

Open RC in patients with MIBC - our clinical experience and review of literature

Xhevdet Çuni^{1,2}, Isa Haxhiu², Sabit Mehmeti², Anton Ndoj², Dardan Hoxha², Leutrim Çuni², Donat Cuni³, Tevide Shabani¹, Labinot Shahini³

¹ College "Universum" Prishtina, Kosovo

² Clinic of urology, Prishtina, Kosovo

³ Faculty of Medicine, Prishtina, Kosovo

Abstract

Background: Radical Cystectomy (RC) regardless of the method of implementation (Robotic-Assisted Radical Cystectomy-RARC, Laparoscopy RC or Open RC) still remains a complex operative treatment associated with a number of possible complications. In this study, we retrospectively analyzed 26 patients operated with Open RC with different types of urinary diversion within a period of 18 months in our University Clinical Centre in Pristina. The analysis is focused on some characteristics of the surgical procedures and on the importance of applying the Enhanced Recovery Program (ERP) in the prevention of possible complications.

Materials and methods: In this study, we retrospectively analyzed 26 patients with Muscle-Invasive Urinary Bladder Cancer (MIBC) operated with Open RC with different types of urinary diversion within a period of 18 months (01 January 2022 to 30 June 2023) in our University Clinical Centre in Pristina. The analysis is focused on some characteristics of the surgical procedures and on the importance of applying the Enhanced Recovery Program (ERP) in the prevention of possible complications.

Results: The Open RC with infraumbilical laparotomy under general and in spinal anesthesia was performed successfully in 26 patients. The most frequent urine diversion was Open CR with uretero cutaneostomy diversion according to Bricker in 10 cases (38%); Open CR with Ureterocutaneostomy Diversion (UCN) in 8 cases (31%); Open CR with ileal bladder substitute diversion (by Hautmann and by Studer) in 8 cases (31%). Pelvic Lymph Node Dissection (PLND) was performed in selective cases.

Conclusion: The choice of the type of Open CR with different urinary diversion was made including the age of the patient, the grading with stage of the disease and the accompanying diseases. The application of the Enhanced Recovery Program (ERP) has had a great impact on the success of this surgical treatment.

Key Words: open RC, bladder cancer, endourology 2023

Address for correspondence:
Donat Cuni, Faculty of Medicine, Prishtina, Kosovo.
E-mail: donatcuni@gmail.com

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INTRODUCTION

Bladder cancer is the 7th most commonly diagnosed cancer in males, whilst it drops to 10th position when both genders are considered. The worldwide age standardised incidence rate (per 100,000 person/years) is 9.5 for men and 2.4 for women. In Europe, the highest age-standardised incidence rate has been reported in Belgium (31 in men and 6.2 in women) and the lowest in Finland (18.1 in men and 4.3 in women) [1-3]. Bladder cancer represents a spectrum of disease, ranging from superficial, well differentiated disease, which does not significantly impact survival, to highly malignant tumors for which long term survival may be dismal [4]. Radical Cystectomy (RC) for localised muscle-invasive Urinary Bladder Cancer (UBC) is a complex and multifaceted surgical procedure and the short and long term complications [5]. The Clavien Dindo classification for grading complications was most frequently used. The most common types of complications were reported gastrointestinal (29.0%) and infectious (26.4%). The weighted mortality rate was 2.4% for in-house mortality, 2.1% for 30-day mortality and 4.7% for 90-day mortality [6]. The high rates of morbidity and mortality reflect the fact that the majority of patients undergoing this procedure are elderly patients with multiple comorbidities [7].

MATERIAL AND METHOD

We retrospectively reviewed the records of 26 patients with Muscle Invasive Urinary Bladder Cancer (MIBC) who underwent Open RC with different urinary diversion in the University Clinic of Urology in Prishtina in cohort study from 01 January 2022 to 30 June 2023. All patients included in this study were prepared with pathohistological data, Urethrocystoscopy and radiological

imaging examinations (US and CT) (Figure 1 and 2).



Fig. 1. US image of bladder tumor



Fig. 2. CT scan of bladder tumor

The use of pathology findings after TUR-B was of particular importance in the further treatment of our patients. The experience and education of our pathologists in urological pathology had a great impact on diagnosis and in the selection of surgical treatment as a treatment modality. Some important data from a sample with pathological analysis will be presented below (Figure 3).

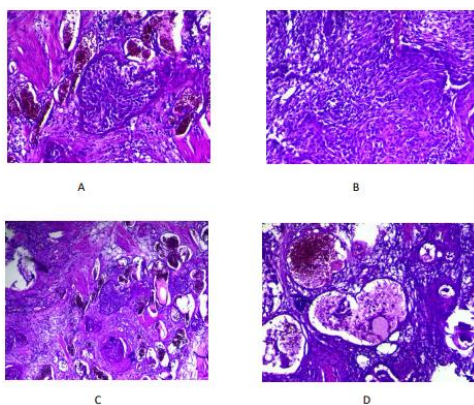


Fig. 3. Pathohistological findings A, B, C, D

In this analyzed sample histologically the tumor was composed by solid areas mainly composed of atypical, polymorphous and hyperchromic transitional cellular epithelial cells was observed. Malignant neoplastic cells are anaplastic, with enlarged

and bizarre nuclei; intracytoplasmic and intranuclear vacuolization, and dense chromatin are seen. The stroma of the tumor is fibrotic and infiltrated with inflammatory infiltrates, as well as large areas of tumor necrosis. The tumor is poorly differentiated and infiltrates the subepithelial connective tissue, and muscularis propria. There is seen and angioinvasion (Figure 3). Features that make a MIBC very high risk include: presence of lymphovascular invasion, variant histology (e.g., micropapillary, sarcomatoid, or plasmacytoid histology), extensive invasion into the lamina propria, large high grade T1 tumors (>5 cm), persistent T1 tumor on re-resection and presence of disease in the prostatic urethra [8]. The main symptom in all cases was hematuria, which was constantly corrected with blood transfusions. All 26 patients involved in this study were smokers where 22 of patients for a period of time over 25 years. The possible risks as well as the potential benefits of surgical treatment have been discussed in advance with our patients. In routine 48 hours before treatment, selected patients were treated with broad-spectrum antibiotics (second generation of cephalosporins). The thromboprophylaxis (with amp. Fraxiparin 0.4 ml s.c.) was used 5 days before the surgical treatment and for several weeks after the operation. The selection of urinary diversion after Open RC is based on the age of the patients, the grading with stage of the disease and their clinical condition. In our Clinic, the recommendations of anesthesiologist colleagues regarding the correct modality of anesthesia have been individually analyzed. In cases where the patients had significant respiratory problems, we were forced to perform Open RC with urinary diversion under spinal anesthesia. This was a new experience for us. The pressure of the limited anesthesia time was a psychological pressure for the entire operating team. Other patients in better clinical condition under general anesthesia underwent the Open RC with ileal ureterocutaneostomy diversion according to Bricker and Open RC with ileal bladder substitute diversion according by Hautmann and by Studer. From total of 26 patients 25 of them were Male and 1 were Female. The average age of the operated patients was 71 years (age group 37 years-82 years). The Open RC with infraumbilical laparotomy was performed in

all cases. The most frequent urine diversion was ileal ureterocutaneostomy diversion according to Bricker in 10 cases (38%); Ureterocutaneostomy diversion (UCN) in 8 cases (31%); ileal bladder substitute diversion by Hautmann and Studer in 8 (4;4) cases (31%). Pelvic Lymph Node Dissection (PLND) was performed in selective cases. During the surgical treatment we applied LigaSure device and titanium stapling device, whereas during the creation of the ileal conduit diversion (op. sec. Bricker) and ileal bladder substitute diversion (op.sec Hautmann/ Studer) we used only soluble sutures. This was done to prevent the possibility of urinary stone formation.



Fig.4. Pathohistological specimen

Based on the pathohistological specimen obtained after radical cystectomy, 24 operated patients were diagnosed with UCB (21 ppts with UCB High Grade, PT1 PN0 and 3 ppts. with UCB High Grade PT2 PN1), 1 patient with S.C.C.(PT1 PN0) and 1 patients with UCB (PT2 Low Grade PN0) (Figure 4). In this study we compare pathological findings at TUR-BT with subsequent findings at Open RC among treated patients. Concordance was found in PH results thanks to the education of pathologists in urinary pathologies.



Fig. 5. Image of the surgical wound

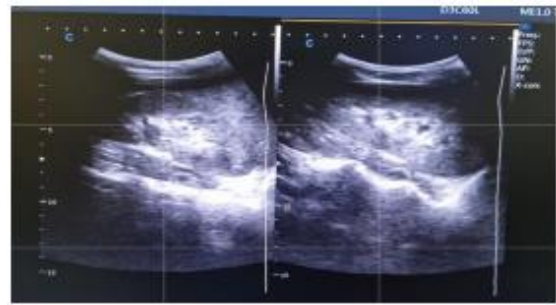


Fig. 6. US image of kidneys of the same patient after 1 year of surgical treatment

The Operation Time (OT) for Open RC with UCN diversion was 155 min. and it was significantly shorter in comparison with Open RC with Op. Sec. Bricker (about 40 min. shorter) or with Op.sec Hautmann and Studer (approx.about 65 min shorter). Postoperatively average need of transfusion was 450 ml (400 ml-800 ml). The average hospital stay was 8 days (range 5 days-12 days) (Figure 5 and 6).

We have not identified major complications that would have seriously endangered the health of the operated patients.

RESULTS

The Open RC with infraumbilical laparotomy under general and in spinal anesthesia was performed successfully in 26 patients. The most frequent urine diversion was Open CR with uretero cutaneostomy diversion according to Bricker in 10 cases (38%); Open CR with Ureterocutaneostomy diversion (UCN) in 8 cases (31%); Open CR with ileal bladder substitute diversion (by Hautmann and by Studer) in 8 cases (31%). Pelvic Lymph Node Dissection (PLND) was performed in selective cases.

DISCUSSION

Our Clinical center offers urological services within the framework of the University Clinic of Kosovo for close to 1.8 million inhabitants. Even in our Clinic we do not have the possibility to perform radical cystectomy with Robotic assistance (RARC) and Laparoscopic RC. Open RC still remains the modality of treatment. Radical Cystectomy (RC) with urinary diversion is still considered the standard treatment for Muscle Invasive Bladder Cancer (MIBC) despite evidence of possible complications [9].

After the successful completion of the radical cystectomy by Open RC, we performed various urinary diversions: Incontinent diversion (UCN/Op. sec Bricker) and Continent diversion (Op. sec Hautmann and Op.sec Studer).

If we analyze the current data on the surgical advantages and disadvantages related to the methods of performing radical cystectomy (with robot assistance, with laparoscopy, open RC), we conclude that none of these is the perfect surgical modality.

Data from the literature show that several studies have been conducted on the complications and time required to perform radical cystectomy through several surgical modalities.

In the CORAL trial, a three-arm, single-center, randomized, controlled study, Khan and colleagues (2016) aimed to distinguish differences regarding 30-days and 90-day complication rates between LRC (Laparoscopic Robotic and open Cystectomy). 19). The 30-day complication rate was significantly higher in the ORC arm than in the LRC arm, but there were no significant differences between groups at 90 days. The mean operative time was longer in RARC compared to LRC or ORC, but there were no significant differences in QoL measures [8].

As for complications, Wei described in his study that early complications of radical cystectomy occur as a direct result of the surgery itself while late complications, which can occur even after 10 years after surgery, are due to urinary diversion [9].

We have not identified any significant early or late complications related to Open RC with urinary diversion that would have endangered the lives of our patients. The Infraumbilical laparotomy has played an important role in reducing the likelihood of wound infection and has increased the possibility of faster mobilization of patients. As a routine for elderly patients who had data on constipation, we applied prophylactic Nasogastric Tube (NGT) and rectal tube for several hours to prevent ileus. The most common types of complications we had mild gastrointestinal disorders: paralytic ileus (in 25% of cases), diarrhea

from administered broad spectrum antibiotics therapy (in 30% of cases) and surgical wound infection (in 10% of cases).

Hospitalization of patients for a few days before surgical intervention, as well as consultation with other professionals based on the patient's pathology, has had a positive effect on the success of surgical intervention. The focus in most cases was on correcting of anemia, respiratory disorders, metabolic disorders, unstable glycemia and cardiorespiratory disorders. Before each surgical intervention a multidisciplinary team is gathered for discussion depending of the case. By applying the Enhanced Recovery Program (ERP) in various areas of surgery, as well as in urology, many things have changed for the better. By publication of Deneshmand et al. the introduction of ERP has resulted in a reduction of the average length of stay from 8 days to 4 days [10]. Compliance with the ERP program has been correctly implemented by health personnel in our Clinic. As a result, it was achieved that the patients with UCN diversion are usually discharged from the hospital on the 4th postoperative day.

Patients with Bricker diversion were discharged approximately on the 8th postoperative day, while those with Hautmann and Studer diversion were discharged on the 12th postoperative day. The application of the Enhanced Recovery Program (ERP) has had a great impact on the success of treatment. The operative and postoperative results in the early follow-up up to 13 months are satisfactory and we hope that through the consultations carried out in cooperation with the Oncology Clinic, we will have until now a satisfactory follow up.

Based on our experience, Open RC with different urinary diversion for MIBC remains a good treatment modality when the operating team consists of a urologist with long experience in open surgery and with strong application of ERP program.

CONCLUSION

The selection of patients to undergo radical cystectomy is a very important surgical decision that is made by carefully analyzing the patient's age, cancer control and comorbidity. Based on our study, it has been

proven that performing a radical cystectomy with urinary diversion is a good treatment modality and when it is performed surgically correctly, the postoperative complications are not major. In many urological centers in Europe and in Asian countries, based on scientific publications Open RC still remains the only treatment modality. Each modality of surgical treatment has its drawbacks and benefits for the patient's health. The success of the implementation of each modality treatment (Robot Assisted Radical Cystectomy RARC, Laparoscopy LRC or Open RC) depends greatly on the experience of the operating team and the application of the Enhanced Recovery Program (ERP). The application of the ERP has been shown to be of particular importance in the treatment success of our patients. It has reduced the occurrence of complications and length of stay for our patients. Regular clinical follow-up in collaboration with oncologists is important for all operated patients especially those with a high risk of recurrence. In most of the cases until now the postoperative overall survival evaluated within 6 months is 100%.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interests regarding the publication of this paper.

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