Our experience in the management of obstructing colorectal cancer

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AIM: *Comparing the different possible surgical procedures and the results in urgent/emergency and in elective surgery for obstructing colorectal cancer.*
MATERIAL OF STUDY: *From 2008 we operated on 238 patients affected by colorectal cancer, 136 complicated tumours, 115 obstructing and 19 perforated. 23 patients had right-sided and 92 left-sided obstructing colonic tumour, divided retrospectively in 4 groups. 18 decompressive colostomy; 32 two-stages procedures: 25 Hartmann's operations and 7 total colectomies with terminal ileostomy; 7 one-stage procedures, with defunctioning ileostomy: 4 total colectomies and 3 colonic resections with wash-out; 35 one-stage procedures with primary anastomosis+wash-out or milking.*
RESULTS: *Operative mortality is 7% in urgent/emergency versus 1% in elective surgery and anastomotic leakage affected 6 /58 cases, 5 requiring additional surgery. Overall, about 2/3 of the perioperative deaths were related to general complications and 1/3 to anastomotic failure. The local recurrence rate was 7% in elective and 11% in urgent/emergency surgery.*
DISCUSSION AND CONCLUSIONS: *Obstructing colorectal cancer is associated with a high operative mortality and a worse prognosis, in terms of recurrence and survival. Actually, immediate resection with primary anastomosis represents the gold-standard in selected patients with a low anaesthetic risk, performing 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. Colon stenting can be an useful palliative or bridge-to-surgery option.*

KEY WORDS: Bowel obstruction, Colorectal cancer, Primary anastomosis

Introduction

The management of obstructing colorectal cancer is still controversial, despite considerable technical improvements in imaging diagnosis and surgical procedures. In fact, operative mortality, morbidity and overall survival rates are still worse than in elective surgery.
The best surgical treatment hasn't yet codified and there is discussion about indications and advantages of one-stage procedure with primary anastomosis versus more-steps procedures like Hartmann's operation and about the timing of operation itself.
Also debatable is the role of intraoperative colonic wash-out and stenting.
In this paper we present our clinical experience with obstructing colorectal cancer in a hospital with a major interest in emergency surgery and discuss the controversial aspects in managing this sometimes difficult and life-threatening pathologic condition.

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The aim is to compare the different possible surgical procedures, in terms of operative mortality, morbidity, survival and recurrence and also to compare the results in urgent/emergency and in elective surgery.

Materials and Methods

From January 2008 to December 2013, we operated on 238 patients affected by colorectal cancer presenting at S. Giovanni Bosco Hospital in Naples.
153 patients, 64% of the cases, had cancer in left colon and 85 patients, 36% of the cases, in the right colon, 55% were female and 45% male, with mean age of 73 years.
Complicated tumours were 136 (56% of the cases), 115 of which obstructing (86%) and 19 perforated (14%).
92 patients (80%) had obstructing cancer in the left colon and in the rectum, while in 23 cases (20%) the obstructing colonic tumour was right-sided.
Patients with right-sided disease underwent a curative right hemicolectomy in 16 cases and palliative procedures in the remaining cases, for too advanced cancer or bad performance status of the patient, particularly caecostomy in 3 cases, intestinal by-pass in 2, resection with terminal ileostomy in one case and resection of the trasverse colon with terminal colostomy and mucosal fistula in one case.
92 patients with left-sided obstructing colorectal cancer can be divided retrospectively in 4 groups:
– 18 (19%) decompressive colostomies, due to advanced disease or bad performance status of the patient for intestinal obstruction, as bridge-to-surgery in 5 cases: 1 Hartmann's procedure and 4 resections with anastomosis;
– 32 (35%) two-stages procedures: 25 Hartmann's operations and 7 total colectomies with terminal ileostomy;
– 7 (8%) one-stage procedures, with defunctioning ileostomy: 4 total colectomies with ileo-rectal anastomosis (IRA) and lateral ileostomy and 3 colonic resections with wash-out followed by anastomosis and lateral ileostomy;
– 35 (38%) one-stage procedures with primary anastomosis and intraoperative colonic wash-out or milking; the wash-out was performed only in 4 patients.
All the patients were preoperatively evaluated by a multislice CT scan.

Results

The histopatologic assessment showed 65% of obstructing colorectal tumours were T3 advanced and 35% T4 cancers, 52% N+.
8/115 patients died, so the overall operative mortality rate is 7% in our experience in urgent/emergency surgery, versus 1% in elective surgery. Particularly, 3 patients died after right extended hemicolectomy, of which 2 for postoperative peritonitis due to anastomotic dehiscence and 1 for septic complications; 5 patients died after left-sided obstructing cancer resection, of which 4 for general complications (1 after Hartmann's procedure, 2 after subtotal colectomy with terminal ileostomy, 1 after left hemicolectomy/wash-out/primary anastomosis) and 1 for postoperative peritonitis due to anastomotic dehiscence (after left hemicolectomy/milking/primary anastomosis/lateral ileostomy). Overall, about 2/3 of the deaths were related to general complications and 1/3 to anastomotic failure.
The rate of anastomotic leakage was 10%, 6/58 patients with anastomosis, 5 requiring additional surgery. In scheduled patients it was less than 3%.
Remarkable the fact that 3 leakages occurred in ileo-colic anastomosis for right-sided tumours, followed in 2 cases by the death of the patient after re-operation, and also in Hartmann's procedures we had 1 patient dead and 2 re-operated for para-colostomic perforation or colostomy retraction.
The wound infection rate was about 15% in urgency and 1% in elective procedures.
The local recurrence rate, for the available follow-up data, was 7% (9/123) in elective surgery and 11% (13/115) in urgent/emergency surgery.
The curative resection rate in urgent procedures was less than 60%, versus more than 80% in elective surgery.
The laparoscopic resection rate in scheduled surgery was 14.6% (18/123, 10 right hemicolectomy and 8 sigmoidectomy/anterior resection).

Discussion

About 60-70% of colorectal obstructions are due to a cancer and 15-20% of patients with colorectal cancer has intestinal obstruction as first symptom at the beginning of disease.
Besides, obstructing cancers represent about 10% of all colorectal cancers resected with curative intent.
The curative resection rate in urgent/emergency surgery for colorectal cancer obstruction is about 60%, significantly less than in the elective surgery, where reaches 74%; probably this is related to a more advanced stage of the tumour at the time of operation for the late detection of the disease [1-3].
The mean age at presentation in emergency is 70-80 years, higher than in elective patients.
The obstructing tumour is located in 80% of the cases in the left colon, above all in the sigmoid, in 5% in the rectum and in remaining 15% in the right colon.
Remarkable is the rate of overall operative mortality for urgent/emergency procedures, 15-25% versus 1-5% for scheduled/elective surgery, and also morbidity is high reaching 40-50%, related to the age and the performance status of the patients and to the type of the operation [2,3].
According to this bad outcomes, 5-years disease-related survival rate is worse too, with 52% of the patients

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undergone urgent/emergency surgery versus 75% of those undergone elective procedures.
Obviously the recurrence rate for obstructing colorectal cancer is also higher, about 14% versus 7-8% for elective surgery; in fact, obstruction is a widely accepted indipendent risk-factor for local recurrence [4].
The 5-year cumulative rate for distant metastases is also higher in obstructing than in not-obstructing colorectal carcinoma.
Stage at diagnosis, macroscopic type of growth and sex of the patient are also significant prognostic factors, while the age and the tumour location in the colon are less important [4].
Obstructing colorectal cancer represents a real surgical emergency, when ileo-caecal valve is competent and the diameter of the caecum exceeds 10 centimeters, for the imminent danger of perforation and consequent faecal peritonitis (Figs. 1, 2) [5].
In the absence of life-threatening conditions, surgery for large bowel obstruction must be regarded as an urgent rather than emergency procedure, so every effort should be made, in order to carefully prepare the patient for operation with adequate fluid administration, to monitor hemodynamic parameters and to operate with experienced surgeons and anaesthetists [5,6].
Antibiotic and deep vein thrombosis prophylaxis are recommended and the possibility of patient staying in intensive care unit (ICU) must be considered.
It's useful stressing the fact to respect the principles of the oncological surgery must be regarded as mandatory in performing surgery for obstructing colorectal cancer, in order to achieve at the same time the right treatment of the tumour and the resolution of the intestinal obstruction (Fig. 3).

Fig. 1: Massive colonic distension due to obstructing left-sided colorectal cancer at CT-scan.

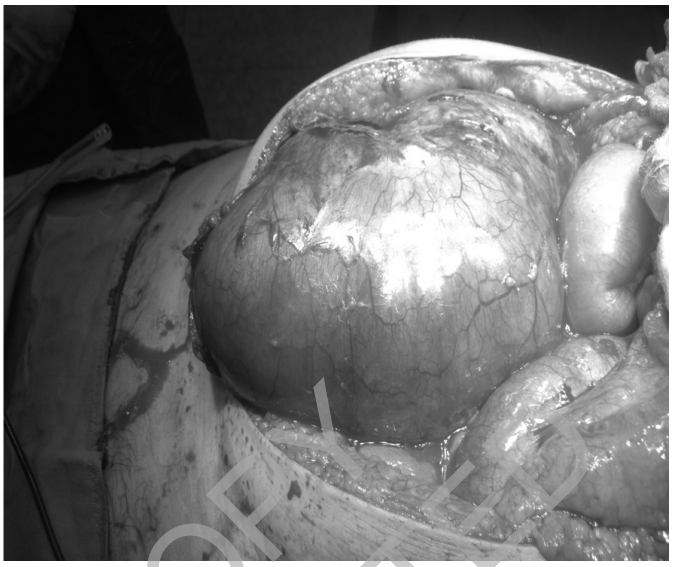

Fig. 2: Massive caecal distension due to obstructing distal sigmoid cancer.

Fig. 3: Specimen of a large obstructing descending colon cancer.

As far as the type of surgery is concerned, primary resection with ileocolic anastomosis is usually feasible for right-sided lesions, while there's a controversy regarding the procedure which should be undertaken for left-sided obstructing tumours, depending on conditions of the patient, peritoneal contamination and experience of the surgeon.
A simple defunctioning colostomy is not generally favoured, except in extreme circumstancies, when the patient doesn't appear fit for a more extensive procedure, for example for major co-morbid diseases; it can be followed by a resection of the obstructing cancer in 7-10 days [6].

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So, the more suitable options to be considered are represented by the Hartmann's operation with end colostomy and the primary resection with anastomosis.
Hartmann's procedure should be favoured in case of peritonitis due to contemporary colonic perforation, metastatic or locally advanced disease for large peritoneal involvement, precarious wall vascularization of the colon proximal to the lesion due to a large distension for advanced obstruction. Even if the Hartmann's procedure is widely accepted as being safer, since there isn't danger of anastomotic leakage, must be considered the disadvantages consisting in significant increased morbidity and operative mortality due to the two-stages intervention, in about 2/3 of the patients undergone the second surgical step to restore the intestinal continuity.
Overall morbidity and operative mortality of the two-stages procedure has been estimated respectively as 10-40% and 3-20%, comparable to the results of the one-stage operation. Furthermore, the quality of life of the patients with end-colostomy is obviously worse [5,6].
Actually, immediate resection with primary anastomosis is regarded as the gold-standard in selected patients affected by obstructing colorectal carcinoma [1-3,7-9].
When this option is choosen, this can be performed either as a typical resection with on-table colonic wash-out, or a subtotal colectomy with ileorectal anastomosis, particularly indicated in selected cases with massive distension or also early perforation of the caecum or when a synchronous lesion is detected (Fig. 4) [10,11].
Randomised trials have indicated that these two procedures are roughly equivalent in terms of results, although long-term bowel habit is better with the former and the rate of postoperative infections is lower with the latter [11]. In some studies, patients undergone a subtotal colectomy for left-sided obstructing colorectal cancer, despite their worse preoperative conditions, have a lower anastomotic leak rate than those undergone a segmental colonic resection [12].
Bowel obstruction due to a left-sided colonic cancer should be treated by one-stage left colectomy or anterior resection and intraoperative colonic lavage for patients with low anaesthetic risk (ASA 1-2); the wash-out can be followed by an intraoperative colonoscopy, for detecting synchronous lesions located proximally to the obstructing neoplasm, without increasing patient morbidity [13].
Immediate anastomosis, after on-table wash-out or milking, protected by a temporary defunctioning colostomy or ileostomy, could be proposed for patients with an intermediate risk (ASA 3), presenting with a massively distended and faeces-loaded colon caused by an obstructing tumour in the descending or sigmoid colon [14-17]. Nevertheless, there is evidence that in advanced obstruction and in high-risk cases Hartmann's operation should be used, as a safer procedure [16].
Little controversy persists in the literature about the significance of the defunctioning stoma [18].
The insert of a self-expanding metallic stent (SEMS), as a bridge-to-surgery for obstructing left-sided colorectal cancer, is associated to a higher rate of primary anastomosis, as well as a better outcome in terms of hospital stay and stay in ICU [19-22].
In some experiences, delayed laparoscopic surgery after SEMS insertion represents a safe and feasible procedure, with oncological outcomes comparable to emergency open surgery with intraoperative colon irrigation, although some studies show a higher rate of perineural invasion and local recurrence after stenting, even if that doesn't adversely affect the overall survival [23-26].
Besides the SEMS can be regarded also as a palliative procedure in the inoperable patients with a very poor prognosis, in order to treat the obstruction.
With reference to our experience, even if the small numbers don't allow to draw any general conclusion, the most of the deaths seems to be related rather to the patients' general conditions, than to the choise to perform the immediate anastomosis [27].
The operative mortality and the anastomotic dehiscence rates are significantly higher in urgency than in elective procedures.
The local recurrence and the overall survival rates are both worse in urgent than scheduled patients at a preliminary data review. As far as follow-up is concerned, data aren't ever available, also because lots patients are referred to other institutions, in order to continue the oncological cares.
The curative resection rate in urgent/emergency procedures is negatively affected by the more advanced stage of the neoplasm.

Fig. 4: CT-scan in caecal distension and early perforation due to obstructing sigmoido-rectal junction cancer, treated by subtotal colectomy and ileorectal anastomosis

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We haven't perform any laparoscopic procedure in urgent or emergency surgery for large bowel neoplastic obstruction, not considering this condition a good indication for mini-invasive surgery and lacking experience in SEMS insertion as a bridge-to-surgery.

Conclusions

The surgical management of obstructing colorectal cancer has been evolving to an increasing interest in resection with primary anastomosis in selected cases with a low risk profile. This procedure can be associated to colonic on-table wash-out and eventually to a defunctioning stoma.
In the presence of massive distension or perforation of the caecum or when a synchronous lesion in the colon is detected, a subtotal colectomy is indicated. In advanced obstruction and in high-risk cases, the Hartmann's operation has to be considered as the option of choise.
The insert of a SEMS can represent an useful bridge-to-surgery or a palliative procedure in the not-operable patients.
Randomised controlled trials, to better compare the results of the various surgical options, are needed.
In all the cases, the general principles of surgical oncology have to be strictly observed in the management of obstructing colorectal cancer.

Riassunto

Riportiamo la nostra esperienza retrospettiva sulle occlusioni intestinali da cancro colorettale.
Negli ultimi 6 anni, abbiamo operato 238 pazienti affetti da cancro colorettale.
I tumori complicati sono stati 136 (56%), 115 dei quali stenosanti (86%) e 19 perforati (14%).
In 23 pazienti (20%) il tumore stenosante del colon era a destra ed in 92 (80%) a sinistra. Questi ultimi sono stati suddivisi retrospettivamente in 4 gruppi, in relazione all'intervento chirurgico eseguito: 18 (19%) colostomie decompressive; 32 (35%) procedure in due stadi: 25 operazioni di Hartmann e 7 colectomie totali con ileostomia terminale; 7 (8%) procedure in uno stadio, con ileostomia di protezione: 4 colectomie totali e 3 resezioni del colon con wash-out; 35 (38%) procedure in uno stadio con anastomosi primaria + wash-out o milking.
I decessi sono stati 8/115, con un tasso di mortalità operatoria globale del 7%.
Il tasso di fistola anastomotica è stato del 10%, riguardando 6/58 pazienti con anastomosi, 5 dei quali hanno richiesto un reintervento chirurgico.
Complessivamente, circa 2/3 dei decessi perioperatori sono avvenuti per complicanze generali ed un terzo per deiscenza dell'anastomosi.
L'occlusione intestinale da cancro colorettale è associata ad un'elevata mortalità operatoria ed una prognosi peggiore, in termini di recidiva e di sopravvivenza.
La colostomia decompressiva può essere considerata come un'opzione valida solo nella malattia avanzata o nel paziente in condizioni generali scadute.
La resezione anastomosi primaria rappresenta il gold-standard in pazienti selezionati con un basso rischio anestesiologico, sia sotto forma di resezione tipica con wash-out, sia come colectomia subtotale.
Una colostomia o ileostomia temporanea di protezione può essere proposta per i pazienti con un rischio anestesiologico intermedio.
Nei casi ad alto rischio o in avanzato stato occlusivo, oppure in presenza di simultanea perforazione del colon o di malattia metastatica o localmente avanzata, l'operazione di Hartmann dovrebbe essere preferita come procedura più sicura.
Lo stent colico rappresenta una valida opzione bridge-to-surgery o una procedura palliativa.

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