Quality of Oncologic Surgery in the Emergency Setting: Colorectal cancer as a Model

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INTRODUCTION

The quality of oncologic surgery is typically discussed under ideal circumstances, in which patients undergo appropriate staging, complex cases are reviewed at multidisciplinary tumor boards, and treatment is delivered at specialized referral centers with access to advanced imaging, endoscopy, pathology, and local and systemic therapies within a structured treatment pathway and follow-up program. However, a substantial proportion of patients with colorectal cancer (CRC) do not follow this pathway. Many enter the healthcare system through the emergency department with obstruction, perforation, bleeding, sepsis, anemia, pain, or clinical deterioration. In these situations, surgery becomes not only a planned technical procedure, but also a decision made under pressure, with incomplete information, variable resources, and substantial risk.

In the emergency setting, beyond disease-related factors, two questions directly influence outcomes: where will the patient be treated, and who will operate? In many healthcare systems, patients presenting with oncologic emergencies are managed in general hospitals, frequently by on-call general surgeons without formal training in surgical oncology or colorectal surgery. This observation should not be interpreted as criticism of emergency surgeons, but rather as recognition of a healthcare reality: emergencies expose structural, educational, and organizational limitations in oncologic care delivery.

CRC is a particularly suitable model for this discussion. It is among the most common malignancies worldwide, with its global burden projected to increase substantially over the coming decades.1 Moreover, a considerable proportion of patients still present with acute complications, most commonly obstruction, perforation, or bleeding. Unlike many other malignancies, CRC provides objective and measurable indicators of surgical quality, including staging, operative approach, extent of resection, margin status, lymph node yield, stoma creation, morbidity and mortality, readmission, reoperation, disease-free survival (DFS), and overall survival (OS).

The central question, therefore, is not whether emergency CRC surgery is associated with worse outcomes; the evidence consistently confirms that it is.

Compared to elective surgery, emergency procedures result in increased morbidity and mortality, longer hospital stays, higher readmission and stoma rates, and poorer oncologic outcomes.[2–5]

The more relevant question is which adverse outcomes are unavoidable given the patient's clinical presentation, and which can be improved through better organization and delivery of care.

Quality Indicators in Emergency Oncologic Surgery

Healthcare quality may be defined as the ability to deliver care that is safe, effective, timely, efficient, equitable, and patient-centered.[6] In surgical oncology, however, the assessment of quality is complex. Quality indicators evolve over time, vary across tumor types, and depend on multiple phases of care. Donabedian's classic framework—structure, process, and outcomes—remains useful for organizing this evaluation.[7]

In emergency colorectal surgery, structural indicators include availability of CT imaging, endoscopy, intensive care, blood banking, anesthesia support, pathology services, antibiotics, nutritional support, surgical teams, specialist consultation, transfer capability, and institutional protocols. Hospital volume, team experience, and continuity of oncologic care must also be considered.

Process indicators are among the most important, and paradoxically among the most difficult to measure. These include recognition of suspected malignancy; accurate preoperative staging; explicit definition of therapeutic intent (curative, palliative, or damage-control); appropriate selection among resection, diversion, primary anastomosis, or stoma creation; adherence to oncologic resection principles; achievement of adequate surgical margins; performance of lymphadenectomy appropriate to tumor location; and detailed documentation of intraoperative findings. In colon cancer, retrieval of at least 12 lymph nodes remains an established quality indicator of adequate pathologic staging and has been associated with improved oncologic outcomes.[8]

Outcome indicators should not be limited to in-hospital mortality. Evaluation should include 30- and 90-day mortality, postoperative morbidity, surgical site infection, anastomotic leak, intensive care unit (ICU) utilization, reoperation, readmission, length of stay, permanent stoma formation, margin positivity, timely initiation of adjuvant therapy, DFS, OS, and, whenever feasible, patient-reported outcomes and quality-of-life measures.

Operative documentation deserves particular emphasis. In oncologic surgery, the operative report is not merely an administrative requirement, but a critical instrument for patient care, communication, quality assessment, and research. In the emergency setting, incomplete operative reports may preclude to determine whether oncologic principles were respected. Whenever feasible, the report should document tumor location, extent of disease, perforation or contamination, suspected invasion of adjacent organs, metastatic disease, intraoperative staging assessment, type of resection performed, margin status, lymphadenectomy, justification for primary anastomosis or stoma creation, and operative intent. What is not documented cannot be

audited, and what cannot be audited is unlikely to improve.

Who Should Operate: General Surgeon, Colorectal Surgeon, or Surgical Oncologist?

CRC highlights a practical dilemma: who should operate on the patient presenting to the emergency department with obstructing or perforated colon cancer? The general surgeon experienced in emergency surgery but without formal oncologic training, or the colorectal surgeon or surgical oncologist, who may have less exposure to routine emergency procedures? The answer should not be based on a rigid, corporate model. Optimal care is achieved not by placing specialists in opposition, but by integrating their complementary expertise.

In practice, many patients presenting with CRC emergencies are treated in general hospitals by general surgeons, often in lower-volume institutions. In one series, elective procedures were performed by colorectal surgeons in 37% of cases, surgical oncologists in 10%, and general surgeons in 53%; in urgent settings, these proportions were 19%, 10%, and 70%, respectively.[9] These findings underscore that the majority of CRC emergencies will continue to be managed by general surgeons. Accordingly, effective solutions cannot rely solely on the availability of subspecialists for every emergency call schedule.

The issue is not whether every emergency surgeon should become a colorectal surgeon or surgical oncologist. Rather, every patient presenting with an oncologic emergency should receive an operation guided by minimum oncologic quality standards. Studies suggest that specialization, hospital volume, and organization of care may influence outcomes, although the impact of these variables appears more complex in emergency settings than in elective surgery.[10,11] In some circumstances, experienced emergency surgeons may achieve acceptable oncologic results; in others, the absence of oncologic training, standardized protocols, and institutional support may increase the risk of inadequate resection, positive margins, or insufficient lymphadenectomy.

The discussion, therefore, must move beyond the individual surgeon and focus on the healthcare system. Who performs the operation is important, but so are the hospital environment, time of care, resource availability, operative documentation, institutional protocols, transfer capability, postoperative multidisciplinary discussion, and access to adjuvant therapy.

Outcomes in the Emergency Setting: Complications, Recovery, and Survival

Patients with CRC operated on in the emergency setting frequently have less access to preoperative staging studies, a lower likelihood of complete staging, and a higher probability of requiring procedures such as Hartmann's operation, stoma formation, and unplanned segmental resections.[3,4] They have also been reported to have an increased risk of positive margins, a lower number of lymph nodes retrieved in some series, longer length of stay, higher readmission rates, and worse survival outcomes.[4,5]

In the series by Wanis et al.,[4] patients undergoing emergency resection for colon cancer had worse five-year disease-free and overall survival compared with those treated electively. Xu et al.[5] demonstrated that emergency colectomies were more frequently performed in community hospitals and lower-volume centers and were associated with a higher likelihood of positive margins, inadequate lymph node assessment, increased unplanned readmission, and worse overall survival. These findings support the concern that emergency presentation may compromise both perioperative and oncologic outcomes.

However, interpretation of these findings requires caution. Patients presenting in the emergency setting are not equivalent to those undergoing elective surgery. They are often older, more frail, have greater comorbidity burden, more advanced disease, higher inflammatory or infectious status, and less prior access to screening programs. Emergency presentation may also reflect socioeconomic vulnerability and delayed diagnosis.[12] In adjusted analyses, some authors suggest that part of the poorer outcomes is driven more by clinical and biological factors than by the emergency setting itself.[13]

This distinction is fundamental. Emergency presentation does not inherently compromise oncologic quality, but it does increase the risk of doing so. The worse prognosis may reflect a combination of advanced disease, poor physiological reserve, delayed diagnosis, structural constraints, lack of multidisciplinary planning, and potential technical limitations. Therefore, the most meaningful conclusion is not that emergency surgery is "worse," but that it requires dedicated mechanisms to safeguard quality of care.

Strategies to Improve Quality

Quality improvement requires a minimum set of actions. First, the definition of specific quality indicators. Second, the development of prospective registries, preferably multicenter or national. Third, the standardization of oncologic operative reporting in the emergency setting. Fourth, the development of practical manuals for the most common oncologic emergencies, starting with obstruction and perforation in CRC. Fifth, the establishment of criteria for transfer and postoperative multidisciplinary discussion. Sixth, investment in formal training of frontline professionals.

Multidisciplinarity, considered a cornerstone of quality in oncology, must be adapted to the emergency setting. It is not always possible to discuss the case before surgery, but minimal workflows can be established: communication with medical oncology, coloproctology, or surgical oncology when available; definition of transfer criteria; early postoperative multidisciplinary discussion; appropriate pathological review; and timely referral for systemic therapy when indicated. Emergency presentation should not be regarded as an isolated event in the continuum of care, but rather as a critical stage in the oncologic care pathway.

In this context, as the result of a collaboration between the Brazilian College of Surgeons (Portuguese acronym CBC) and the Brazilian Society of Surgical Oncology (Portuguese acronym SBCO), the Advanced Oncological Life Support (AOLS) has been proposed. This ongoing Brazilian initiative represents a natural evolution in the organization of care for oncologic patients presenting in the emergency setting. We advocate for the development of an advanced support program for oncologic emergencies, modeled after established courses such as ATLS, but tailored to the specific needs of cancer patients: early recognition, resuscitation, decision-making, preservation of oncologic principles, appropriate documentation, and planning of follow-up after the acute event.[14] AOLS aims to disseminate a minimum standard of oncologic quality among professionals managing cancer patients in emergency departments, including abdominal emergencies related to CRC.

Although this initiative originates in Brazil, the underlying problem is shared by many Latin American health systems: inequitable access, insufficient screening, delayed diagnosis, structural heterogeneity, overcrowded general hospitals, and limited access to referral to specialized centers. CRC, given its frequency and the availability of measurable indicators, may serve as a starting point for a broader program to assess the quality of emergency oncologic surgery.

CONCLUSION

Patients with CRC do not choose to present as an emergency. The health system, however, determines whether such presentations are merely acts of rescue or opportunities to preserve oncologic quality. Emergency care does not obviate the need for sound surgical and oncologic principles; on the contrary, it makes their consistent application even more critical.

CRC should serve as an initial model, given its frequency, measurability, and the availability of objective quality indicators. Improving outcomes requires the identification of modifiable factors, enhancement of data collection systems, establishment of clearly defined quality metrics, strengthening of professional training, development and implementation of standardized protocols, and full integration of emergency care into the colorectal cancer care pathway. The contemporary challenge is

not only to operate faster, but to operate better, even when time is limited.

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REFERENCES

1. Morgan E, Arnold M, Gini A, et al. Global burden of CRC in 2020 and 2040. Gut. 2023;72(2):338-344.
2. Zhou H, Jin Y, Wang J, et al. Comparison of short-term surgical outcomes and long-term survival between emergency and elective surgery for CRC. Int J Colorectal Dis. 2023;38(1):41.
3. Guidolin K, Withers R, Shariff F, Ashamalla S, Nadler A. Quality of colon cancer care in patients undergoing emergency surgery. Curr Oncol. 2021;28(3):2079-2086.
4. Wanis KN, Ott M, Van Koughnett JAM, Colquhoun P, Brackstone M. Long-term oncological outcomes following emergency resection of colon cancer. Int J Colorectal Dis. 2018;33(11):1525-1532.
5. Xu Z, Becerra AZ, Aquina CT, et al. Emergent colectomy is independently associated with decreased long-term overall survival in colon cancer patients. J Gastrointest Surg. 2017;21(3):543-553.
6. Hardt JL, Merkow RP, Reissfelder C, Rahbari NN. Quality assurance and quality control in surgical oncology. J Surg Oncol. 2022;126(8):1560-1572.
7. Donabedian A. Evaluating the quality of medical care. Milbank Mem Fund Q. 1966;44(Suppl):166-206.
8. Shulman LN, Browner AE, Palis BE, et al. Compliance with cancer quality measures over time and their association with survival outcomes: the Commission on Cancer's experience with at least 12 lymph nodes in colon cancer resections. Ann Surg Oncol. 2019;26(6):1613-1621.
9. Patel SV, Patel SVB, Brackstone M. Emergency surgery for CRC does not result in nodal understaging compared with elective surgery. Can J Surg. 2014;57(5):349-353.
10. Huijts DD, Dekker JWT, van Bodegom-Vos L, et al. Differences in organization of care are associated with mortality, severe complication and failure to rescue in emergency colon cancer surgery. Int J Qual Health Care. 2021;33(1):mzab038.
11. Schrag D, Cramer LD, Bach PB, Cohen AM, Warren JL, Begg CB. Influence of hospital procedure volume on outcomes following surgery for colon cancer. JAMA. 2000;284(23):3028-3035.
12. Gunnarsson H, Ekholm A, Olsson LI. Emergency presentation and socioeconomic status in colon cancer. Eur J Surg Oncol. 2013;39(8):831-836.
13. Weixler B, Warschkow R, Ramser M, et al. Urgent surgery after emergency presentation for CRC has no impact on overall and DFS: a propensity score analysis. BMC Cancer. 2016;16:208.
14. Ferreira FO, Lima TMA, Utiyama EM, Oliveira AF, Von Bahten LC, Ribeiro HSC. Quality of emergency oncological surgery: time for advanced oncological life support. Rev Assoc Med Bras. 2024;70(Suppl 1):e2024S109.