

Fast track in colo-rectal surgery. Preliminary experience in a rural hospital

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SUMMARY: Fast track in colo-rectal surgery. Preliminary experience in a rural hospital.

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Background. "Fast Track surgery" is a therapeutic program of large application, despite some doubts about its applicability and real validity. Literature review shows that this approach to colo-rectal surgery, particularly video-assisted, can allow a rapid recovery, better performance and a faster postoperative functional autonomy of the work, which can be discharged without cause additional welfare costs; in addition it can be reproducible in different health reality.

Purpose: To analyze the possibility to apply the Fast Track protocol in patients undergoing colorectal surgery in a rural hospital and

non specialistic Unit of Surgery.

Patients and methods. We have conducted a prospective, randomized study on 80 patients subjected to colorectal surgery in the last year.

Results: The protocol was observed in 95% of cases, compliance with the Fast Track was high and general morbidity was limited (7.8%).

Conclusion. This "aggressive" approach, which has fundamentally altered the usual surgical behavior, seems to allow a mean length of stay significantly lower than in controls ($p < 0.05$) with positive implications for patients and containment of health care costs, even after discharge (no need for home care in 92% of cases, no early re-admittance to the hospital). Homogeneous protocols are desirable, as well as an increased enrollment, to consolidate these rehabilitation programs in order to provide a reference for all hospitals.

KEY WORDS: Fast Track - Colorectal surgery - Postoperative rehabilitation.

Introduction

"Fast Track Surgery" is a therapeutic program that can be used at all the stages of the management of the person candidate for surgery, from the correct preparation to the post-operative management: besides a minimally invasive surgical approach, it provides for an advanced management of anaesthesia, analgesia and digestive and motor rehabilitation, with the aim of achieving less pain, early re-alimentation and canalization, early mobilization and deambulation, reduced morbidity, rapid functional recovery and shorter hospitalization; this will also lead to a hospital cost

reduction (1-3). Basing on these assumptions, in 2001 the "Enhanced Recovery after Surgery Study Group - ERAS" was started in Northern Europe (4-6).

As a matter of fact, considering the results achieved by the modern laparoscopic techniques, the "Fast Track" surgery might represent a development of the "open surgery" (7); the latter has already modified many attitudes imposed by tradition, to such an extent that some Fast Track experiences didn't show a real advantage in terms of course (8).

In the most important world surgery centres ERAS is nowadays considered the gold standard for the treatment of the patients candidate for an elective colon-rectal surgery, but its diffusion in Italy has been so far slow and it was not adopted widely (9). One of the major criticisms to Fast Track is that most bibliographic data refer to great hospitals and specialized centres and that its employment in less dedicated centres might result difficult or even impossible (10).

The purpose of this survey is to check the enforceability and real usefulness of a program of multimodal treatment on patients candidate for surgical resection of the colon and

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rectum, for benign pathology or neoplasia, in the general surgery unit of a rural hospital.

Patients and methods

This survey is perspective and randomized: it was carried out in the period December 2010- December 2011 and in this period we subjected 113 patients over 18 years of age to an elective surgical resection for benign or malignant colon-rectal pathology. The following patients were excluded from the therapeutic protocol: non-consentient patients, ASA IV patients, patients with serious cardiovascular dysfunction (NYHA class > 3), respiratory dysfunction (arterial pO₂ value < 70 mmHg) or hepatic dysfunction (Child C), those with extensive tumor infiltration, or those with other pathologies which require a complimentary relevant surgery treatment, those affected by neoplasia of the lower rectum candidate for amputation according to Miles, patients subjected to urgency surgery. We have enrolled 74 patients, divided using lists of randomization generated by a computer program in:

- Fast Track Group (FT), undergoing a particular intensive therapeutic protocol consisting in pre-operation physiological preparation, epidural analgesia, minimally invasive surgery, early mobilization and feeding;

- Control Group (C), that followed the traditional treatment, including the surgery procedure, but however remaining in the program of postoperative pain management.

The characteristics of the patients enrolled are shown on Table 1.

As study protocol, "Fast Track" by Basse (11) was adopted and was modified by us to be also used for the treatment of patients with mid-upper rectum carcinoma. FT perioperative care comprises extensive preoperative counselling. The program was carried out with the following procedure:

1. Adjusted diet, at home, for 5 days prior to operation;
2. Bowel preparation at home on the day prior to operation:
 - a) FT Group: Dimethicone ½ bottle every 12 hours

and fleet enema (acid sodium phosphate, 120 ml);

- b) C-Group: fleet enema before operation on right colon and Macrogol, 8 packets of 34.8 g in 4 lt water before operation on left colon and rectum;

3. Admission to the ward the day of surgery;
4. Short term antibiotic prophylaxis (FT Group and C Group) with Cefazolin 2 g every 24 hours and Metronidazole 500 mg every 8 hours; the treatment should not be extended over 24 hours, and antibiotic therapy has to be carried out if necessary (patients with immuno-depression, or relevant comorbidity, etc.);
5. Preoperative fasting since midnight;
6. Thromboembolic prophylaxis (FT Group and C Group) with anti-thrombosis compression stockings and provision of Dalteparin Sodium (2500 UI/die or 5000 UI/die according to risk score), continued for 3 weeks after operation.

We have not employed preoperative carbohydrates-loaded liquids.

Chronic drug therapies, except anticoagulant therapy, were not suspended and we started a parenteral nutritional support for neo-plastic elderly and undernourished patients, anticipating their hospitalization in order to place a central venous catheter (CVC).

Anaesthesia. The protocol of combined, epidural, general and integrated anaesthesia was adopted: this has been in use in our hospital for some years now, getting however ready for a possible pre-treatment with Midazolam 1-2 mg intravenous for the most anxious patients before placing the epidural catheter (T9-T10 or T10-T11) with administration of 6-12 ml of Ropivacaine 0,2%; the general anaesthesia is carried out with Fentanyl and Propofol, using Rocuronium for curarization, Sevoflurane in O₂/air for maintaining the anaesthetic plan, the ventilation previously set and adjusted during operation with capnometric monitoring (PetCO₂ 32-38 mmHg); maintenance of normal temperature by means of heater of liquids and hot air blanket applied on thorax and on one or both upper limbs and, in recovery room, on the whole body; fluid therapy limited to 1000-2000 ml of Ringer's acetate, ephedrine or hydroxyethyl starch (500 ml maximum) in case of occasional or recurrent hypotension, and finally Sugammadex at the end of the operation in order to antagonize the curarization.

Analgesia. The intra-operative and post-operative epidural analgesia was carried out with morphine 0.6-2 mg and Ropivacaine 0.2% in bolus of 5 ml, followed by continuous infusion of Ropivacaine 0.2% and Morphine 0.02-0.04 mg/ml at 3-6 ml/h. The post-operative pain was monitored to the purpose of maintaining the values of VNR (Verbal Numerical Rating scale) <=4. In case of insufficient analgesia, we supplied Paracetamol 1 g intravenous (max 3 administrations / 24 hours) and, for a not yet controlled pain, we modified the epidural infusion and/or supplied ketorolac intravenous in consideration of the re-evaluation

TABLE 1 - ENROLLED PATIENTS.

	FT (n. 38)	C (n. 36)
Age (range)	71 (43-95)	73 (40-92)
Male\Female	21\17	22\14
ASA I	10	11
ASA II	25	19
ASA III	3	6
Benign Disease	6	2
Malignant Disease	32	34

of our anaesthetist. After 48 hours, once the infusion was suspended, we supplied Paracetamol 1g three times a day and, if necessary, Ketorolac.

Surgery. FT Group: laparoscopic approach with four trocars for exploration, vascular and lymphatic control, mobilization of the colic flexure; subsequent limited laparotomy (right transverse for the right colon, left transverse for lesions of the splenic flexure, Pfannenstiel for left colon and mid-upper rectum) for extraction of the tract and extracorporeal anastomosis.

C-Group: traditional operation by mid-line, xifo-subumbilical (left or right colon) or xifo-pubic (sigmoid and rectum) laparotomy.

For both groups, anastomosis were made manually, with a lateral-side technique, after right colectomy and with mechanic surgical stapler (according to Adloff or Knight-Griffen) after left colectomy or anterior resection of the rectum, and we provided for making temporary ileostomy for protection after low rectal resection, especially in the cases of patients undergoing a pre-operation radiotherapy. There have not been any differences in the employment of drains, as we systematically made use of a Jackson-Pratt drain in the area between rectum and uterus/prostate, and a drop drainage tube respectively under-liver after right colectomy and between colon and abdomen wall after left colectomy or anterior resection of the rectum.

Post-operative management. FT-colon Group: the nasogastric tube was removed at the end of operation and Metoclopramide 20 mg IV every 8 hours and mixed fluid-therapy intravenous 2000 cc/per day was supplied until the third day; we started water diet on the 1st day, liquid diet on the 2nd day, half-liquid diet on the 3rd day, solid diet on the 4th day. Mobilization was early, it was assisted on the 1st day and independent from the 2nd and 3rd day; on the 2nd day the bladder catheter was removed and on the 4th day the central venous catheter (if present) also was removed; drains were removed on the 5th day, the discharge was considered possible starting from the 5th day.

C-colon Group: the nasogastric tube was removed after gas canalization, followed after 24 hours by administration of liquids and removal of the bladder catheter; half-liquid diet and removal of central venous catheter (if present) have been provided for after faeces canalization; the mobilization of the patient to the armchair happened after the first 48 hours; drains were removed between the 6th and 7th day.

FT-rectum Group: the nasogastric tube was removed after 12-24 hours, the bladder catheter on the 4th day, drains on the 6th day; fluid-therapy intravenous was carried out for 72 hours; feeding was re-started after 24 hours (like for FT-colon Group), mobilization after 24 hours; the discharge was considered possible starting from the 6th day.

C-rectum Group: the nasogastric tube was removed after gas canalization, and after 24 hours we started the liquid diet, while a half-liquid diet and the removal of cen-

tral venous catheter (if present) were considered possible after faeces canalization; the bladder catheter was removed on the 5th or 6th day, drains on the 7th day; the patient was mobilized to the armchair after the first 48 hours; fluid-therapy intravenous and antibiotic-therapy were carried out for 6 days, the discharge was considered possible starting from the 8th day.

Discharging criteria. The patient is considered dischargeable when he showed tolerance to a solid diet and recovery of the bowel function and it was possible to remove abdominal drains, when the bladder catheter was removed (subject to retention by prostate disease), when pain showed to be adequately controlled, body temperature was $< 37,2^{\circ}$, and it was no longer necessary to have intravenous antibiotic-therapy and deambulation was regular. An outpatient control was planned after 2-4 days from discharge, ensuring to the patient the possibility of a direct phone contact with the surgical team in case of need.

Results

In the compared groups the following data were analysed: demographic data, co-morbidity (ASA score), the reason and type of operation, any occurred complication, time of re-starting nourishment, canalization and complete and independent mobilization, pain control (VNR, Verbal Numerical Rating scale), mental function, quality of sleep, length of stay in hospital. In the FT-Group any variation that revealed itself as necessary with respect to the protocol was also analysed. The degree of patient satisfaction was also assessed with verbal scale from 1 to 5 (1= very unsatisfied, 5= very satisfied).

Data were analysed using the T Test by Student with statistic significance $p < 0,05$. Moreover, we performed the univariate analysis of the relations among the evaluated factors setting as outcomes the duration of the post-operation stay in hospital and the level of satisfaction of patients in the two groups.

Out of the 74 randomized patients, 38 were assigned to FT-Group and 36 to the Control Group.

In the first group, 21 was males and 17 females aged between 43 and 95 years (mean 71 years). We have subjected our patients at 11 right colectomies, 10 left colectomies, 8 anterior resection of the rectum, 7 sigmoid resection, 1 transversal colonic resection, 1 colonic segmentary resection. In 6 cases indication to surgery coming from a benign disease and in 32 from a malignant neoplasm. Disease was located in the caecum in 2 cases, in the right ascending colon in 7, in the transverse colon in 3, in left descending colon in 6, in the sigma in 14, in the mild-superior rectum in 6.

The data relative to the demographic parameters of patients (ASA classification), to the type and location of pathology, and to the type of operation are shown on Fig-

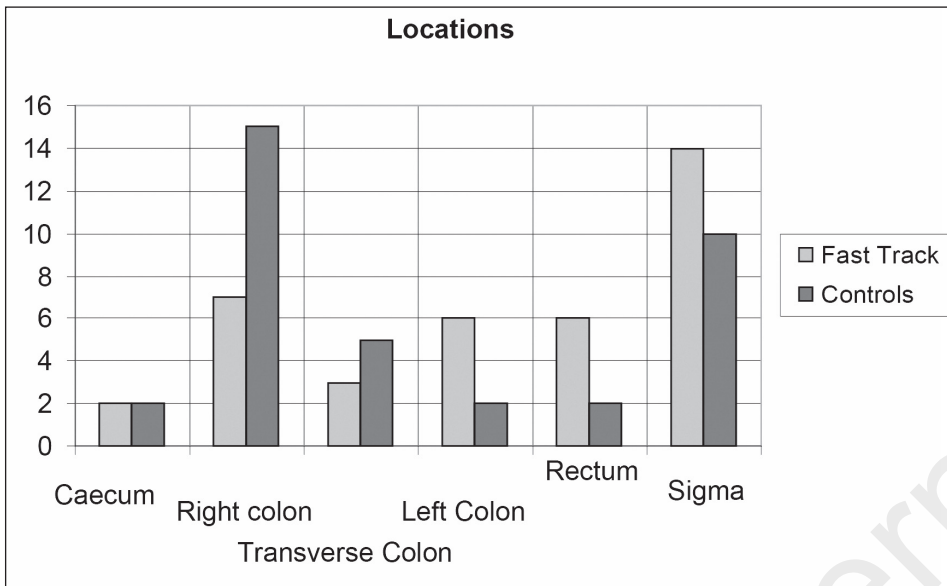


Fig. 1 - Locations of the disease.

ures 1 and 2 and Table 2. The two groups appeared to be substantially homogeneous for age, sex and type of pathology.

For the patients of FT-Group no laparotomic conversion was necessary, a right colectomy was enlarged to the transverse and in 5 cases we had to carry out also a surgery procedure for a complimentary non relevant pathology (four cholecystectomy cases and one inguinal hernia plastic surgery case). In the C-Group, for two patients, a right colectomy was enlarged to the transverse, while in 3 other patients we had to carry out also the following surgery procedures: an ileal resection due to infiltration, a right oophorectomy, an endoscopic gastric mucosal resection due

to intraepithelial carcinoma; cholecystectomy was performed in three cases.

After the operation of 6 patients (3 of the FT-Group, 3 of the Control Group) we planned and carried out the admission to Intensive Care Unit for 24-36 hours due to cardiovascular or respiratory co-morbidity.

More serious complications occurred in 3 patients (7.8%) of the FT-Group (one case of anastomotic dehiscence and one of ileal obstruction, both treated surgically and a pulmonary focus in a patient with Systemic Lupus Erythematosus) and in 4 (11%) of the C-Group (one case of gangrenous cholecystitis and two cases of anastomotic dehiscence, both treated surgically, and one case of

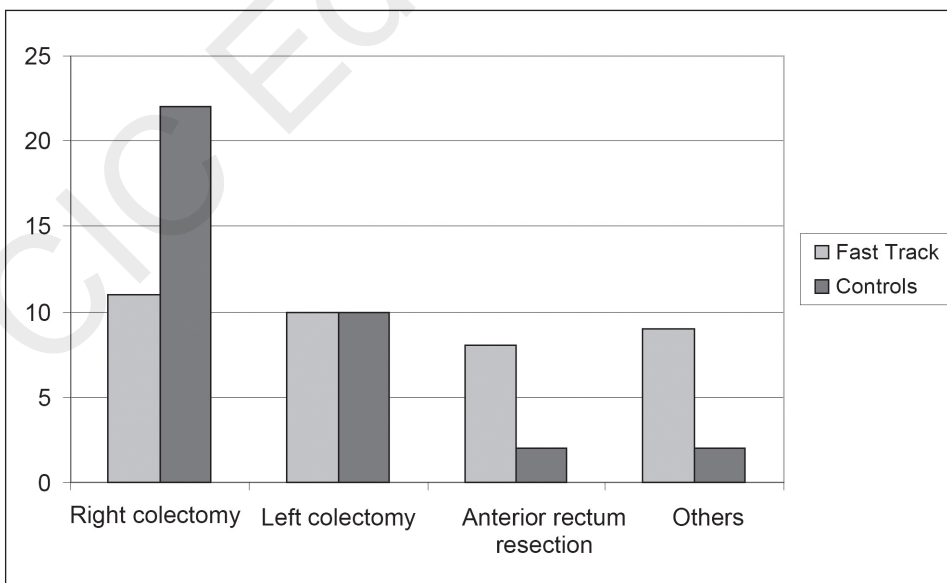


Fig. 2 - Performed procedures.

TABLE 2 - BENIGN DISEASES AND SURGICAL PROCEDURES.

Case	Group	Disease		Surgery
3	FT	Diverticular disease	Sigma	Left colectomy
5	FT	Diverticular disease	Sigma	Left colectomy
10	FT	Displasic polyp	Sigma	Resection
20	FT	Diverticular disease	Sigma	Resection
26	FT	Displasic polyp	Sigma	Resection
33	FT	Diverticular disease	Left colon	Left colectomy
16	C	Displasic polyp	Caecum	Right colectomy
30	C	Diverticular disease	Sigma	Left colectomy

deep vein thrombosis). We didn't find any correlation with age, sex, co-morbidity and location of the pathology. We didn't find a statistically significant difference between the studied groups.

The FT therapeutic protocol was therefore respected in 36 cases (95%), only excluding the two re-operated patients.

6 patients had to undergo a blood transfusion, both in the FT-Group (3 cases) and in the C-Group (3 cases), but the blood transfusion did not influence the following course or the application of the protocol. The pain control resulted to be satisfactory for both groups, except for one case in the FT-Group and 3 cases in the C-Group: for these patients we had to perform a further administration of opiates.

The removal of the nasogastric tube was followed by nausea and/or vomit in 5 cases (13,8%) in the FT-Group and in 7 cases (21%) in the C-Group. The patients of the FT-Group (in comparison with those of the C-Group) showed a quicker gas canalization (2.5 +/- 0.8 days vs. 3.6 +/- 1 day) and feces canalization (4.4 +/- 1.9 days vs. 5.2 +/- 1.7 days; p=0.03). Similarly, the patients of the FT-Group were quicker in re-starting of the administration of liquids (1.3 vs. 3.6 days) and solid food (3.9 vs. 5.9 days), in suspending the intravenous fluid-therapy (3.8 vs. 5.5 days), the independent deambulation of the operated patients (3.5 vs. 5 days), the removal of drains (5.5 vs. 6.2 days) and the removal of the bladder catheter (2.9 vs. 4.6 days). We had to use the bladder catheter again due to urinary retention, for 2 patients of the FT-Group suffering from prostate disease. In the patients of C-Group we recorded one case of temporary repositioning and another case where we had to maintain the epicistostomic catheter after the patient's discharge due to tight urethral stricture. A temporary post-operation mental confusion was noticed in a slightly higher level in the patients of the Control Group (4 cases vs. 3 in the FT-Group), as well as we noticed sleep disturbances (5 cases in the C-Group vs. 3 in the FT-Group). No mortality cases were registered in the two groups.

The average stay in hospital (from this calculation the

cases that required a second operation were not considered, i.e. 2 cases in the FT-Group) resulted shorter for the patients of the FT-Group (6.9 vs. 7.9 days; p<0.05), as well as the median values (7 days range 4-18 after FT-Group; 8 days range 6-11 in the C-Group; probability: not significant). It is to underline that the causes of a longer stay in patients of the FT-Group were a delayed faeces canalization (10 cases), family organizational reasons (1 case), particularly advanced age (1 case), persistent hyperpyrexia in a woman suffering from LES (1 case), aggravation of a pre-existing depressive state (1 case).

At discharge, it was necessary to enable the nursing home care for 5 patients (3 of the FT-Group, 2 of the C-Group), respectively due to ileostomy (2 cases), presence of temporary bladder catheter (1 case) or epicistostomic catheter (1 case), very advanced age (1 case). For no patient of both Groups a new early hospitalization was registered. The satisfaction expressed by operated patients was substantially good in both groups, even if better in the patients of FT-Group (4.5 vs. 3.9 in the verbal scale). A synthesis of results is shown on Figures 3 and 4.

Discussion

Fast Track is an integrated multidisciplinary rehabilitation course aiming to optimize the peri-operative treatments involving in a synergistic way surgeon, anaesthetist, hospital attendant, physiotherapist, nutritionist, nursing home care operators (12-14). The following measures may be requested (9): no smoking and drinking alcohol in the 4 weeks before operation, abolition of preoperative fasting (possibly replaced by a regulated diet and/or nutritional support), abolition of mechanical bowel preparation, administration of beta-blockers, antibiotic and anti-embolus prophylaxis, pre-operative pre-oxygenation, integrated anaesthesia, minimally invasive surgical access, intra-operative normothermia, limited perioperative fluid-therapy, early re-introduction of carbohydrates and post-operative re-feeding, absent or limited use of opioid analgesic

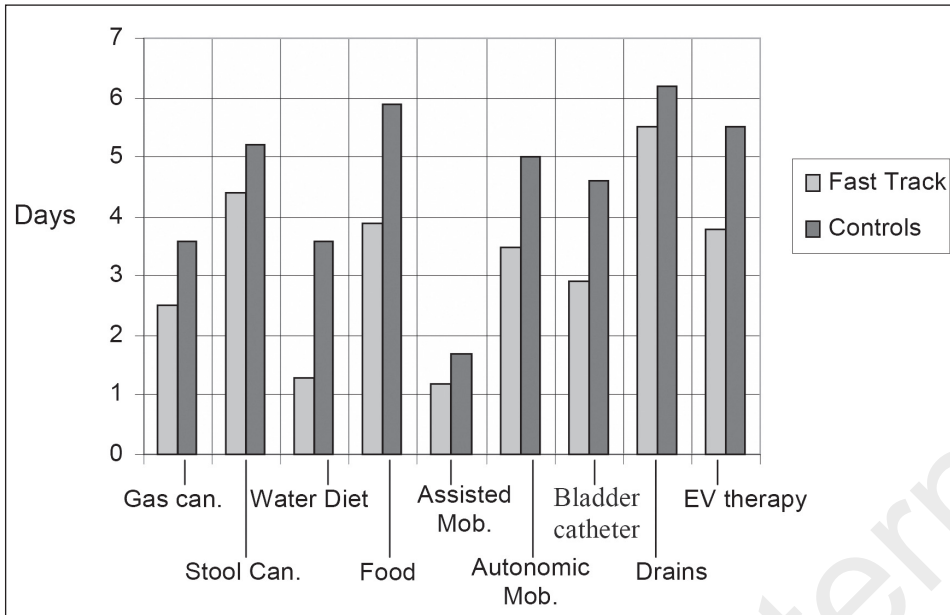


Fig. 3 - Results.

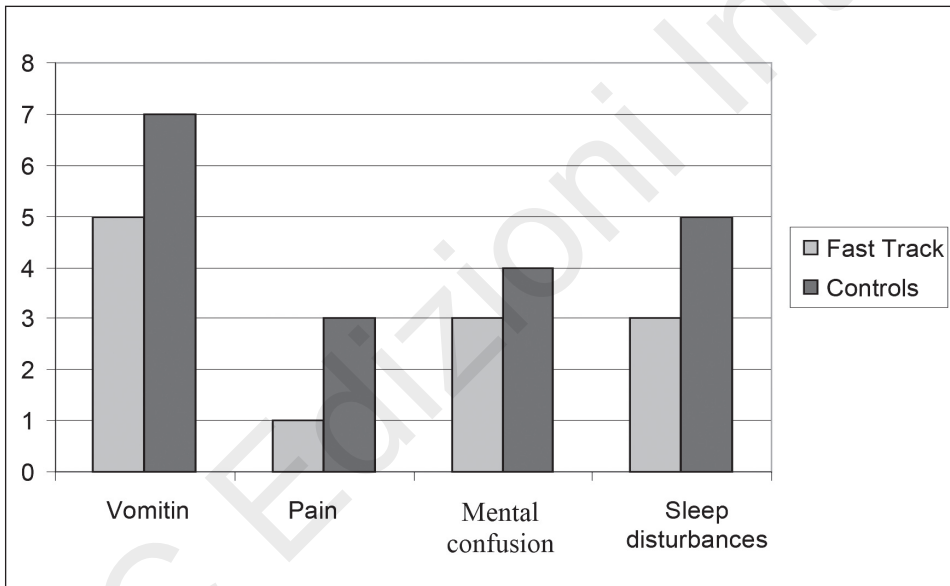


Fig. 3 - Results.

drugs, excellent control of pain, abolition or limited use of drains, removal of the nasogastric tube at the end of the operation, pharmacological prevention of post-operative emesis, early removal of the bladder catheter, early mobilization, short stay in hospital.

The main field of application of this protocol is the colon-rectum surgery: the results analysed by Wind in his review carried out in 2006 (15) and by several randomized surveys carried out in 2005-2007 (1, 6, 16, 17), are globally positive, even if there is a non negligible evidence of early hospital re-admissions (up to 21%). It was remarked that the colon-rectum post-operative condition of ileum,

nausea, pain and asthenia are the factors that determine the recovery timing and the duration of stay in hospital. This sequence is determined by the operation stress and by several iatrogenic factors (18, 19), such as improper analgesia, suspension of feeding, immobilization and invasive instrumentation (tube, catheter, drain). As a matter of fact, the operation stimulates the reply to stress (CO₂, vasoactive peptides, adrenocortical hormones and opiates) in relation to the entity of manipulation, inhibiting the intestine smooth muscle (20). As a result, the minimally invasive approach is effective to reduce the post-operative ileum (19) and the algogenic stimulations (21), thus favouring an ear-

ly mobilization of the patient and a reduced stay in hospital (16, 22-25). Concordantly with these data, also in the patients that we subjected to video-assisted surgery with limited incision we observed the recovery of the intestinal canalization on the 4th day, as an average, with an average morbidity (7.8%) and stay in hospital (6, 9 days) lower than in the patients of the C-Group (respectively 11% and 7.9 days).

As noticed by Galley (26) and Senard (27), the use of local anaesthetic drugs in the epidural and subarachnoid areas mitigates the reaction from stress and the continuous infusion permits a better pain control, helping for an early mobilization of the operated patient, and reduces the inhibition of the gastro-colic motility that is typical of opioid drugs. Also in our survey the use of integrated anaesthesia guaranteed good results in most operated patients, also ensuring an effective pain control by means of a preventive, epidural analgesia and later on a systemic one. Time of stay in hospital and wound infections can also be limited by means of prevention of peri-operative hypothermia (19), that we achieved using blankets with forced circulation of hot air. The perioperative normovolemic management, limited by us to 2000 cc. of balanced solution, demonstrated itself similarly effective in limiting stay in hospital and in helping recovery of gastro-intestinal function (28).

The administration of anti-emetic agents (19) appears also particularly important, especially if associated to an early removal of the nasogastric tube. On the other hand, it is known that the nasogastric tube may affect the recovery of the digestive motility and may increase the occurrence of pulmonary complications, mostly in elderly patients (16). Notwithstanding the anti-emetic prophylaxis and the early removal of the nasogastric tube, we had to notice in the patients undergoing a FT procedure a 13.8% of incidence of post-operative nausea and/or vomit, but however in a lower measure than in the C-Group (21%). The foundation of the Fast Track procedure is early feeding: it helps the functional recovery of the digestive system (20), it is well tolerated by 86% of the operated patients (29) also with solid diet on the 1st day (16), is not risky for the holding of anastomosis (17, 29, 30), reduces incidence of infections and time of stay in hospital (29, 30), does not increase the risk of aspiration pneumonia and intestinal occlusion (29). Some surveys demonstrated the safety and the tolerability of an early re-feeding but they didn't however demonstrate a real advantage in terms of comfort for the patient or a reduction of stay in hospital and did not permit to draw up guidelines with regard to this (31). In our experience, the recovery of re-feeding has surely been earlier and more effective after the FT procedure in comparison with the experience with the C-Group patients: in these patients parenteral feeding has been continued up to the canalization.

In the medical literature there are many evidences con-

firming how extended immobilization increases the risk of thromboembolic and pulmonary complications besides worsening catabolism and muscle function (32), while there are few data relative to the outcome of the use of bladder catheter and drains (19). The review carried out by Pozzi (9) shows that most operators wait at least until the 3rd days after operation for the removal: we did the same and performed the removal once the canalization had taken place.

It is finally to underline that for our patients we decided not to carry out the traditional intestinal preparation, and we only used a rectal bulb syringe for the cases of the FT-Group, and we did not observe any obstacle during the surgery operation. As a matter of fact, the intestinal mechanic preparation has been lately very debated (33) as it was noticed that the use of polyethylene glycol or sodium phosphate may negatively affect the synthetic processes and the early post-operative healing and recovery (34, 35). To this purpose and with the aim to achieve a better tropism of the colonic mucosa and a better approval of the patient, it is more and more frequent to make use of probiotics and regulated diet in the pre-hospitalization period.

Notwithstanding so many evidences, the diffusion of the Fast Track procedure has not been so notable so far, in Italy. A recent research about the surgical units in the North-Western area (9) found out that only 31% of the surveyed Hospitals apply the protocol integrally, while most of them adopted only some elements of it: antibiotic prophylaxis (76%), control of normothermia (90%), reduced use of the nasogastric tube (61%), minimally invasive surgical approach (63%), controlled infusion (40%), early mobilization (94%), preventive analgesia (62%). Such a fragmentary use of single elements of the course, called "Flexible Fast Track Procedure", is more and more frequent and however seems to meet the patient's satisfaction and help the reduction of stay in hospital (34). Pozzi (9) points out that the application of new protocols is not connected to the location of the hospital unit (central or rural) and not even to the age of the Director of the Hospital: there is, instead, a connection between the areas with higher economic resources and the interest for scientific innovation; Pozzi underlines, moreover, that the characteristics of the territory (example mountain areas) and of the hospital service users (elderly patients with relevant co-morbidity, living alone or with a coeval partner) in an area where territorial assistance is not enough spread or it is not well equipped for perioperative treatments may limit the adoption of the Fast Track procedure. Another factor that can constitute a limit to the diffusion of the Fast Track procedure in the units scarcely specialised for the coon-rectum surgery is the complex changes in the perioperative management, that involves the work of different professional figures.

In these last years some Italian hospitals have applied protocols similar to the ones used in Northern Europe for

the patients operated for colonic neoplasia (19, 21) and reported - in comparison with the patients of the C-Group - a shorter duration of the mechanical ventilation, a reduced perspiration and a lower use of opioids in the first 24 hours, an early appearance of peristalsis (0,5 vs. 2,7 days) and of canalization (2,5 vs. 5,2), an advanced recovery of regular feeding (3,1 vs. 7,2) and independent deambulation (3,3 vs. 6,9), a reduced incidence of early re-hospitalization (2 %). These trials demonstrated that the Fast Track Procedure can be introduced also to non-specialized surgery units and to rural hospitals, as there is the possibility of matching the interest of the patient (safe treatment course, the least invasive approach as possible, respect of oncological radicality, short separation from the family environment) with the interest of the hospital unit (proper and effective treatments in a short period) (21). The univariate analysis has moreover demonstrated that the compliance to the elements of the FT Protocol affects the duration of stay in hospital more significantly than the characteristics of the patient or the surgical procedure (10). Our survey also has achieved similar results: it demonstrated that the Fast Track Protocol can be applied to the higher level colon-rectum surgery in a non-specialised division of a rural hospital, with positive results in terms of reduction of complications, time of recovery and stay in hospital and patients' satisfaction. Data surveyed are not always supported by a statistic significance, maybe because the number of patients observed was very low.

Criticisms to the Fast Track Protocols have been variously expressed in relation to stay in hospital, that has not always been short (34, 36), the workload for nursing staff, or, more generally, to the need of dedicated staff (anaesthetists, surgeons, hospital assistants, nutritionists, physiotherapists) (34), to the higher costs of the operating theatre (21), to the more frequent use of nursing home care for the post-discharge assistance (16, 34), to the non-negligible percentage of early re-hospitalizations (21, 34). According to our experience, however, it was not necessary to expressly appoint any doctor and/or assistant for the management of the operated patients, as anaesthetists went on using the protocols in force, the workload of the nursing staff has remained unchanged thanks to the already existing close cooperation with the ward surgeon, it has never been

necessary to ask the help of the nutritionist, because it was enough to use the commonly used diet schedules, the help of physiotherapists was never necessary nor it was necessary to re-admit any operated patient. For 92% of the discharged patients we could respect the discharge protocol criteria and only for 3 patients we had to start the nursing home care, but a temporary one, and all of this in a similar way for both study groups.

As already evidenced by Fabbrocile (8), the use of the FT Protocol permitted to achieve satisfactory results also after the open surgery procedure (11, 16, 34, 37, 38), thanks to the modification of many traditional surgery methods (adoption of limited laparotomy and transversal incisions, early removal of the nasogastric tube and drains) (10). In other words, by adopting and updating the FT guidelines, with the open surgery procedure you can achieve a superimposition of results, unless patients have a co-morbidity requiring more caution in the post-operative management (8).

Conclusion

The "Fast Track Surgery" is a procedure that has been validated for some years now. The medical literature proves that the multimodal approach to the colon-rectum surgery, both open and video-assisted, can permit a quicker recovery and a quicker functional autonomy of the patient, that can be discharged without having to bear additional welfare costs on the territory; the rehabilitation course, moreover, can be reproduced in different local health units. The preliminary results of our survey confirm the applicability and safety of the "Fast Track Surgery": compliance with the FT procedure has been good and morbidity occurrence in general has been limited. This "aggressive" approach has substantially modified the traditional methods that had been followed by us for many years and seems to permit a quicker patient discharge and therefore positive results for the patients and health care cost containment. We believe that if controls are carried out homogeneously and the number of patients observed is higher, rehabilitation programs will be consolidated, thus becoming a reference for all hospital units.

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