

Open sphincter-preserving surgery of extraperitoneal rectal cancer without primary stoma and Fast Track Protocol

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SUMMARY: Open sphincter preserving surgery of extraperitoneal rectal cancer without primary stoma and Fast-Track protocol.

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Aim. Fast track protocol (FTP) showed to improve perioperative care. The study aims to evaluate the impact of the FTP in the open extraperitoneal rectal cancer (ERC) surgical treatment without a primary derivative stoma (DS) and the QoL in patients with or without a secondary DS.

Patients and Methods. 50 patients affected by ERC were enrolled and operated on with open low anterior resection without a primary DS. They were randomized in two groups: one was treated periopera-

tively in the traditional way (group T), the other using a modified FTP (group FT). A QoL questionnaire was administered prior to discharge and at 1-month follow-up.

Results. Five courses (10%) were complicated by anastomotic leakage: 3 (12%) in the FT group (2 minor and 1 maior) and 2 (8%) in the T group (1 minor and 1 maior) ($p=n.s.$). All the maiors and one minor were treated with a DS. Patients of the group FTP were considered dischargeable earlier than those of group T ($p<0.05$). Patients with DS had a significantly lower QoL score ($p<0.0001$).

Conclusion. FTP with minor modifications is feasible and safe in the ERC open surgery without using a DS. Better results were obtained without increasing complication rate. A secondary DS impacts detrimentally on QoL.

KEY WORDS: Rectal cancer - Fast Track Protocol - ERAS - Open surgery - Quality of life.

Introduction

Since its implementation, Fast Track Protocol (FTP), also known as Enhanced Recovery After Surgery (ERAS), showed to improve perioperative care (1, 2). Compared with the standard care, fast track protocol takes into account the perioperative changes of psychology and pathophysiology and eliminates unfavorable factors that are not justified (3-5). The intention of carrying fast track protocol is to reduce the surgical stress response, improve postoperative recovery, decrease complications and morbidity, shorten hospital stay and reduce health costs, yet maintaining an uncompromised patient safety. FTP is a multidisciplinary approach involving surgeons, anesthesiologists, dieticians and nurses. FTP consists of various elements including preoperative counseling, no preoperative fasting, no bowel preparation,

fluid restriction, high O_2 concentration, prevention of hypothermia, epidural analgesia, no routine use of nasogastric tube, no routine use of drain, enforced mobilization, early oral feeding, no systemic morphine use nor standard laxatives, early removal of bladder catheter. It mostly focuses on limited perioperative fluid management, optimized analgesia, early oral nutrition, and early mobilization (6-9).

It has been demonstrated (9, 10) that improved adherence to the ERAS programs was significantly associated with improved clinical outcomes following major colorectal cancer surgery.

Use of a primary derivative stoma in surgical treatment of extraperitoneal rectal cancer (ERC) is still controversial. In the past, it was considered a dogma for this kind of surgery (open or laparoscopic) (11, 12), while in recent papers some Authors (13-16) suggest a selective use of the primary stoma because a secondary stoma, performed only in case of major anastomotic leakage, seems do not increase postoperative overall mortality and morbidity. Moreover, the presence of a stoma, which can become definitive, significantly decrease the quality of life (QoL) of these patients (17).

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A recent Swedish cohort study (18) of patients undergoing low anterior resection (LAR) for ERC within an ERAS program with and without a stoma creation has shown that stoma does not impact on postoperative morbidity. This study does not evaluate patients' QoL.

The present study aims to evaluate the impact of the FTP in the open ERC surgical treatment without a primary derivative stoma and the QoL in patients who had or had not received a secondary derivative stoma.

Patients and Methods

From January 2009 through December 2014 we started a randomized controlled trial, approved by our Institutional Review Board. Fifty patients affected by ERC were enrolled and operated on with open LAR with a Total Mesorectal Excision (TME) without a primary derivative stoma. They were randomized in two groups: one was treated perioperatively in the traditional way (group T), the other using a modified FTP (group FT). If the conditions were met (T3-4 and/or N+) a neoadjuvant therapy had been administered.

We partially modified the original FTP (8). In particular, our protocol (Table 1) included colon preparation and a pelvic drainage.

All the operations were carried out by a single colorectal surgeon who had previously performed more than 100 similar procedures.

Inclusion criteria were:

- extraperitoneal tumor location (within 12 cm above the anal verge measured by a rigid rectoscopy);
- cT2 – T4 tumors, with or without positive lymph nodes, M0;
- elective procedures;
- use of modified FTP;
- neoadjuvant therapy where indicated: (T3 – T4 or N+).

Exclusion criteria were:

- tumors located over 12 cm above the anal verge;
- cT1 or M1;
- urgent procedures;
- patients ASA > 3;
- patients operated on with abdominoperineal resection or Hartmann's procedure;
- patients refusing neoadjuvant therapy whereas indicated;
- patients refusing or unable to follow FTP;
- coagulation disorders contraindicating epidural catheter insertion.

We defined a dehiscence as *major* when signs of peritoneal reaction and sepsis were present, regardless of the diameter of the fistula. When a major dehiscence was diagnosed and confirmed by means of a CT or an

TABLE 1 - MODIFIED FTP.

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| <ul style="list-style-type: none"> • Informant consent • Mechanical bowel preparation (polyethylene glycol) • General anesthesia (transdermal scopolamine, fentanyl and properidol) • Epidural anesthesia (ropivacaine + morfine) • Antibiotic prophylaxis (ceftriaxone 2g + metronidazolo 500 mg) • Epidural anesthesia (ropivacaine 225mg 4ml/h) for 48 hours • Venous thromboembolism prophylaxis (low molecular weight heparin) • Protonic pump inhibitors (omeprazole 40mg/die) • Pain killers (acetaminophen 1000 mg if pain \geq 5 VAS) • Electrolyte Solutions IV for 48 hours • Nasogastric tube for 12 hours • mobilization After 24 Hours • Clear liquid diet after 24 hours |
|---|

enema, a transverse colostomy was performed within 12 hours.

We defined a dehiscence as *minor* when the clinical picture was less severe and subsequently a "wait-and-see" strategy was adopted.

In our practice, we cannot always discharge a patient when the clinical conditions allow it, so we adopted some "dischargeability" criteria: normal oral feeding, complete canalization, abdominal drain and vesical catheter removed, no fever, no need for intravenous therapy.

All the patients were administered with a QoL questionnaire widely used in colorectal surgery (EORTC QLQ CR-38) (20-24) prior to discharge and at 1-month follow-up.

The outcome assessors were blinded till the study completion.

Primary study endpoints were day of dischargeability, 30days morbidity and mortality.

Secondary endpoint was the evaluation of the QoL upon discharge and at 1-month follow-up.

Results

From January 2009 through December 2013, 157 patients were operated on in our Department for rectal cancer. Fifty patients fulfilled the above-mentioned inclusion criteria.

Prior informed consent, they were randomized in two groups: 25 patients were treated perioperatively in the traditional way (group T), 25 using a modified FTP (group FT).

TABLE 2 - BASELINE CHARACTERISTICS.

	GROUP T n=25	GROUP FTP n=25	p value
Gender			n.s.
• Male	13 (52%)	13 (52%)	
• Female	12 (48%)	12 (48%)	
Mean Age [years – (range)]	65,7 (45 – 82)	67,6 (48 – 83%)	n.s.
BMI [Kg/m ²]			n.s.
• < 25	10 (40 %)	9 (36%)	
• 25 – 30	9 (36%)	12 (48%)	
• > 30	6 (24%)	4 (16%)	
Smoking	10 (40%)	12 (48%)	n.s.
Alcohol (> 24 g ethanol/die)	8 (32%)	6 (24%)	n.s.
Co-morbidity			
• Pulmonary	14 (56%)	12 (48%)	n.s.
• Cardiovascular/Hypertension	15 (60%)	16 (64%)	n.s.
• Diabetes	5 (20%)	6 (24%)	n.s.
ASA score			
• I	3 (12%)	2 (8%)	n.s.
• II	11 (44 %)	10 (40%)	n.s.
• III	11 (44%)	13 (52%)	n.s.
Neoadjuvant therapy	13 (52%)	14 (56%)	n.s.

Baseline characteristics of the groups are shown in Table 2.

In 31 patients (62%) an anterior resection with termino-terminal anastomosis was performed (15 in group T and 16 in group FT).

In 18 patients (36%) an ultra-low anterior resection Knight-Griffen technique (9 in both groups).

In 1 patient of group T (4%) an anterior resection with coloanal anastomosis using the Castrini technique (19).

The mean operative time was 150 minutes (range 125-180), the mean intraoperative blood losses were below 70ml (range 50-160), with no difference between the two groups.

In all the patients of both groups, the nasogastric tube was removed 12 hours after the operation, while the epidural catheter 36 hours later.

Four patients (16%) of the group T had postoperative nausea, treated with metoclopramide or ondansetron, while these symptoms were present only in 1 (4%) patient of the group FT (p<0.05).

The first bowel movement was registered at a mean 52 hours after the operation for the group FT, while the group T had it 19-33 hours later (p<0.05).

All the patients of group FT were mobilized on post-operative day (POD) 1 and were able to ambulate on POD2. Group T had a lower compliance with mo-

bilization: 17 patients (68%) were mobilized on POD2, 8 (32%) on POD3; ambulation was possible the subsequent day for all the patients.

No death or pulmonary, urological or vascular complications were registered in the postoperative period or at follow-up in both groups.

Five patients (10%) had their course complicated by anastomotic leakage: 3 (12%) in the FT group (2 minor and 1 major) and 2 (8%) in the T group (1 minor and 1 major) (p=n.s.). The majors were treated with a derivative stoma within 12 hours from the diagnosis. Among the 3 minor leakages, one required a stoma fashioning and 2 recovered after conservative treatment (one of each group).

Analyzing the incidence of the five leakages basing on the procedures performed, out of 31 termino-terminal anastomosis only 2 (6.4%) had this complication, while 3 out of 18 (16.6%) anastomoses fashioned using Knight-Griffen technique.

Out of 27 patients treated with neoadjuvant therapy, 3 patients (11.1%) (2 in FT group and 1 in T group) had an anastomotic leakage.

In the 5 patients with anastomotic fistula, the abdominal drainage was left in place for more than 10 days.

According to the above mentioned criteria, 4 patients (16%) of group T and 17 patients (68%) of group FT

were considered in dischargeable on POD 4; 5 patients (20%) for each group in the POD 5; and 8 patients (32%) of group FT and 3 patients (12%) of group T in the POD 6; while 7 patients (28%) of the group T were dischargeable only in POD 7 or more ($p < 0.05$).

All 50 patients answered the questionnaire EORTC QLQ-CR 38. The patient QoL was excellent/good (score 4) in 12 patients (48%) of group T and 14 (56%) of group FT, moderately good (score 3) in 9 (36%) and 8 patients (32%) respectively, acceptable (score 2) in 3 (12%) and 2 patients (8%) respectively, poor (score 1) in 1 patient for each group ($p = n.s.$). Both these patients had received a derivative stoma. Analyzing results among patients who received a stoma and those who had not, we found that patients with a stoma had a significantly lower score ($p < 0.0001$): the three patients with a stoma had one a score 2 and two a score 1.

Discussion and conclusion

Our study demonstrated that FTP with minor modifications is feasible and safe in the ERC open surgery without using a derivative stoma. This confirms what has recently been reported in a Swedish study on two groups of patients operated on with and without stoma (18).

Better statistically significant results were obtained in the FTP group in terms of postoperative nausea and first bowel movement, without increasing complication rate. A subsequent earlier discharge was therefore safely possible. In particular, we succeeded in considering dischargeable the 68% of the group FT patients on POD 4, in contrast with 16% of the group T ($p < 0.05$).

Our FTP had minor changes compared to the protocol of the ERAS Society (8). In particular, our protocol included colon preparation because we consider that, in case of an anastomotic leakage not protected by a derivative stoma, the clinical consequences can be less severe if an adequate colon preparation was not omitted. Moreover we routinely use a pelvic drainage which may help in obtaining an early diagnosis of an anastomotic leakage.

Not much is known about the influence of each individual item and data on the importance of the various ERAS components are scarce. Considering our results we can state that maintaining the bowel preparation and the routine use of a pelvic drainage does not reduce outcome improvements given by the FTP.

Analyzing the results obtained by means of the QoL questionnaire, we found that, regardless the protocol used (which does not seem to impact on the QoL), the 3 patients who received a secondary derivative stoma have a significant lower score. This may not surprise, but may be useful for further consideration on the topic. Temporary stomas are widely used in colorectal

surgery, especially in minimally invasive surgery and above all in rectal surgery. Various studies have reported a complication rate of 21–70% (26) after stoma formation; moreover up to 30% of the “temporary” stomas become definitive (27), and mortality is also reported. A question arises: in the modern era, where patients are treated with a holistic approach, and where many efforts are done to improve their QoL and their outcome, and where “minimally invasivity” is the present of the surgery, can a routine and unselected use of a derivative stoma be considered a standard of care?

A recent article (28) highlights how a high tendency towards derivative stoma construction in rectal cancer surgery did not result in lower anastomotic leakage or mortality rates. A series of 287 consecutive patients undergone laparoscopic AR with TME for rectal cancer showed that a diverting stoma was not associated with reduced postoperative morbidity, signally anastomotic leaks, but with a delayed postoperative recovery (18). The Authors found that the need for acute relaparotomy due to anastomotic leaks was increased among patient not diverted. This is not confirmed by our results, while it is clear that the systematic use of the stoma protection lengthens hospital stay and has a negative impact on QoL. The Authors concluded stating that current use of diverting stoma in the vast majority of patients undergoing laparoscopic AR should be reconsidered and need to be re-evaluated in patients undergoing surgery within an ERAS setting. The present study may be a further reason for reflection on the topic.

There are some limitations in this study. The population randomized is small (mean: 8 cases per year). Moreover, being a unicenter study, it reflects our experience toward a pathology we electively treat. Our study, in contrast with those multicenter in the literature involving several surgeons, refers to the experience of a single surgeon. Since the surgeon is considered an independent variable in the LAR for ERC (29), results reported by us offer the advantage of homogeneity. One may argue that QoL of the patients with a stoma may be affected by the complicated postoperative course and by the second urgent operation as well. Nevertheless it is well established that the presence of a stoma can have detrimental effects on QoL, even in long-term studies (30, 31).

In conclusion, adequate identification of high-risk patients and a more conscious use of defunctioning stoma, combined with the use of the ERAS pathways, may lead to reconsider the present role of the open rectal surgery.

Disclosure

The authors declare that there are no conflicts of interest.

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