SHORT COMMUNICATION

Defunctioning stoma in high ASA grade, aged patients, with bowel occlusion due to advanced cancer: is it still worthwhile?

Corrado R. Asteria · Gabriella Nesi · Chiara Minari · Paolo Viganò

Abstract

Purpose The aim of this study was to assess the role of defunctioning stoma (DS) in elderly high-risk patients with bowel obstruction from advanced colorectal cancer, by exploring consistent variables of outcome, because every other procedure was unfeasible.

Materials and methods A 6-year survey in a single surgery unit (between 1999 and 2004) was retrospectively evaluated, allowing to collect a cohort of 75 patients, aged over 65, who overall presented such critical condition. Pre-operatively, American Society of Anaesthesiologist grade classification was used. Post-operative course was monitored by focusing on gauging symptom relief. So, a validated assessment scale was employed to evaluate physical distress symptoms, graduated on a Likert scale and compared at baseline and day 7, on days 7 and 30, post-operatively. Length of hospital stay (LHS), morbidity, in-hospital (within 30 days) and overall mortality (within 6 months) were also assessed. Paired t test was used as statistical analysis to ascertain improvement of symptoms.

Results All symptoms improved significantly (range, $p < 0.05$ to $p < 0.01$) within the surveyed time, with exception of vomiting on day 30 ($p = 0.14$). Average LHS was 22.8 (standard deviation, ±3.856) days. Overall morbidity was detected in 68 (91%) patients. In-hospital and overall mortality rates accounted for 27 (35.8%) patients and for 48 (100%) patients, respectively.

Conclusions The role of DS was effective to improve symptom relief but was poor in terms of morbidity and mortality control. So, ethical concerns have to be addressed, and medical treatment or stenting for left-side obstructions only should be considered as alternative procedures.

Keywords Defunctioning stoma · Bowel occlusion · Advanced colorectal cancer · American Society of Anesthesiologists classification

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Introduction

The advantage of defunctioning stoma (DS) in elderly high-risk patients with bowel occlusion from advanced cancer is not clearly defined. On reviewing all colorectal procedures with associated stoma performed in our department between 1999 and 2004, we assessed retrospectively a series of patients with bowel occlusion due to advanced neoplastic disease who underwent DS within 24 h of admission. All cases had a high American Society of Anaesthesiologist (ASA) score class, due to severe co-morbidities, and the primary end point of treatment was mere relief of symptoms. The aim was to critically evaluate the adequacy of the clinical decision, as well as to highlight specific moral dilemmas, a topic of recent debate among surgeons [1].

Materials and methods

Between 1999 and 2004, 221 patients were admitted to the Surgery Unit of Mantua Hospital for colorectal cancer and underwent procedures with stoma. Among these ones, we found 75 patients, aged over 65, who presented acute bowel occlusion due to advanced cancer. Advanced malignancy was defined as the presence of distant metastasis at the time of surgery or a recurrent, locally advanced tumour. Thus, the only stoma was carried out as an urgent or emergency procedure. Palliative surgery was considered unsuitable in cases of widespread malignancy according to clinical practice recommendations [2]. Exclusion criteria were adopted as follows: recent laparotomy or video laparoscopy showing diffuse neoplasm, palpable abdominal masses, proximal stomach involvement and massive ascites. Thus, the other 23 patients with these characteristics were found but not considered, although their outcome was surveyed.

Pre-operative clinical assessment enabled identification of two groups of patients affected by colorectal malignancies and the other by genito-urinary malignancies causing bowel occlusion anyway. Demographic data concerned age and sex distribution, clinical symptoms and signs, blood samples and radiological investigations, including computerised tomography scan in those patients whose cancer had not yet been diagnosed. Stage, histotype and site of the tumour were determined. Patient's surgical risk was assessed regarding any pre-morbid conditions. Likewise, incidence and severity of associated organ failure were investigated. Furthermore, a consultant anaesthesiologist was requested to define risk classification according to the ASA graduation.

The decision to perform DS alone, together with the high ASA score, was influenced by the advanced stage of the tumour, while a laparotomy with stoma was to be carried out when malignancy was not known. Pre-operatively, before DS, we always discussed with the patients and their relatives, so as to make them aware of the reasons for avoiding major surgery.

The following parameters were reviewed: the number of stoma alone compared to the number of stoma with laparotomy, location of obstruction and DS distribution. Alternative methods of dealing with large bowel obstructions (stent-application and on-table lavage) were not employed.

In order to classify symptom relief, a validated patient-rated instrument of quality of life (QoL), i.e. the memorial assessment scale symptom short form (MSAS-SF), was employed. In detail, it quantitatively measures 12 physical distress symptoms (PHYS), according to the method described by Chang et al. [3]. In our study, the assessment was limited to those seven PHYS (constipation, pain, vomiting, drowsiness, lack of appetite, lack of energy and dry mouth) that we recorded. The original graduation

system consisted of a five-point Likert rating scale, which was modified to three points (a little, 1.2; somewhat, 2.4; and very much, 3.6) to simplify the evaluation procedure. Each parameter was assessed on hospital admission (corresponding to baseline) and on days 7 and 30, post-operatively. Moreover, scores were compared at baseline vs day 7 and on day 7 vs day 30. A paired t test (Student) was used to assess each PHYS: it was expressed in mean value (MV) and standard deviation (SD) during the scheduled time, with confidence interval of 95%. A p value of less than 0.05 was considered statistically significant. Moreover, the average length of hospital stay (LHS) was calculated either as overall or with annual partition (MV, ±SD) in 71 patients, with the exclusion of those who had died within 7 days. Finally, two periods were considered separately (1999–2001 and 2002–2004) to compare LHS. The reason for this is that an intensive care unit (ICU) was more frequently used in the second time (2002–2004). This difference was merely random and did not depend on a change in the criteria related to respiratory distress, which are usually adopted for ICU admission.

Co-morbidities and complications were analysed to account for LHS. Mortality was evaluated in terms of in-hospital mortality (within 30 days of surgery) and overall mortality (within 6 months). A computerised stoma database is kept in our department to record clinical, surgical and pathological information, enabling a real-time audit of each patient.

Results

Over the 6-year period, palliative procedures accounted for 75 (33.9%) of the 221 overall procedures with stoma, either transient or permanent, performed on colorectal cancer patients. The demographic data showed an age distribution ranging from 66 to 97 years (median, 83.33). Sex distribution showed a prevalence of women (43 vs 32). All patients undergoing palliative surgery for bowel occlusion showed severe symptoms, and the stoma was intended to treat pain, pressure from bloating, nausea and faecal vomiting, rectal bleeding (always as poor leakage), dehydration, fever, immobility and cachexia. Pain was the most common symptom prompting surgery. Pre-operatively, the metabolic sequelae were the following: 66 (88%) patients showed volume depletion, 55 (73%) patients showed anaemia and 64 (85%) patients showed low serum albumin and clotting-time defects. Pre-operative consultation with an anaesthesiologist defined the ASA score: 61 (81.3%) patients were ASA 4 and 14 were (18.7%) ASA 5. Cancer had already been diagnosed in 57 (76%) patients and, consequently, DS alone was performed. The remaining 18 patients underwent laparotomy with DS. Seventy

Table 1 Stoma distribution and location of primary cancer

Stoma distribution	Cancer location				
	Right colon, number 7	Transverse, number 21	Left colon, number 27	Rectum, number 15	Uro-genital, number 5
Ileum	7	13			
Caecum		8	27		
Transverse				15	2
Sigmoid					3

patients had colorectal cancer and five had uro-genital cancer infiltrating the bowel. Furthermore, in those patients with uro-genital cancer, three had prostate cancer invading the rectum, and two had ovarian or uterine cancer occluding the bowel.

Surgical procedures were colostomy or ileostomy, the former in 55 (73.3%) patients. DS, together with laparotomy, was performed only when cancer was not pre-operatively diagnosed, while in the other cases (57 patients), only DS was used. Stoma was immediately opened in all cases, and either a loop or an end stroma was constructed. Intra-operative findings confirmed an inoperable tumour, making either resection or entero-enteric by-pass unfeasible. Location of obstruction and DS distribution are shown in Table 1.

PHYS scores significantly improved either on day 7 or on day 30. Tables 2 and 3 summarise the results of a paired t test, comparing PHYS scores at baseline vs day 7 and on day 7 vs day 30, respectively. The average LHS was 22.85 days (SD, 3,856). As the ICU was used in 18 patients (out of 35) in the years 2002–2004 compared to 12 patients (out of 36) in the years 1999–2001, we found that LHS was significantly higher (t, 3,356; $p<0.05$) in the second period considered.

General and early post-operative complications were related to exacerbation of previous single or multi-organ failure. Data refer to transient renal impairment, anaemia, metabolic sequelae, respiratory distress due to post-operative dysventilation or pleural effusion or pneumonia, and transient encephalopathy due to hepatic insufficiency. Sixty-eight (90.7%) patients presented co-morbidities that included respiratory distress (27 patients), anaemia with hypoproteinaemia (21 patients), renal impairment (13 patients) and cardiac decompensation (seven patients). All cases of respiratory distress were treated in the ICU. In-hospital mortality (within 30 days) accounted for 27 (35.6%) patients, with four patients (5.3%) dying in the first week. All the remaining 48 patients died in the following 6 months. The main causes of mortality were respiratory distress, cachexia, renal impairment and hepatic failure. The mortality rate did not depend on the location of the tumour, but all patients with uro-genital carcinomas died within 30 days. The 14 patients, previously classified as ASA 5 grade, also died within the same period.

All 23 patients, pre-operatively excluded for widespread malignancy, died within 10 days.

Discussion

Colorectal and genito-urinary carcinomas are age-related diseases. The second most common cancer in Italy affects the bowel and is the first malignant disease in the population between 65 and 84 years of age with 33,613 cases, amounting to 20.8% of overall registered malignancies [4]. Bowel obstruction is frequently the first sign of a malignant tumour, and surgery is palliative in 45.8% of cases [5]. There has been an increase in the number of patients undergoing palliative treatment, stoma, stent-application and on-table lavage, mostly under emergency conditions, and this situation will worsen as the population ages. Resection procedures have been considered alternative options, and several studies have emphasised their success [6, 7].

Table 2 Results of a paired t test comparing physical distress symptoms scores (mean values, including standard deviation) between two groups of 71 patients on baseline and on day 7 post-operatively

PHYS physical distress symptoms, *MV* mean value, *SD* standard deviation, *CI* confidence interval

PHYS (71 patients)	Score baseline MV (±SD)	Score day 7 MV (±SD)	CI 95%	P
Constipation (bloating)	3.549 (0.243)	1.875 (0.754)	3.16±0.20	<0.01
Pain	3.329 (0.580)	2.4 (0.863)	2.38±0.32	<0.01
Vomiting	3.333 (0.626)	2.030 (0.901)	2.59±0.34	<0.01
Feeling drowsy	2.773 (0.863)	2.328 (0.818)	0.74±0.28	<0.01
Lack of energy	3.566 (0.199)	3.109 (0.697)	0.63±0.24	<0.01
Lack of appetite	3.6 (2.054)	2.606 (0.814)	1.47±0.30	<0.01
Dry mouth	3.6 (2.054)	2.495 (0.755)	1.39±0.25	<0.01

Table 3 Results of a paired t test comparing physical distress symptoms scores (mean values, including standard deviation) between two groups of 48 patients on day 7 and on day 30 post-operatively

PHYS (48 patients)	Score day 7 MV (±SD)	Score day 30 MV (±SD)	CI 95%	P
Constipation (bloating)	1.733 (0.871)	1.5 (0.567)	0.23±0.20	<0.05
Pain	2.16 (0.835)	2.0 (0.555)	0.43±0.31	<0.01
Vomiting	2.1 (0.767)	2.8 (0.848)	0.20±0.27	0.14
Feeling drowsy	2.123 (0.774)	1.6 (0.740)	0.63±0.30	<0.01
Lack of energy	2.905 (0.726)	2.342 (0.802)	1.25±0.43	<0.01
Lack of appetite	3.043 (0.852)	2.864 (0.738)	0.75±0.44	<0.01
Dry mouth	2.789 (0.767)	2.295 (0.951)	1.05±0.47	<0.01

PHYS physical distress symptoms, *MV* mean value, *SD* standard deviation, *CI* confidence interval

The definition of palliation varies widely in surgical studies, based either on pre-operative intent or on post-operative factors, or else, patient prognosis [8]. Otherwise, the term palliative also refers to symptom and pain relief in terminally ill patients [9].

Epidemiological studies show that surgeons often have to decide whether or not to operate on elderly patients with dramatic symptoms, but the decision is usually influenced by patients and their relatives demanding "everything" be done to relieve their distress [10, 11].

As to this issue, some considerations seem necessary: First of all, advanced obstructive malignant tumours pose a clinical dilemma, as ensuring life quality has to be balanced against the risks of surgery and time of recovery. In this debate, Hardy highlights the lack of guidelines [12]. Secondly, the surgical approach should be subordinated to patient's survival [13]. Unfortunately, prospective clinical studies on palliative surgery are very few, with the exception of the literature on radiation therapy in oncology [14, 15]. A review reported that up to 72% of studies are retrospective, 9% prospective, 10% review articles and 9% case reports [16]. Moreover, other authors found a correlation between survival time of over 3 months and palliation failure, with only a marginal effect on life quality [17]. A national prospective study has recently shown a variation in post-operative mortality rates, depending on age, ASA grade and cancer excision and an advantage in terms of predicted outcome in three of the four ASA categories. Furthermore, resection surgery, when feasible, seemed to provide advantage in terms of predicted outcome. This effect diminished with increasing ASA score, indicating a similar outcome in patients who underwent cancer resection and in those who did not [18]. Other studies reported that self-expanding stents or emergency surgery is recommended for left-side obstructions only but requires subsequent DS in 13% and 50% of cases, respectively, thus revealing an unacceptable high rate of re-intervention [19]. Furthermore, morbidity related to stent placement includes a series of reported complications, among which, dislocation and migration, minor rectal bleeding, stent obstruction by tumour in-growth, faecal impaction and perforation (colon blowout too). According to some authors, this latter complication occurs more frequently than it is expected with a surprisingly high rate (more than 50%), thereby needing a scheduled trial to be closed [20]. Moreover, a comprehensive review showed that little high-level evidence is available, as to its safety and effectiveness [21]. Thus, the placement of stenting for unresectable strictures of left colon and rectal cancer will require further prospective trials to implement a more favourable level of evidence and to support it as the first procedure to be used.

Finally, alternative methods are becoming widespread: pharmacological treatment was reported to control symptoms in 42% to 80% of cases [22]. Moreover, percutaneous gastrostomy made the use of a nasogastric tube unnecessary [23].

The critical analysis of our retrospective study suggested that stoma was the sole procedure feasible in terms of risk and benefit, with the exception of self-expanding stent insertion in few cases, in spite of its limits.

Morbidity signified an unacceptable LHS, with the consequent need for prolonged assistance.

The adopted PHYS subscale of the MSAS-SF was a reliable requisite towards good symptom control and a useful component of QoL. Indeed, the results obtained with the MSAS-SF can be compared to other assessment scales, i.e. functional assessment cancer therapy (FACT-G), which makes MSAS-SF a reliable tool for the graduation of different populations [3]. Moreover, the MSAS-SF can be compared to other scales that are associated with QoL [24], unlike the other scale which is not comparable [25].

In our series, the QoL related to symptom relief considerably improved, except for vomiting, and we maintain that the primary end point of care was fully achieved by performing DS alone. On the other hand, our data suggest that DS was of little use, as far as the high morbidity and the mortality rate were concerned. Finally, these results should prompt us to more careful decisions, as we expected a greater number of these patients would be approached in the future.

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