

Emergency Surgery for Colorectal Cancer in Patients Aged Over 90 Years: Review of the Recent Literature

De Simone Belinda, Catena Fausto

De Simone Belinda, Catena Fausto, Department of Emergency and Trauma Surgery, University Hospital of Parma, Italy

Correspondence to: De Simone Belinda, Department of Emergency and Trauma Surgery, University Hospital of Parma, V. Gramsci 15, 43100, Parma, Italy

Email: desimoneB@hotmail.it

Telephone: +390521703040

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ABSTRACT

The aging of the world population is leading to an increase in the number of patients aged over ninety needing for a surgical treatment in emergency setting. Colorectal cancer in people over 90 years of age represents an ethical dilemma for surgeons and oncologists, above all when the neoplastic disease is advanced and complicated by obstruction and/or perforation. The emergency surgeon often has the crucial role of selecting which patients to submit to surgery, balancing the benefits and the high surgical risk associated with frailty, polypharmacy and comorbidities. We decided to review the recent literature to discuss the latest strategies in the management of colorectal cancer in emergency situations, for patients aged over ninety.

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Key words: Emergency surgery; Colorectal cancer in emergency; Oncogeriatric patients; Colorectal cancer obstruction; Colorectal cancer in nonagenarians

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INTRODUCTION

Colorectal Cancer (CRC) is a disease that predominantly affects el-

derly people; approximately 60% of patients are aged >70 years at time of diagnosis and 43% of cases are aged >75 years in the western countries^[1-3].

These proportions will likely continue to increase in the near future, because of the increasing percentage of people living past ninety years, a phenomenon associated with the aging world population.

In Italy, according to the Italian National Institute of Statistics (ISTAT) data, the population aged 85 and older will increase from 2.8% in 2011 to 7.8% in 2050, reaching an average life expectancy of 85.3 years for males and 90.5 years for females.

This highly significant demographic change in modern society has an important impact on health care, especially in cancer care, as cancer in people aged over 90, poses an ethical dilemma for surgeons and oncologists: non operative management or medical and/or surgical treatment? To treat is an over treatment?

In clinical practice, the management of this group of patients is frequently suboptimal, consequently an increasing number of nonagenarian CRC patients are admitted in emergency departments, requiring surgical treatment.

Generally, emergency abdominal procedures are associated with increased morbidity and mortality rates, particularly for frail elderly patients. The emergency surgeon often has the crucial role of selecting which patients to submit to surgery, balancing the benefits and the high surgical risk associated with comorbidities.

Another important issue to consider is the high costs of the postoperative care for this group of patients which frequently demand rehabilitation and longer recovery, even after minor surgery.

We decided to review the recent literature to discuss current strategies in the management of oncogeriatric patients aged over ninety in emergency.

MATERIALS AND METHODS

We performed a search by Cochrane Library, MEDLINE, and EMBASE for potentially relevant scientific articles on emergency surgery for colorectal cancer in nonagenarian patients. We considered in our review all the scientific papers published in the last ten years up to June 2015. We included in this study randomized controlled

trials, systematic review of the recent literature, retrospective study on large case series, prospective observational study and meta-analyses. The aim of our review is to highlight new strategies in the treatment of the patients aged > 90 years, requiring emergency abdominal surgery because of complications of colorectal cancer.

We used the search terms: “abdominal surgery in elderly”, “oncogeriatric patient management”, “colorectal cancer in elderly”, “emergency surgery in nonagenarians”, “geriatric surgery”, “bowel obstruction in nonagenarians”, and “peritonitis in nonagenarians”.

All the studies in English available, judged relevant for the review, were included in the references.

EMERGENCY ABDOMINAL SURGERY FOR CRC IN ELDERLY: DIAGNOSIS AND PREOPERATIVE ASSESSMENT OF SURGICAL RISK

The worldwide increase in the elderly population is leading to the increase of patients aged over 90 years needing surgical treatment in an emergency setting.

Often, very elderly patients are admitted in emergency departments with serious complications of a gastrointestinal neoplastic disease, most frequently CRC.

In the majority of cases, clinical features such as bowel obstruction and acute abdomen, are the primary manifestation of the colic neoplastic disease or they represent its late complications in patients judged unfit for elective surgery, because of advanced age, or in patients who had refused surgical and medical treatment.

The diagnosis of acute abdomen can be delayed because of the absence of clinical symptoms such as abdominal pain, and the bowel obstruction can be initially confused with the habitual constipation.

At admission, common symptoms include severe asthenia, anorexia, dyspnea, nausea, vomiting, chronic abdominal pain without defense at the clinical examination, and rarely fever. Consequently, the difficulty in obtaining an accurate history, the mild character of symptoms and the diminution of sensibility at exploration are responsible for the delay in surgical decision-making, the progress of the disease state and the increase in mortality.

Computed tomography (CT) is the diagnostic radiological test for patients with acute abdomen.

Ong and Al retrospectively analyzed data on 144 patients aged 60 years and older who had undergone emergency abdominal surgery because of perforated or gangrenous viscus and strangulated hernia; he concluded that delays in performing emergency surgery in elderly lead to higher complication rates and that early CT scans may facilitate prompt diagnosis of certain abdominal emergencies where presentation is more equivocal and improve surgical outcomes^[4]; Reginelli and Al retrospectively analyzed data from 126 patients aged 65 years and older who presented to the emergency department with acute abdominal pain, with the aim of assessing the diagnostic performance of abdominal CT; he showed that, in the care of elderly patients, CT is accurate for diagnosing the cause of acute abdominal pain, particularly when it is of gastrointestinal surgical origin^[5].

There is no consensus about the optimal surgical management of elderly people affected by CRC, but there is worldwide agreement that compared to younger patients admitted to an acute care surgery service, patients over 80 years old have a higher risk of postoperative complications, with increased morbidity and mortality rates^[1,2,6], despite improvements in preoperative care, surgical techniques and advancements in anesthesiology and intensive therapies.

Smothers carried out a case control study on 184 patients submitted

to primary surgery in elective and emergency setting for colon cancer and highlighted that overall surgical morbidity and mortality were significantly high for patients undergoing emergency surgery, without difference in overall survival between patients undergoing emergency compared with elective operation; then he concluded that emergency surgery has a strong negative influence on immediate surgical morbidity and mortality without distinguish patients by the age^[7].

Most probably this is related to the degree of severity of the patient at admission. Elderly people represent a heterogeneous group of patients, ranging from very fit to very frail individuals consequently with decreased physiological reserves, due to chronological age and biological changes, making these patients vulnerable to any stressful event^[8-9].

There is a lack of studies evaluating early and late outcomes of emergency abdominal surgery in the cohort of patients aged over ninety years affected by colorectal cancer.

The emergency surgeon often has the crucial role of selecting patients who may benefit from a surgical treatment in emergency settings, considering the high surgical risk due to comorbidities, polypharmacy, and advanced age. These surgeons must decide whether to administer the treatment with palliative or curative intent, and clearly communicate the decision to the relatives. Because of these problems, surgeons require a model or a score system to use in the preoperative evaluation to predict postoperative mortality in patients older than 90 years.

Chronological age cannot be the only selection factor to consider in the decision making, as a considerable number of elderly patients will continue to live with good functions and excellent quality of life after emergency surgery^[9-12].

This is due to the great variation in individual health status with increasing age: physiological/biological age does not always reflect chronological age.

The patient aged over ninety is often defined as frail to indicate his weak or vulnerable status, sustained by co-existing chronic diseases and poly-pharmacy; we have to understand that it is a physiological status that comes with age. In literature, the “frailty phenotype” is defined by the presence of five criteria including: unintentional weight loss, self reported exhaustion, weakness (grip strength), slow walking speed and low physical activity^[9]. Many frailty screening tests among elderly patients qualified for emergency abdominal surgery are available. Kenig in a prospective study conducted on 184 patients \geq 65 years of age, evaluated the diagnostic accuracy of the Vulnerable Elderly Survey (VES-13), Triage Risk Screening Tool (TRST), Geriatric-8 (G8), Groningen Frailty Index (GFI), Rockwood, Balducci score; the outcome measured using these tests were sensitive and specific values that predict 30-day postoperative outcome. He concluded that it is possible to safely and efficiently perform screening tests for frailty in older patients who are potential candidates for emergency surgery.

The VES-13 survey was determined to be the best screening instrument for its highest sensitivity and negative predictive value both for postoperative mortality and morbidity, by asking simply questions about independent living^[13].

Gomes et Al, in a retrospective observational longitudinal study conducted on a population of patients aged > 80 years, compared the predictive values of the Physiological and Operative Severity Score for the Enumeration of Mortality and Morbidity (POSSUM), the Portsmouth (P) POSSUM, the ColoRectal (CR)-POSSUM, and CR-BHOM in colorectal surgical mortality and morbidity in elective and emergency setting. Gomes concluded that CR POSSUM was the best predictor of surgical mortality and morbidity; POSSUM and

P POSSUM underestimated surgical mortality and morbidity and CR BHOM overestimated surgical mortality, but none of the scores showed sufficient discriminatory power to have clinical application value.

Moreover Gomes stated that in elderly patients, it is the patient's health status and not the type of surgery that is primary indicator mainly responsible of surgical outcomes^[14].

In emergency conditions, it could be difficult to administer any type of survey because of the altered cognitive status of the patient and sometimes impedes accurate pre-surgical evaluation (nutritional and functional status): emergency surgery may often be performed as a lifesaving procedure and timing of surgery is the primary goal.

The American Anesthesiology Association (ASA) classification can be quickly determined on admission and it has been shown in literature to be predictive of complications and mortality. Recent retrospective studies^[8] demonstrated that high ASA class is associated with high mortality following emergency surgery.

SURGICAL TECHNIQUES AND OUTCOMES

When deciding the course of treatment, the primary objectives of the emergency surgeon are the maintenance of the independence status, life expectancy and quality of life of the elderly patient needing for surgery.

In literature, the surgical treatment of large bowel obstruction for cancer depends on^[15-20]: location of the colic obstruction, intraoperative local findings, patient's general condition and nutritional status, and experience of the surgeon^[21-22].

Right hemicolectomy with primary anastomosis, eventually extended to the transverse colon, is indicated for right sided lesions or transverse colon obstructing cancers.

In case of left sided lesions, surgical treatment is still debated and includes:

(1) Primary resection and anastomosis associated with on-table irrigation or manual decompression of the colon (one stage procedure): it prevents the confection of a loop colostomy but presents the risk of anastomotic leakage;

(2) The Hartmann's procedure (two stage surgery) which allows the treatment of both obstruction and cancer and prevents anastomotic leakage but needs a second operation to reverse the colostomy;

(3) Three stage procedure (decompressive colostomy-colic resection-colostomy's closure);

(4) Subtotal or total colectomy with/without primary anastomosis: is indicated in cases of diastatic colon perforation or synchronous right colonic cancer;

(5) Temporary or definitive loop colostomy/ileostomy, in case of important bowel dilatation proximal to obstruction, advanced neoplastic disease or peritoneal carcinomatosis, because of the high risk of anastomotic leakage^[20-22].

In literature, many studies reported the increasing number of operative procedures involving the creation of an intestinal stoma. Use of these seem to increase as the population ages^[23]; this is probably due to the high risk of anastomotic dehiscence in frail nonagenarian patients, even if many authors reported that if patient do not show hypoalbuminemia, the surgeon may be able to perform an emergency operation with low risk of surgical mortality^[24].

In a retrospective study on 238 patients undergoing operations for CRC in elective and emergency condition, Formisano et Al showed that obstructing colorectal cancer is associated with a high operative mortality and a worse prognosis, in terms of recurrence and survival. In his experience, immediate resection with primary anastomosis

represents the gold standard in selected patients, those with a low anaesthetic risk, performed either as a typical resection with wash-out, or a subtotal colectomy. A temporary defunctioning colostomy or ileostomy could be proposed for patients with an intermediate risk. In high-risk cases, advanced obstruction, simultaneous colonic perforation, metastatic or locally advanced disease, Hartmann's operation should be used, as a safer procedure. Formisano concluded that colon stenting can be an useful palliative or bridge-to-surgery option^[25].

After a consensus conference on the management of the obstructing cancers of the left colon, Ansaloni et Al stated that primary resection and anastomosis with manual decompression seems the procedure of choice; loop colostomy and staged procedure should be adopted in extreme case, when neoadjuvant therapy could be expected; Hartmann's procedure should be performed in case of high risk of anastomotic dehiscence; subtotal and total colectomy should be attempted in the presence of cecal perforation or synchronous colonic neoplasm^[26].

Some authors evaluated the use of laparoscopy in selected colorectal cancer patients, undergoing emergency surgery, highlighting benefits in terms of short term and oncological outcomes^[27], but there are no studies focused on elderly patients needing emergency surgery.

It is difficult to evaluate surgical outcomes in nonagenarians in terms of morbidity and mortality rate; life expectancy decreases with increasing age independent of the diagnosis of colorectal cancer and emergency surgery for obstructive lesions.

Several studies found similar disease specific survival for elderly and young colorectal cancer patients^[28-31], but difference in overall survival; this means that the increase of mortality in oncogeriatric patients is due to competing causes of death and not to CRC. Consequently decreased survival in the elderly is mainly due to differences in early mortality^[28,32-36].

Some authors showed that time between admission and surgery doesn't increase morbidity and mortality rates^[29]; others, demonstrated that delays in performing emergency surgery in elderly patients leads to higher complication rates^[3,30].

Length of hospital stay is longer for patients aged over ninety than for younger patients and surgical treatment of CRC in emergency condition is a potential promoter of permanent disability in frail and vulnerable nonagenarian patients. In fact, discharge is often to long care facilities, with high costs for the public health.

Postoperative delirium is a frequent complication among elderly patients. The incidence of PostOperative Delirium (POD) is high for both emergency and elective surgery, leading to an increase in hospital stay and perioperative mortality^[37,38]. Ansaloni et Al. affirmed that to minimize POD, associated risk factors of co-morbidity, cognitive impairment, psychopathology and abnormal glycaemic control must be identified and treated^[37].

NON OPERATIVE MANAGEMENT

In emergency conditions, non-operative management has to be considered in the treatment of very elderly patients (laser therapy, emergency endoscopy and colonic stenting) with palliative or curative intent, in advanced neoplastic disease or in very elderly patients judged unfit for surgery in emergency setting^[39,40].

Colonic stents represent the best option when the surgeon skills are available.

Several studies demonstrated that endoscopic self-expanding metal stent (SEMS) placement, used as a bridge to surgery for acute ma-

lignant colonic obstruction, increase the primary anastomosis rate in patients with left sided lesion^[38], with long term oncologic outcomes comparable to those of primary curative surgery^[39-41]. The optimal timing for surgery after stenting should be within 5 days^[39] to obtain the best results. Anyway colonic stenting (CS) for palliation or as bridge to surgery carries risks and potential complications (migration of the stent or colic perforation); in a retrospective study conducted on 126 patients hospitalized for acute large bowel obstruction, Boyle affirmed that CS is more likely to be successful in shorter, malignant strictures with less angulation, distal to the obstruction^[42].

CONCLUSION

Few studies are focused on emergency abdominal surgery on nonagenarian patients; rare are the studies on nonagenarian patients affected by complicated colorectal cancer in emergency conditions.

An increasing number of very elderly (>90 years of age) patients are admitted to emergency departments needing surgery for complications of CRC such as colic obstruction or perforation.

Elective surgery is the best way to manage CRC in all patients affected and physicians should early recognize signs and symptoms suspicious for colorectal malignancy in this group of patients.

We cannot judge healthy elderly patients unfit for surgery and medical treatment based solely on their chronological age.

Many authors reported that emergency surgery for CRC in patients over 90 years of age can be performed safely^[15,26,29,43].

Old age itself is not an independent negative prognostic factor for CRC surgery.

Careful selection and preoperative evaluation of the patient maximizes surgical outcomes.

To avoid delay in surgical treatment, TC is the best diagnostic radiological test in elderly patients.

ASA classification, evaluating the global health status of the patient is the best tool quickly available for the emergency surgeon to assess individualized risk with high predictive value for postoperative morbidity and mortality.

Emergency surgery for ASA I-III nonagenarians patients is feasible with good outcomes in terms of overall in hospital mortality and overall survival at follow up.

The dosage of albuminemia (nutritional status) and the degree of independence of the patient in the daily activities before hospitalization (quality of life) have to be considered in the preoperative evaluation of the geriatric patients.

In emergency settings, one-stage surgery is the best choice, when possible, in selected patients; two stage surgery is indicated in case of peritonitis, in patients hemodynamically unstable and in case of malnourished patients (hypoalbuminemia), due to the high risk of anastomotic leakage^[44], decompressive colostomy or ileostomy is indicated as bridge to elective surgery in operable patients, or as palliative procedure, in advanced neoplastic disease and peritoneal carcinomatosis.

Cennamo and Al recently carried out a meta-analysis of randomized trials comparing endoscopic stenting and surgical decompression for colorectal cancer obstruction and concluded that in patients with acute colorectal obstruction, SEMS placement improves several outcomes, such as primary anastomosis, stoma formation, and permanent stoma, while it failed to show an improvement in mortality and morbidity risk^[45].

The use of colorectal stents should be considered, whenever appropriate, both as bridge to surgery and as palliative procedure.

In conclusion, in emergency settings, ASA I-III nonagenarian

patients with no hypoalbuminemia and high independence in the daily activities, have the same surgical risk as younger patients and can be undergone surgery with good outcomes.

A multidisciplinary approach to oncogeriatric patients and evidence-based clinical guidelines in their management in emergency situations, are necessary to offer the optimal disability-free treatment and to preserve life expectancy and overall survival.

CONFLICT OF INTERESTS

The authors declare no conflicts of interest in this work.

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Peer reviewers: Chun-Ru Chien, Associate Professor, Department of Radiation Oncology, China Medical University, Taichung, Taiwan; Jeffrey Michael Farma, Fox Chase Cancer Center, Department of Surgical Oncology, Philadelphia, USA.