weaknesses. We are currently modifying the collection of data in our CCC to better delineate factors leading to treatment recommendation changes, and we are collecting data on the fidelity of subsequent treatment choices after CCC review and on patient outcomes.

Our observed high rates of change in treatment recommendations suggest variation in the processes of care provided by participating surgeons. Standardization of processes of care can help with the identification of potential quality gaps and plans to address those gaps¹⁴. Our study design and results should encourage surgeons toward better collaboration with fellow surgeons when treating patients with rectal cancer. Closer collaboration could potentially also be beneficial in other cancer and non-cancer conditions.

CONFLICT OF INTEREST DISCLOSURES

We have read and understood *Current Oncology's* policy on disclosing conflicts of interest, and we declare that we have none.

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