

doi:10.3969/j.issn.2095-4344.2013.05.022 [http://www.crter.org]

Wang HF, Wang JS, Xu HY, Shi YF, Zuo YG, Yang DL. Comparison of clinical efficacy between orthotopic ileal neobladder and orthotopic sigmoid neobladder in female bladder cancer patients. *Zhongguo Zuzhi Gongcheng Yanjiu*. 2013;17(5): 907-912.

Comparison of clinical efficacy between orthotopic ileal neobladder and orthotopic sigmoid neobladder in female bladder cancer patients[☆]

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Abstract

BACKGROUND: The orthotopic urinary diversion after radical cystectomy of bladder cancer has good urinary continence. However, there are few reports about the clinical efficacy and follow-up of orthotopic ileal neobladder and orthotopic sigmoid neobladder in female bladder cancer patients.

OBJECTIVE: To compare the clinical efficacy of orthotopic ileal neobladder and orthotopic sigmoid neobladder in female bladder cancer patients.

METHODS: The clinical data of the female patients with bladder cancer who were treated with orthotopic ileal neobladder (ileal group, $n=29$) and orthotopic sigmoid neobladder (sigmoid group, $n=23$) from 1996 to 2008 were retrospective analyzed. The intraoperative and postoperative conditions, urodynamics, urinary continence, pouch-related complications of the patients in two groups were compared.

RESULTS AND CONCLUSION: The average follow-up time was 57 months in the ileal group, and 55 months in the sigmoid group. There was no difference in intraoperative blood loss and postoperative urinary continence between two groups, and there were significance differences in operative time, postoperative out-of-bed activity and the orthotopic neobladder's capacity between two groups ($P < 0.05$). The early and late pouch-related complication rates in the ileal group were higher than those in the sigmoid group. In the ileal group, tumor recurred in two patients, and no tumor recurred in the sigmoid group. It indicates that orthotopic ileal neobladder and orthotopic sigmoid neobladder in female patients are both safe and effective to achieve satisfactory clinical outcomes.

Key Words: organ transplantation; basic experiments of organ transplantation; urinary diversion; ileal neobladder; sigmoid neobladder; urodynamic; urinary continence; women; bladder cancer; efficacy

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Received: 2012-06-09
Accepted: 2012-06-28
(20120419008/WLM)

INTRODUCTION

The orthotopic neobladder is currently considered the most ideal form of urinary diversion after radical cystectomy for invasive bladder cancer which can improve the patient's quality of life^[1-2]. However, female patients who are able to be treated with the orthotopic neobladder must meet the following two conditions: sphincter integrity must be preserved after resection of the bladder and the urethral suspension tissues do not be damaged^[3-4]. To date, a number of studies have reported the clinical outcomes in patients undergoing reconstruction of orthotopic neobladder^[5-12]; however, there have been few reports comparing the clinical efficacy between orthotopic ileal neobladder and orthotopic sigmoid neobladder in female bladder cancer patients. From April 1996 to July 2008, the main types used in female patients at Yunnan Institute of Urology were orthotopic ileal neobladder substitution and orthotopic sigmoid neobladder substitution. In order to compare the clinical efficacy between them, we retrospectively analyzed 52 patients who were treated with these two approaches.

SUBJECTS AND METHODS

Design

A retrospective case analysis.

Time and setting

The experiment was completed at the Second Affiliated Hospital of Kunming Medical University at May 2012.

Subjects

Female patients undergoing radical cystectomy for bladder invasive cancer and reconstruction of an orthotopic neobladder at Yunnan Institute of Urology between 1996 and 2008, 52 female patients (mean age 51.3 years) were included in this study.

Diagnosis criteria

The 52 patients were all confirmed by pathological examination after surgery.

Inclusion criteria

Female patients undergoing radical cystectomy for bladder invasive cancer and reconstruction of an orthotopic neobladder were included.

Exclusion criteria

Male patients with severe underlying disease, and tumors of patients who had been metastasis were excluded.

Ileal group comprised 29 patients who had radical cystectomy and reconstruction with an ileal neobladder (mean age 51.2 years). There were 26 patients of transitional cell carcinoma (T1 13 cases, T2 10 cases, T3 2 cases and T4 1 case), two patients of the squamous carcinoma and one patient of adenocarcinoma. Sigmoid group included 23 patients who had sigmoid neobladder after radical cystectomy (mean age 52.6 years). There were 21 patients of transitional cell carcinoma (T1 12 cases, T2 7 cases, and T3 2 cases), two patients of adencarcinoma.

This study complies with the current ethical considerations, and all the patients in this study were informed consent.

Methods

Modus operandi

Orthotopic ileal neobladder: After total cystectomy, we excised pedicled ileal loop 40–60 cm from the ileocecal valve 15–20 cm, restored intestinal continuity, and closed the gap in mesentery. We fold ileal loop as W-shaped, and made a urine storage pouch by continuous suture method. Bilateral ureter was anastomosed to the pouch using the method of the submucosal tunnel and the nipple. Single-J tubes were indwelled in ureter^[13]. The bottom of the pouch is anastomosed the urethral stump. At last, indwelling balloon catheter was necessary for all the patients.

Orthotopic sigmoid neobladder: After radical cystectomy, we excised pedicled sigmoid colon 30–40 cm, and restored intestinal continuity. We fold sigmoid colon as U-shaped, and used the method of continuous suture to make a U-shaped pouch^[14]. Bilateral ureter was anastomosed to the pouch. The remaining steps were the same as the above modus operandi.

Follow-up content

The follow-up content included operative time, intraoperative blood loss, postoperative urinary continence, postoperative out-of-bed activity, time of indwelling catheter and single-J tube and the early and late pouch-related complications.

Main outcome measurement

Intraoperative and postoperative conditions, urodynamics, urinary continence, pouch-related complications.

Statistical analysis

Differences between the groups were analyzed by the chi-square test of enumeration data or *t* test of measurement data, and all results were reported as mean±SD. *P* < 0.05 was considered to indicate significance.

RESULTS

Quantitative analysis of the subjects

Among 52 patients, 29 patients were treated with radical cystectomy and reconstructed with an ileal neobladder (ileal group) and 23 patients were treated with by radical cystectomy and reconstructed with a sigmoid neobladder (sigmoid group), all of them were involved in the final analysis.

General information of the subjects and the follow-up results

The mean age of the ileal group was 51.2 years old (ranged from 33 to 82 years), and the mean follow-up time was 57 months (ranged from 2 to 122 months). The mean age of the sigmoid group was 52.6 years old (ranged from 31 to 85 years), and the mean follow-up time was 55 months (ranged from 4 to 118 months). During follow-up, there were 7 cases deaths in ileal group and 2 patients died of tumor recurrence and metastasis, and the other 5 patients died of non-cancer causes. In sigmoid group, there were 5 cases deaths, and they all died of non-cancer causes. The details were listed in the Table 1.

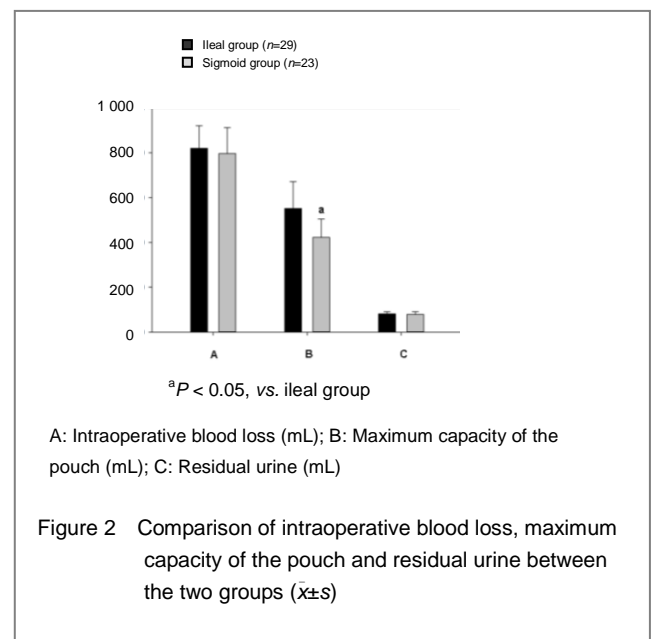
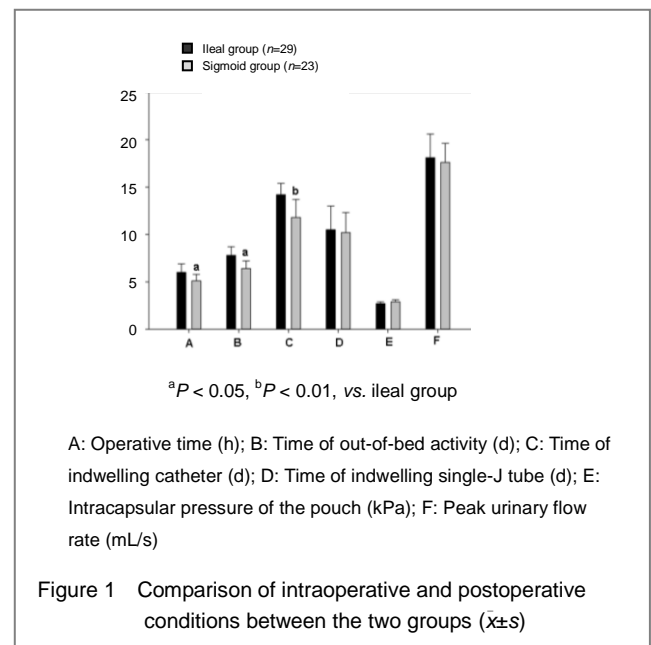
Table 1 General information of the patients

Item	Ileal group (n=29)	Sigmoid group (n=23)
Mean age (yr)	51.2	52.6
Mean follow-up time (mon)	57	55
Number of deaths	7	5
Cancer causes	2	0
Non-cancer causes	5	5
Tumor type and stage		
T1	13	12
T2	10	7
T3	2	2
T4	1	0
Adenocarcinoma	1	2
Squamous carcinoma	2	0

Intraoperative and postoperative conditions of the patients

Comparison of intraoperative and postoperative conditions between the two groups is showed in Figure 1 and Figure 2. Compared with the sigmoid group, the

operative time, postoperative recovery time and time of indwelling catheter were longer in the ileal group (*P* < 0.05). In the ileal group, 26 patients (90%) could control urination during the day, and 23 patients (79%) could control urination at night. In the sigmoid group, 20 patients (87%) could control urination during the day, and 18 patients (78%) could control urination at night. There was no significant difference between the two groups (*P* > 0.05). The results of the postoperative ability to control urination and urodynamic analysis showed that the maximum capacity of the pouch in the ileal group was larger than that in the sigmoid group (*P* < 0.05). Two cases had dysuresia after surgery in the ileal group and one case had dysuresia in the sigmoid group. They were all due to mucus blocking the urethra.



Early and late pouch-related complications of the patients

Comparison of the early and late pouch-related complications between the two groups is showed in Table 2. The rates of the early and late pouch-related complications in the ileal group were higher than those in the sigmoid group. However, the differences of the late pouch-related complications were significant ($P < 0.05$).

Table 2 Comparison of the early and late pouch-related complications between two groups [n(%)]

Complications	Ileal group (n=29)	Sigmoid group (n=23)
Early	6 (21)	2 (9) ^a
Urinary fistula	3 (10)	1 (4)
Intestinal fistula	1 (3)	0
Adhesive ileus	2 (7)	1 (4)
Late	9 (31)	4 (17) ^a
Hydronephrosis	2 (7)	2 (9)
Megaloblastic anemia	2 (7)	0
Metabolic acidosis	4 (14)	1 (4) ^a
Calculus	1 (3)	1 (4)

Renal hydroureter broaden and tumor recurrence

In the ileal group, two cases (7%) had the renal hydroureter broaden, among whom, one case was due to the stenosis of the stoma, and the other one case was due to the refluxing of the ureter. In the sigmoid group, one case (4%) had the renal hydroureter broaden due to the stenosis of the stoma. During the follow-up time, tumor recurred in two patients of the ileal group, while there was no tumor recurrence in the sigmoid group.

DISCUSSION

Radical cystectomy remains the treatment of choice for patients with muscle invasive bladder cancer^[15]. For the 52 patients in this study, we assessed the clinical efficacy between orthotopic ileal neobladder and orthotopic sigmoid neobladder during a long period based on the previous study.

The pressure of ileal tube used in orthotopic neobladder is low, and the ileum can provide adequate bowel to make a pouch. Moreover, ileum has characteristics of large activity and a long mesentery. In the early stage, surgeons often use ileal to make a pouch after radical cystectomy. However, results of the long follow-up showed that the ileum pouch can cause acid-base disturbance, as well as nutritional and metabolic

disorders. Moreover, the position of the ileum is higher, which need a longer mesentery to make the pouch located in the pelvic cavity and decompress urethral anastomosis. This limits the orthotopic ileal neobladder to put into practice, to some extent. While the location of the sigmoid colon is near to the urethra, it has characteristics of the convenient surgery of orthotopic neobladder, little influence on acid-base balance and nutrition metabolism^[16], and less mucus secretion. Recently, orthotopic sigmoid neobladder has been widely promoted.

In this study, the operative time of the orthotopic ileal neobladder group is longer than that of the orthotopic sigmoid neobladder group. This may due to the orthotopic ileal neobladder surgery carried out earlier, and the early technology is not proficient enough. Both groups achieved a good ability to control the urine. The two groups showed insignificant difference in controlling urination, which is similar to the reported literatures^[17-20]. Dysuresia caused by urethral anastomotic stricture was cured by transurethral incision and dysuresia due to mucosal congestion treated by regular bladder irrigation. Both had achieved good therapeutic effects.

In this study, with the urodynamic analysis after surgery, the capability of the orthotopic ileal neobladder group is larger than that of the orthotopic sigmoid neobladder group. However, the differences in the intracapsular pressure of the pouch, peak urinary flow rate, and residual urine between the two groups are not significant. The reason why the capability of sigmoid group smaller may be related to the intestines being short cut, but this is enough for a low-pressure and high-capacity pouch. The residual urine volume of the two groups were large enough, which may be caused by low pressure of the pouch, the anastomotic stenosis and patients cannot master the correct method emiction. We used the method of intermittent catheterization to decrease the intravesical pressure and prevent the infection to the older patients.

The early and late pouch-related complication rates of the two groups are similar to the reported literatures. However, the rate of the ileal group is higher than that of the sigmoid group. The reasons why the ileal group has higher rates of urinary fistula and fecal fistula may be as follows: (1) Orthotopic ileal neobladder surgery carried out earlier, and the early technology is not matured enough. (2) Complex production technology of ileal neobladder increases the possibility of urinary fistula. Intestinal fistula after orthotopic ileal neobladder surgery is the enteric fistula, which leads to the loss of a large

number of digestive juice and nutrient malabsorption. Patients usually have complications of electrolyte imbalance and poor wound healing, which may cause a long recovery time.

Colon is prone to get a digestive tumor, and its cancer incidence was significantly higher than the ileum, which is one of the major concerns with the colon urine storage. In this study, no cancer occurred in the urine storage pouch made of colon during the follow-up. Correspondingly, tumor recurred in two patients whose urine storage pouches were made by the ileum. The two cases were bladder transitional cell carcinoma. Whether ileal pouch mucosa is more prone to occur cancer needs further observation and research. The results of this study showed that the cancer recurrence risk of colon pouch is not higher than the ileal allantoic.

Our experience shows that the operation difficulties of orthotopic ileal neobladder and orthotopic sigmoid neobladder are similar, and both methods can achieve satisfactory clinical outcomes. However, compared with orthotopic ileal neobladder, orthotopic sigmoid neobladder has shorter operative time, quicker recovery and lower rate of the pouch-related complications, which is worth priority selection.

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女性膀胱癌患者原位回肠和乙状结肠尿流改道效果的比较[☆]

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文章亮点:

1 原位尿流改道术在膀胱癌根治术后具有良好的控尿能力, 近年来被国内外泌尿外科医生广泛采用。但针对女性膀胱癌患者行原位回肠新膀胱和原位乙状结肠新膀胱术中、术后及随访方面的研究很少。

2 实验针对昆明医科大学第二附属医院泌尿外科 1996 至 2008 年行原位新膀胱术后的女性患者进行回顾性分析, 比较、评价原位回肠新膀胱和原位乙状结肠新膀胱在女性膀胱癌患者中的疗效。

3 结果发现两种修复方式均有良好的控尿效果, 但原位乙状结肠尿流改道耗时短, 恢复快, 修复后并发症发生率低, 值得优先采用。

关键词:

器官移植; 器官移植基础实验; 尿流改道术; 回肠代膀胱; 乙状结肠代膀胱; 尿动力学; 控尿能力; 女性; 膀胱癌; 疗效

摘要

背景: 原位尿流改道在膀胱癌根治术后具有良好的控尿能力, 但针对女性膀胱癌患者行原位回肠重建新膀胱和原位乙状结肠重建新膀胱后疗效及随访方面的研究很少。

目的: 比较女性膀胱癌患者原位回肠和乙状结肠尿流改道的临床疗效。

方法: 回顾性分析 1996 至 2008 年行膀胱癌术后原位回肠尿流改道(回肠组, $n=29$)和乙状结肠尿流改道(乙状结肠组, $n=23$)的女性膀胱癌患者的临床资料。比较分析两组患者修复中及修复后的一般情况、尿动力学结果、控尿能力和修复后储尿囊相关并发症等。

结果与结论: 平均随访时间回肠组 57 个月, 乙状结肠组 55 个月。两种修复方式术中失血量、术后控尿效果接近, 但两组在手术时间、治疗后下床时间、新膀胱容量等方面差异有显著性意义($P < 0.05$)。回肠组治疗后早期及晚期储尿囊相关并发症发生率均高于乙状结肠组。回肠组治疗后储尿囊再发肿瘤 2 例, 乙状结肠组未见发生, 说明两种重建方式应用于女性膀胱癌患者疗效均良好。

作者贡献: 实验设计为王剑松, 实验实施为王剑松、王海峰、徐鸿毅、石

永福、左毅刚、杨德林, 实验评估为王剑松、徐鸿毅, 资料收集为王海峰、石永福、左毅刚、杨德林。王海峰成文, 王剑松审校, 王海峰、王剑松对文章负责。

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中图分类号: R318 文献标识码: B

文章编号: 2095-4344(2013)05-00907-06

王海峰, 王剑松, 徐鸿毅, 石永福, 左毅刚, 杨德林. 女性膀胱癌患者原位回肠和乙状结肠尿流改道效果的比较[J]. 中国组织工程研究, 2013, 17(5): 907-912.

(Edited by Jia YZ, Peng LK/Chen X/Wang L)