Orthotopic Neobladder: A 22-Year Experience

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Objective: To analyze the outcome of orthotopic ileal neobladder related to complications and quality of life.

Patients and methods: From 1985 to 2006, 75 patients with mean age of 57 years, (41-75) underwent radical cystectomy and orthotopic ileal neobladder substitution. The mean follow up was 72 months (6-144). Mean operative time was 240 minutes.

Results: Intraoperative blood loss ranged from 250 to 2810 ml. Ureteral stents were removed on 14th postoperative day, and patients were discharged at 21st day, average.

Complications appeared in 23 patients. There were two recurrent TCC in the neobladder. Three patients died from pulmonary embolism. Vesicoureteral reflux appeared in three patients, and it was bilateral in two patients. Total of 98% patients have daytime continence.

Conclusion: Continent urinary reservoirs represent the state of the art in urinary diversion. Surgesons who perform these operations are urgent to institute requirements for careful long-term follow-up of these patients.

Key words: invasive bladder cancer, radical cystectomy, orthotopic neobladder

INTRODUCTION

The technique of total bladder replacement by a segment of intestine was studied of the end of the last century. In 1951, Couvelaire reported the results of the first successful attempt1. The ideal bladder substitution procedure, whether performed for urinary diversion of for replacement of the bladder in situ, should preserve the upper urinary tract, avoid metabolic disturbances and give the patients full command over voiding.

It is now generally accepted, that functionally acceptable compliance can be achieved only with the use of detubularized segments of intestine.

When this type of reservoir is constructed of ileum, pressure waves with an amplitude exceeding 40 cm of water seldom occur seldom, only at large volumes1, which provides continence during the sleep2.

The ideal bladder substitute should have qualities similar to those of the normal bladder: low pressure with large filling volumes, minimal absorption of urinary constituents, absence of reflux to the upper tract and voiding voluntarily controlled by a sphincter3.

MATERIAL AND METHOD

From 1985. to 2006, one surgical team performed 75 radical cystectomies due to invasive bladder cancer, with the construction of orthotopic neobladder. Sixty-seven patients were operated in Urological Clinic in Belgrade, and additional eight, in urological departments in Leskovac, Vranje, Pirot and Valjevo.

In 30 patients, transurethral resection (TUR) of the bladder tumor preceded cystectomy, in the interval from 8-13 months.

Preoperative staging revealed 35 patients in stage T2N0M0 and 19 patients in stage T3aN0M0.

In the preoperative staging, renal function assessment, ultrasonography, intravenous urography and cystoscopy under anesthesia were mandatory. Recently, computed tomography (CT) and magnetic resonance imaging (MRI) are used routinely.

After radical cystectomy, the formation of neobladder was performed, using the technique of Camey, (56 patients) Studer (12 patients), Ghoneim (3 patients) and S-shaped ileal neobladder (4 patients).

The mean operative time was 240 minutes, with the intraoperative blood loss from 250 to 2810 ml. The average patients age was 57 years (41-75).
All patients had preoperative preparation of the digestive tract in the duration of three days, and the antibiotic prophylaxis starting the day before surgery.

The first radical cystectomy with orthotopic neobladder in Yugoslavia was performed in Urological Clinic in Belgrade, at 1985. The first results of Camey enterocystoplasty were presented at the Congress of the Urologists of Yugoslavia, at 1987, in Bled (Hadzi-Djokic).

RESULTS

The average operative time was 240 minutes. Ureteral stents were removed on 14th postoperative day, urethral catheter on 17th day, and patients discharged on 21st postoperative day (18-32).

There were 10 early complications: septicemia (3 patients), wound infection and dehiscence (4 patients) and urethro-ileal anastomotic fistula in three patients. Urethro-ileal fistulas closed spontaneously after prolonged catheterization. Three patients died after pulmonary embolism.

The late complications developed in 14 patients (Table 1).

Stenosis of uretero-ileal anastomosis appeared in two patients; this complication was successfully treated with the use of balloon catheter, or metal stent. Very rare complication was the development of the recurrent tumor in the neobladder, which was noted in two patients. One patient developed the tumor in the neobladder and in the renal pelvis, simultaneously.

Total of 46% patients are continent. Daily continence rate is 98%, while nocturnal incontinence developed in 50% of patients.

DISCUSSION

The radical treatment of the invasive bladder cancer requires radical cystectomy and bilateral pelvic lymphadenectomy, followed by the derivation of the urine 1,3,5,6.

In the one of the first reports, at 1984, Lilien and Camey had average intraoperative time of nine hours, in the presence of two surgical teams. Average blood loss was 2500ml, and operative mortality of 2.7% in 220 operations. Surgical experience, with the development of the surgical technique and preoperative and postoperative care, are essential for the good results and low mortality and complication rate 7,8.

In our series, operative mortality was 4%; three patients died after pulmonary embolism. Fistula of the urethro-ileal anastomosis appeared in two patients and resolved spontaneously after prolonged catheterization. Wound dehiscence appeared in four patients and was treated with secondary wound suture. Three patients had vesicoureteral reflux.

All patients underwent anti-reflux ureteral implantations using the Camey-Le Duc technique.

There were no serious metabolic disturbances during the follow-up.

<table>
<thead>
<tr>
<th>Late Complications</th>
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<td>Upper tract TCC*</td>
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<tr>
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*Transitional Cell Cancer

Surgical procedures using the detubularized intestinal segment offer almost normal life 10. There is a tremendous significance of the psychological and social integration of the patient after radical cystectomy. Orthotopic neobladder substitution provides such an opportunity.

CONCLUSION

For decades, urologists have been searching for suitable means of handling urine in patients with diseased bladders.

This search led to the evolution of several creative methods for conducting and storing urine, like ureterosigmoidostomy, ileal loop, antirefluxing colon conduit, bladder augmentation and continent urinary reservoirs.

Today, continent urinary reservoirs represent the state of the art of the urinary diversion.

SUMMARY

ORTOTOPSKA NEOBEŠIKA-22-GODIŠNJE ISKUSTVO


Ključne reči: invazivni karcinom bešike, radikalna cistektomija, ortotopska neobešika

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