Urinary Tract Complication after Rectal Surgery

Shinji Takahashi,¹ Yoshitaka Fukuda,¹ Kazushige Kawanishi ¹ and Akira Ohashi ¹

Abstract: The major postoperative complications in rectal surgery are urinary retention and urinary tract infection. Although the pelvic autonomic nerve preserving procedure is performed, urinary dysfunction may still occur. In this article, we report a patient with rectal cancer who developed a postoperative urinary tract infection (UTI). An insufficient estimation of bladder function and frequent periodical bladder catheterizations were considered to be the cause of the UTI. In conclusion, the careful management of urinary tract complications is required in patients undergoing surgery for rectal cancer. (Kitakanto Med J 2002; 52: 473~475)

Key Words: rectal cancer, urinary tract complication, pseudomonas aeruginosa

Introduction

The numbers of patients with colorectal cancer are gradually increasing following the promotion of screening for colorectal cancer.¹ During recent decades, operative procedures have been gradually improved and minimally or function-preserving surgery is now preferred.² Although pelvic autonomic nerve preserving procedures are performed, urinary dysfunction may still occur. We report a patient with rectal cancer who developed a urinary tract complication following surgery.

Case Report

The patient was a 63-year-old-male and attended our hospital in April 2002. He complained of increasing constipation since February 2002 and digital examination revealed a hard rounded immobile rectal mass. Colonoscopy and barium enema examinations revealed a type 2 rectal cancer (Fig. 1). There was no

Fig.1. The colonoscopy and barium enema examinations revealed a type 2 rectal cancer.

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evidence of urinary tract involvement and urinary laboratory findings were unremarkable. The biopsy specimens from the rectal tumor demonstrated a well to moderately differentiated adenocarcinoma. Pelvic computed tomography (CT) showed that the tumor was located near the prostate and regional lymph node metastases were evident (Fig. 2). There was no evidence of liver or lung metastases. The patient was catheterized at the time of surgery and a low anterior resection of the rectum was performed with preservation of all pelvic autonomic nerves. The postoperative course is depicted in Fig. 3. The urinary catheter was removed on the 5th postoperative day (POD) and he subsequently complained of voiding difficulties. Urinary catheterization was performed again on the 7th POD and was continued until the 14th POD. Following catheter removal, intermittent catheterization was required 2–4 times per day with urine volumes of 180–650 mls being recorded. At this time, the urinary volume following spontaneous voiding was very little and therefore tamsulosin 0.2mg per day was administered on the 16th POD. On the 18th POD, the patient required recatheterization and developed a fever up to 38.9°C. Despite the administration of cefotiam (CTM) 2 g per day for 4 days, he remained febrile at 37.2–38.3°C. Pelvic CT revealed no abscess, inflammation or other abnormalities. Since urine bacterial culture showed pseudomonas aeruginosa infection (10⁶ CFU/ml) whilst other cultures (central venous catheter and drainage tube located near the anastomosis) were negative, we concluded that the fever was due to the urinary tract infection (UTI). The bacterial sensitivities of this bacterium are described in Table 1. Treatment with intravenous imipenem (IPM/CS) 1 g per day and oral tosflloxacin tosilate (TFLX) 450mg per day was commenced together with bladder irrigation with gentamicin sulfate (GM) 60mg/500ml saline per day. The patient rapidly became afebrile and repeated urine culture revealed no bacterial but some mycoses infection. On the 32nd POD, oral distigmine bromide 5mg and beth-

<table>
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<th>Antimicrobial agents</th>
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<tr>
<td>ABPC</td>
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<tr>
<td>SBT/ABPC</td>
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<td>CEZ</td>
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<td>TFLX</td>
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<td>MINO</td>
<td>Resistant</td>
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<td>GM</td>
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![Fig.2](image.png)

**Fig.2.** Pelvic computed tomography (CT) indicated the tumor was located near the prostate and regional lymph node metastases were evident.

![Fig.3](image.png)

**Fig.3.** Clinical course is shown. The arrows indicate the periodical bladder catheterizations.
anechol chloride 30mg per day were commenced. By the 40th POD, the urinary catheter was removed and the patient was voiding spontaneously.

**Discussion**

The major postoperative complications following rectal surgery are urinary retention and urinary tract infection with Pollard et al.\(^3\) reporting rates of 22.5% and 16.0% respectively. In our hospital, 21 cases underwent pelvic nerve preserving surgery for rectal cancer between 1997 and 2002 with 2 cases exhibiting postoperative urological complications (10.5%). Bladder dysfunction can be minimized by meticulous anatomic dissection thereby avoiding unnecessary disruption of the pelvic nerves during rectal surgery.\(^4\) The minimum requirement of pelvic splanchnic nerve preservation for urinary function after radical surgery for rectal cancer is bilateral S4 or unilateral S3, S4 preservation,\(^5\) but even complete nerve preservation cannot avoid urinary complications completely. In addition, some patients exhibit urological problems prior to surgery and these patients are more likely to develop postoperative urological complications. Leveckis et al. reported that only 6 of 20 patients with rectal cancer exhibited normal urodynamic studies\(^6\) and it is therefore apparent that careful consideration must be given to the appropriate timing of catheter removal.

The prevention of catheter-associated urinary tract infections following rectal surgery is an important issue. The use of bladder irrigation for the prevention of UTI is considered to be ineffective.\(^7-9\) CDC guideline recommends that the insertion should be done aseptically and that the drainage system should be a closed system.\(^9\) The catheter and drainage tubes should not be disconnected unless the catheter is irrigated (e.g., for catheter obstruction).\(^9\) Inadequate postoperative estimation of urological function will consequently lead to the frequent self or medical staff-assisted catheterization with an increased risk of urinary tract infection. In our case, the requirement for frequent catheterization after the initial removal of the catheter probably resulted in the pseudomonas aeruginosa UTI.

Anti-microbial therapy was effective following confirmation of the UTI. Catheter-associated infections typically often involve coagulase-negative staphylococcus, candida species and pseudomonas aeruginosa.\(^10\) Our patient exhibited a good response to the administration of intravenous or oral antibiotics and irrigation of the urinary bladder. It is unclear whether bladder irrigation contributed substantially to the resolution of symptoms. However, we prefer to irrigate the urinary bladder with gentamicin sulfate (60mg/500ml saline) in cases with UTI since the treatment is cheap (about 1,200 yen per irrigation), easy to perform and well tolerated by the patient. The drug resistance of pseudomonas aeruginosa has been frequently reported and it is therefore important to confirm drug sensitivities. Tamsulosin, distigmine bromide and bethanecol chloride are effective for the treatment of neurogenic bladder\(^11\) and the early institution of such treatment may be preferable if urinary tract complications are suspected after rectal surgery.

In conclusion, the careful management of urinary tract complications is required in patients undergoing surgery for rectal cancer.

**References**