DOI: 10.4081/aiua.2019.4.230

ORIGINAL PAPER

Is Fast Track protocol a safe tool to reduce hospitalization time after radical cystectomy with ileal urinary diversion? Initial results from a single high-volume centre

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Summary ***Introduction and aim: Radical Cystectomy (RC) with ileal urinary diversion is one of the most complex urological surgical procedure, and many Fast Track (FT) protocols have been described to reduce hospitalization, without increasing postoperatory complications. We present the one-year results of a dedicated protocol developed at a high volume centre.***
Materials and methods: The FT protocol was designed after a review of the literature and a multidisciplinary collegiate discussion, and it was applied to patients scheduled to open RC with intestinal urinary diversion. To validate its feasibility, we compared its results with data collected from a 1:1 matched population of patients who had undergone the same surgical procedure, without the implementation of the FT protocol.
Results: We enrolled in the FT group 11 (55%) patients scheduled to RC with ileal conduit diversion, and 9 patients (45%) scheduled to orthotopic neobladder (Studer) substitution, while a numerically equivalent population was enrolled in the control group, matched according to age at surgery, BMI, gender, ASA score, CCI, preoperative stage and type of urinary diversion. No statistically significant difference was found in terms of pre-operatory and intra-operatory domains. Median overall age was 71 years (Inter Quartile Range - IQR: 63-76) and mean operatory time was 276 ± 57 minutes. Hospitalization time was significantly reduced in the FT group, considering oralization and canalization items we found a significant advantage in the FT group. No statistically significant difference was found in the control of the post-operatory pain. We found no difference, in terms of both early and late complications ratio, among the two populations. Complications graded Clavien ≥ 3 were found in 4 patients of the control group (20%), while in only one patient (5%) in the Fast Track group, though this difference was not statistically significant.
Conclusions: The Fast Track protocol developed in this study has proven to be effective in significantly reducing hospitalization time in patients submitted to RC with intestinal urinary diversion, without increasing post-operatory complications ratio.

KEY WORDS: Radical cystectomy; Fast Track; Enhanced recovery; After surgery.

Submitted 4 June 2019; Accepted 26 June 2019

INTRODUCTION

Bladder cancer (BC) represents the 7th most common cancer in male population and the 11th considering both sexes (1). Open RC remains the gold standard for the surgical treatment of localized *muscle invasive bladder cancer* (MIBC) or *non-muscle invasive bladder cancer* (NMIBC) resistant to topic chemo- and immunologic therapy (2, 3). RC with urinary diversion is considered one of the most complex urological surgery and is characterized by long hospital stay and high rate of postoperative morbidity and mortality. Complication rate could be up to 34.4% (and to 50% in some series) for mild-moderate grade (Clavien Dindo < 3), and up to 17.5% for severe grade (4, 5) (Clavien Dindo ≥ 3). Even if improvements in surgical procedure have reduced incidence of postoperative complication, it remains important to minimise surgical trauma and optimise perioperative care.

The term "*Fast Track*" refers to a group of perioperative protocols aimed to standardise perioperative cares, shorten hospital stay, maintain optimal surgical treatment quality without increasing postoperative complication rate (6). They are also commonly known as *Enhanced Recovery After Surgery* (ERAS) protocols, as they were firstly described in general surgery. FT schemes are standardised, multimodal and multidisciplinary developed protocols aimed to enhance surgical outcomes referring to perioperative "*best clinical practice*" (7). The origins of ERAS protocols date back to the early 90s with the experiences of *Dahl et al.*, with bupivacaine intratecal analgesia (8), and *Kehlet et al.* with epidural anaesthesia, high preoperative glucose intake and early mobilization and starting of oral diet, applied on colorectal surgery with a mean reduction of 2 days in terms of hospital stay (9). From the urologist's point of view, FT protocols can be applied mainly to RC with ileal diversion, considering the complex operation technique, high complication rate and long mean hospital stay.

Distinctive tract of the FT protocols is that they can be adapted on patient's needs depending on perioperative management phase. Key features of FT protocols are: perioperative diet management, advanced anesthesiological technique, specific antalgic postoperative care (based on non-opioid drugs), early oral diet intake and mobilization (10). We developed a FT protocol with the aim of reducing mean hospitalization time in patients sub-

No conflict of interest declared.

mitted to RC with ileal urinary diversion in our centre, without increasing the complications ratio.

Materials and methods

After an extensive review of literature and a multidisciplinary team consult consisting of urologists, anesthesiologists, nurses and nutritionists, we developed an ERAS protocol (*see Appendix*). To test the effect of this protocol, we designed a pilot observational prospective cohort study, in accordance with the principles and practice of our Review Board. The protocol focused on the reduction of postoperative nausea and vomiting, early canalization, *nasogastric tube* (NGT) removal, enteral feeding and mobilization, shorter hospitalization time, without significant worsening in terms of complication rate or pain management.

We enrolled 20 consecutive patients candidate to open RC with ileal urinary diversion from January 2016 to April 2017 at a single high volume centre. Each operation was performed by surgeons at the end of the learning curve and with extensive experience. The indications for RC included muscle-invasive bladder carcinoma or high-grade non-muscle invasive bladder carcinoma refractory to topic intravesical immunotherapy in fit-for-surgery patients (2, 3). Preoperative radiological assessment was realized via a toraco-abdominal computed tomography with urographic reconstructions and contrast enhanced magnetic resonance of the pelvis (we adopted this accessory technique in order to have a precise and detailed study of the pelvis, as previously described) (11). Data were prospectively collected from medical records. For each patient of the study population a one-to-one propensity score-matched analysis was performed with a population selected among 64 patients who underwent RC with ileal urinary diversion, without application of the FT protocol. Each patient received detailed instructions about FT protocol at preoperative evaluation. Adherence to instructions was verified at the time of the hospital admittance. Data were prospectively collected for patients in the FT group, while, for patients of the control group, each item was retrospectively collected.

Preoperative data were collected about age, *Body Mass Index* (BMI), *American Society of Anesthesiology* score (ASA *Score*), *Charlson Comorbidity Index* (CCI), smoking habits, clinical stage, grading (defined sec. WHO 2016 classification) or neoadiuvant therapy.

We collected data regarding surgical approach, urinary diversion used, pelvic lymphadenectomy template, number of removed lymph nodes, global operation time (minutes) and intraoperative transfusion rate.

Postoperative data collection comprehended histological tumor features (such as stage, grading, lymph node status), hospital stay time, NGT removal

Table 1.
Preoperative and intraoperative items.

	Overall	Fast Track group	Control group	P value
Number of patients, n (%)	40 (100%)	20 (50%)	20 (50%)	-
Gender, n (%)				
Male	31 (77.5)	16 (80)	15 (75)	0.7
Female	49 (22.5)	4 (20)	5 (25)	
Age				
Median (IQR)	71 (63-76)	70 (60-76)	72 (66-75)	0.6
ASA score, n (%)				
1-2	16 (40)	9 (45)	7 (35)	0.5
3-4	24 (60)	11 (55)	13 (65)	
CCI, n (%)				
0	0 (0)	0 (0)	0 (0)	0.8
1-2	7 (17.5)	4 (20)	3 (15)	
3-4	15 (37.5)	8 (40)	7 (35)	
> 4	18 (45)	8 (40)	10 (50)	
BMI (Kg/m^2)				
Mean ± SD	28 ± 4.8	28 ± 4.9	28 ± 5	0.9
Smoking attitude, n (%)				
No	16 (40)	11 (55)	5 (25)	0.05
Yes	24 (60)	9 (45)	15 (75)	
Clinical stage, n (%)				
T0	1 (2.5)	0 (0)	1 (5)	0.7
Ta-pT1	12 (30)	7 (35)	5 (25)	
T2	23 (57.5)	11 (55)	12 (60)	
T3	4 (10)	2 (10)	2 (10)	
Preoperative grade, n (%)				
G1	1 (2.5)	0 (0)	1 (5)	0.6
G2	5 (5)	1 (5)	1 (5)	
G3	37 (92.5)	19 (95)	18 (90)	
Neoadjuvant chemotherapy, n (%)				
No	40 (100)	40 (100)	40 (100)	-
Yes	0 (0)	0 (0)	0 (0)	
Surgical approach, n (%)				
Open	39 (97.5)	19 (95)	20 (100)	0.3
Laparoscopic	1 (2.5)	1 (5)	0 (0)	
PLND template, n (%)				
Not performed	2 (5)	1 (5)	1 (5)	0.2
Standard	22 (55)	13 (65)	9 (45)	
Extended	14 (35)	4 (20)	10 (50)	
Super-extended	2 (5)	2 (10)	0 (0)	
Lymph node retrieved				
Median (IQR)	14 (10-23)	14 (12-21)	14 (8-24)	0.3
Urinary diversion, n (%)				
Ileal conduit	23 (57.5)	11 (55)	12 (60)	0.7
Ileal ortotopic neobladder (Studer neobladder)	17 (42.5)	9 (45)	8 (40)	
Surgical time (minutes)				
Mean ± SD	276 ± 57	260 ± 56	293 ± 54	0.06
Intraoperative transfusion, n (%)				
No	27 (67.5)	15 (75)	12 (60)	0.3
Yes	13 (32.5)	5 (25)	8 (40)	
Pathologic stage, n (%)				
pT0	2 (5)	1 (5)	1 (5)	0.8
pT1-pTis	9 (22.5)	6 (30)	3 (15)	
pT2a-pT2b	7 (17.5)	3 (15)	4 (20)	
pT3a-pT3b	15 (37.5)	6 (30)	9 (45)	
pT4	7 (17.5)	4 (20)	3 (15)	
Pathologic grade, n (%)				
G1	2 (5)	1 (5)	1 (5)	0.8
G2	2 (5)	1 (5)	1 (5)	
G3	35 (87.5)	17 (85)	18 (90)	
G4	1 (2.5)	1 (5)	0 (0)	
LNI, n (%)				
No	26 (65)	13 (65)	13 (65)	1
Yes	14 (35)	7 (35)	7 (35)	

IQR: Inter Quartile Range; VAS: Visual Analogue Scale; ASA: American Society Of Anesthesiologists; CCI: Charlson Comorbidity Index; BMI: Body Mass Index; SD: Standard Deviation; PLND: Pelvic Lymph Node Dissection; LNI: Lymph Node Invasion.

(time and repositioning), pain control (coded by *visual analogic scale* [VAS] standard), time to flatus and time to defecation, lymphorrea amount, time of the start of a light diet and time to drain removal. Postoperative complications were stratified as early (before 30 days from surgery) and late complications (between 30 and 90 days from surgery).
All complications were graded following the Clavien-Dindo classication.
To compare results between the study population and the control group a one-to-one propensity score-matched analysis was computed by modelling a logistic regression, with the dependent variable as the odds of undergoing Fast Track protocol and independent variables such as age at surgery, BMI, gender, ASA score, CCI, preoperative stage and urinary diversion in course of surgery.
Subsequently, covariate balance between the matched groups was examined. Covariates between the two groups were considered equivalent, providing a standardised mean difference ≤ 10%. The primary objective was the evaluation of the eventual reduction in hospitalization ratio, while the secondary objective was the evaluation of any difference in the early (< 30 days) and late (< 90 days) postoperative complication ratio. Statistic software R (*The R Foundation*) was used for statistical analysis. Chi-square test and t test were used for binomial and continuous variables, respectively.

Results

11 (55%) patients of FT groups underwent ureteroileocutaneostomy, while 9 (45%) patients underwent urinary diversion with orthotopic neobladder (according to the Studer technique), while, in the control group, 12 (60%) patients received ureteroileocutaneostomy and 8 patients (40%) were submitted to orthotopic urinary diversion according to the Studer technique. Table 1 shows preoperative and intraoperative characteristics of the two study groups. The two groups were statistically homogenous, with no significant difference among them. Considering intraoperative parameters, mean operative time was 260 ± 56 min in FT group, while was 293 ± 54 min in the control group, with a difference at the limit of the statistical difference (p = 0.06).
Table 2 depicts Fast Track outcomes. NGT was removed earlier in the FT group than in the control group, with a median of 20 hours versus 48 hours, respectively (p < 0.001). Just one patient (5%) of the FT group had SNG removed after the first 24 hours. No significant difference was noted in NGT repositioning rates between the two groups (15% in FT group and 5% in control group, p = 0.3).

Table 2.
Postoperative datas.

	Overall	Fast Track group	Control group	P value
Number of patients, n (%)	40 (100%)	20 (50%)	20 (50%)	-
NGT removal (hours)				
Median (IQR)	24 (20-48)	20 (18-20)	48 (48-72)	< 0.001
NGT removal after POD 1, n (%)	18 (42.5)	1 (5)	16 (80)	< 0.001
NGT repositioning, n (%)	4 (10)	3 (15)	1 (5)	0.3
Mobilization (hours postoperatively)				
Mean ± SD	66 ± 43	21 ± 12	106 ± 26	< 0.001
Postoperative nausea episodes, n (%)				
None	25 (62.5)	13 (65)	12 (60)	0.02
1	7 (17.5)	6 (30)	1 (5)	
> 1	8 (20)	1 (5)	7 (35)	
Postoperative VAS Score				
Median (IQR)	4 (3-4)	3 (3-4)	4 (3-4)	0.2
Time to flatus (POD)				
Median (IQR)	2 (1-3)	1.5 (1-2.75)	3 (2-3.75)	0.004
Time to defecation (POD)				
Median (IQR)	5 (3-6)	4 (3-5.75)	6 (4.5-6)	0.02
Start of a light diet (POD)				
Median (IQR)	5 (2-8)	2 (2-4.5)	6.5 (6-8)	< 0.001
Last drain removal (POD)				
Median (IQR)	8 (6-9)	7 (6-9.75)	8.3 (7-9)	0.5
Lymphorrea amount (ml)				
Mean ± SD	1720 ± 1534	1776 ± 1710	1665 ± 1380	0.8
Hospital stay (days)				
Median (IQR)	12 (9-14)	10 (8-12)	13 (11-14)	0.005

NGT: Naso Gastric Tube; POD: Post Operatory Day; SD: Standard Deviation; IQR: Inter Quartile Range.

Table 3.
Postoperative complications.

	Overall	Fast Track group	Control group	P value
Number of patients, n (%)	40 (100%)	20 (50%)	20 (50%)	-
Overall perioperative (< 30 days) complications, n (%)				
No	31 (77.5)	14 (70)	17 (85)	0.3
Yes	9 (22.5)	6 (30)	3 (15)	
Clavien-Dindo classification, n (%)				
Grade 1	6 (66.6)	5 (83.3)	1 (33.3)	0.3
Grade 2	2 (22.2)	1 (16.7)	1 (33.3)	
Grade 3	1 (11.1)	0 (0)	1 (33.3)	
Grade 4	0 (0)	0 (0)	0 (0)	
Grade 5	0 (0)	0 (0)	0 (0)	
Type of complication (< 30 days), n (%)				
Dynamic Ileus	6 (66.6)	5 (83.3)	1 (33.3)	0.3
Anemization	1 (11.1)	1 (16.7)	0 (0)	
Wound Infection	1 (11.1)	0 (0)	1 (33.3)	
Deep Venous Thrombosis	1 (11.1)	0 (0)	1 (33.3)	
Overall postoperative (< 90 days) complications, n (%)				
No	36 (90)	19 (95)	17 (85)	0.3
Yes	4 (10)	1 (5)	3 (15)	
Clavien-Dindo classification, n (%)				
Grade 1	0 (0)	0 (0)	0 (0)	0.3
Grade 2	0 (0)	0 (0)	0 (0)	
Grade 3	4 (100)	1 (100)	2 (100)	
Grade 4	0 (0)	0 (0)	0 (0)	
Grade 5	0 (0)	0 (0)	0 (0)	
Type of complication (< 90 days), n (%)				
Lymphocele (Right Iliac Fossa)	1 (25)	1 (100)	0	0.2
Uretero-Ileal Anastomosis Stricture	2 (50)	0	2 (66.7)	
Laparocele	1 (25)	0	1 (33.3)	
Readmission within 90 days, n (%)	4 (10)	1 (5)	3 (15)	0.3

Mobilization time was significantly shorter in the FT group than in the control group (mean 21 ± 12 hours vs 106 ± 26 hours, respectively, $p < 0.001$). We observed one (5%) patient in the FT group who had more than one nausea episode postoperatively, while we noted 7 (35%) of such events in the control group ($p = 0.02$). Median time to flatus was 1,5 (IQR 1-3) days in the FT group and 3 (IQR: 2-3.75) days in the control group, with a statistically significant difference ($p = 0.004$). We also observed a significant shorter time to defecation in the FT group (4 days IQR: 3-5.75) than in the control group (6 days, IQR 4.5-6) with $p = 0.02$. No statistically significant difference was noted in terms of VAS scale, duration and entity of lymphorrea between the two groups. We observed a statistically significant shorter median hospital stay time in the FT group (10 days, IQR: 8-12) than in the control group (13 days, IQR: 11-14, $p = 0.005$).
As depicted in Table 3, no statistically significant difference was noted in terms of early and late complication rate among the two groups ($p = 0.3$ for each type of complication, respectively). Considering early complications, only one event graded as Clavien 3 was reported (11.1%), and it was a wound infection surgically treated in the control group. Considering late complications ratio, 4 events graded as Clavien 3 were documented, 1 in the FT group (right iliac fossa lymphocele percutaneously drained), and 3 in the control group (2 cases of uretero-ileal anastomosis stricture surgically corrected, and 1 case of laparocele surgically repaired), though this difference was not statistically significant ($p = 0.2$). No statistically significant difference was found in terms of readmission rate within 90 days among the two groups ($p = 0.3$)

Discussion

RC with ileal urinary diversion is a surgery historically affected by a high rate of perioperative morbidity and mortality. With the starting point set in intervention on bowel in general surgery, ERAS protocols were described in order to improve postoperative outcomes. Although a number of ERAS protocols have been built over the years, all of them found their key features on strategies to improve postoperative recovery rate and reduction of hospital stay time, without worsening postoperative complication rate. After extensive literature review and multidisciplinary meeting between urologists, anaesthetists, nurses and nutritionists, we designed a tailored ERAS protocol to be adopted at a high volume institution. In order to validate the FT protocol we designed a case-control prospective study, matching patients who underwent RC with ileal urinary diversion and who applied the protocol with patients who underwent the same kind of surgery but without implementation of the protocol. In our cohorts of RC with ileal urinary diversion, the adherence to the FT protocol permitted to obtain a significant shorter hospitalization time, without a significant increase in term of perioperative complications rate. An interesting fact is that no preoperative bowel preparation was adopted, because, as demonstrated by *Shafii et al.*, it does not give any significant advantage (12). Moreover, the early removal of the NGT tube, in adjunction with a continuous prokinetic stimulus, has proven to be feasible, in accordance to the experience of *Braga* (13), who demonstrated that decompression with NGT in all patients is not necessary ad is associated with an increased incidence of pulmonary complications. An important contribute to this result is represented by the perioperative dietary regimen and by the intra- and postoperative pain management. The hypercaloric and hyperglucidic preoperative dietary regimen of the FT protocol allows to create a preoperative supply of proteins and glucose in order to react to the operative stress without significantly compromise the homeostasis and improving the natural healing process. This fact seems to be the possible base for the observation that no wound infections were reported in the FT group. As a matter of fact, wound repair depends on the disponibility of adequate protein and glucose supply, which could be insufficient after a prolonged perioperative fasting period.
We observed no statistically significant difference in VAS scale evaluation between the two groups, so we might affirm the non-inferiority of an opioid-free pain control regimen (based on FANS and continuous infusion via epidural catheter), in comparison with the pain control obtained with opioid drugs. Moreover, the absence of opioid administration allows to avoid typical side effects, such as a prolonged intestinal transit, which could hesitate in delayed time to flatus and time to defecation. Other aspects of our FT protocol aimed to improve intestinal function, such as administration of prokinetic drugs (metoclopramide) and of chewing-gum, as already been prove successful by *Kouba et al.* (14). We observed a statistically significant reduction of canalization time in FT group compared to control group, either considering median time to flatus (respectively in POD 1,5 *vs* POD 3, $p = 0.004$) and median time to defecation (respectively on POD 4 *vs* POD 6, $p = 0.02$). Moreover we observed that patients of the FT group could tolerate a solid diet regimen on POD 2, significantly sooner in comparison with patients of the control group (median POD 6.5, $p < 0.001$). These results could be explained by the fact that metoclopramide administration is able to reduce the incidence of nausea and vomiting episodes, and also gastrointestinal complications, as described by *Pruthi* (15). Another explanation for this matter could be the fact that faster bowel activity recovery might be reached also with early mobilization and early feeding, as postulated by *Cerruto et al.* (10). Internal peristalsis is moreover facilitated by the blocking of visceral afferents and segmental efferences, which is realized by the epidural analgesia (16). The importance of a T11 epidural catheter as a useful tool to increase microvessels perfusion (thus reducing interference with the cardiopulmonary system), has been underlined by *Friedrich-Freksa*, who successfully applied this technique to high-risk patients submitted to RC (17).
The result of the aforementioned considerations allows patients in the FT group to be discharged 3 days before, in comparison with patients of the control group (mean 10 days *vs* 13 days, $p = 0.005$). This result is in line with the Literature, though there are discordant experiences, as the one described by *Cerruto* (10), who reported no statistically significant difference in mean hospital stay

time in patients submitted to RC with implementation of a dedicated FT protocol.
A promising synergy is represented by FT protocols applied to mini-invasive surgery, a technique which is usually already characterized by a short hospital stay (18). As demonstrated by *Saar et al.* (19), the implementation of a FT protocol in case of robotic approach to RC provides a significant advantage in terms of return to a regular diet and use of postoperative morphine equivalents.
The efficacy of FT protocols applied to mini-invasive surgery has led to the recommendation to always adopt them in case of robot assisted radical cystectomy, as written in the paper published by *Wilson* (20). Moreover, the use of barbed sutures (21), a typical feature of the robotic approach, might improve the postoperatory continence ratio, as described in case of robot-assisted radical prostatectomy (22, 23).
Another point of interest of FT protocols is the eventual reduction of both postoperative complications ratio and 90-days readmission rates. On a previous publication by *Cerruto et al.* on the effect of a FT protocol in patients candidates to robot-assisted RC with Padovana ileal neobladder, the authors reported a lower global rate of postoperative complications ($p = 0.004$) in patients adherent to the protocol (10).
In our study we did not record a statistically significant difference between the two groups in terms of complications or readmission rate. Such observation is in partly due to the scarce numerosity of the group of our study. It is important to underline that no major early complication (grade 3 or superior according to the Clavien-Dindo classification) was observed in the FT group. Moreover, of the 4 (10%) major late complications observed, only 1 (5%) was in FT group, while 3 (15%) were in control group.
The complication of the FT group was a lymphocele treated with ultrasound-guided percutaneous drainage, which seemed unrelated to FT protocol implementation. On the control group we observed one early and three late complications Clavien ≥ 3, consisting of wound infection (early complication), two uretero-ileal anastomotic strictures (a well-documented complication of this kind of surgery) (24) and a laparocele, all of them treated with surgical revision on general anaesthesia.
A limitation of the present study is the limited number of patients enrolled, though the scarce numerosity seems to be a common feature in studies concerning FT protocols applied to RC, as confirmed by a recent paper published by *Freeks et al.* (25).

Conclusions

The implementation of the FT protocol to patients submitted to RC with urinary ileal diversion is a safe and effective procedure, which allows to reduce hospitalization time without increasing postoperatory complications ratio. Further studies are needed, with larger populations, in order to definitively confirm the superiority of FT protocols over standard protocols in the perioperative management of patients submitted to this surgical procedure.

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Appendix

Enhanced Recovery Protocol

Preoperative clinical setting: within 7 days before surgery
- Anestehesiological assessment
- Written dietary recommendations
- Diet with no restrictions

Preoperative days - 24 hours before RC
- Hospital admittance
- Unrestricted clear fluids
- Normal breakfast
- No bowel preparation

Perioperative phase - day of RC
- Clear fluids allowed up to 2 hours before RC
- Nutritional supply 2 hours before surgery (400 mL/200 calories)
- Elastic compressive stockings
- Ceftriaxone 2 g i.v as prophylaxis for infection

Intraoperative phase - day of RC
- Combined general and epidural anesthesia with intrathecal catheter left in place for the first PODs
- Optimized intraoperative intravenous fluid administration
- NGT insertion preoperatively ad removal at the end of surgery
- Reducing intraoperative blood loss
- Antiemetic prophylaxis
- Infiltration of the surgical wound with local anesthetic

Postoperative phase - day of RC
- Ranitidine 150 mg i.v.
- Metoclopramide 25 mg i.v. every 8 hours
- Intravenous analgesia (paracetamol, ketorolac)
- Epidural analgesia (elastomeric pump loaded with naropine)
- Low molecular weight heparin (LMWH) as prophylaxis for thromboembolic events
- Intravenous hydration (100 mL/h) of 10% glucose solution and electrolyte solution
- Mobilization 6 hours after surgery
- Free clear fluids as tolerated

Postoperative phase - POD 1
- Female patients: remove vaginal pack
- Active mobilization
- Respiratory rehabilitation exercises
- 1100 calories diet as tolerated
- Free clear liquids as tolerated
- Analgesia if needed (ropivacaine, paracetamol, ketorolac)
- Metoclopramide 25 mg i.v. every 8 hours
- Ranitidine 150 mg 1 tab/die
- LMWH as prophilaxys
- Chewing gum (1 piece very 2-4 hours), as tolerated

Postoperative phase - POD 2
- 1500 calories diet as tolerated
- Free clear fluids
- Active mobilization
- Drain removal (if drained < 50 mL/24 hours)

- Epidural catheter removal
- Neobladder flushes 3 trimes a day (every 8 hours)
- Analgesia if required (paracetamol, ketorolac)
- LMWH as prophylaxis
- Metoclopramide 25 mg i.v. every 8 hours
- Continue ranitidine

Postoperative phase - POD 3
- Active mobilization
- 1650 calories diet
- Analgesia if needed (paracetamol, ketorolac)
- Metoclopramide 25 mg i.v. every 8 hours
- LMWH as prophylaxis
- Continue ranitidine
- Continue neobladder flushing

Postoperative phase - POD 4
- Active mobilization
- 2000 calories diet as tolerated
- Analgesia if needed (paracetamol, ketorolac)
- Metoclopramide 25 mg i.v. every 8 hours
- LMWH as prophylaxis
- Continue ranitidine
- Continue neobladder flushing

Postoperative phase - PODs 5 to 7
- Free diet
- Active mobilization
- If absence of canalization and oralization after 5 days from surgery, start total parenteral nutrition (TPN) and search for any cause
- Continue neobladder flushing
- LMWH as prophylaxis
- Continue ranitidine

Postoperative phase - PODs 8 and 9
- Ureteral stents removal
- Clips removal
- LMWH as prophylaxis

Postoperative phase - PODs 10 and 11
- Schedule for return to home
- LMWH as prophylaxis (up to 18 days after RC)

Postoperative phase - POD 30
- Catheter removal (without neocystogram)

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