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Case Report

Lower urinary tract reconstruction with ileum in the treatment of gynecologic malignancies ☆

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Abstract

Introduction. Advanced or recurrent gynecologic malignancies can invade or obstruct the lower urinary tract. If extirpation is necessary for cytoreduction or repair of radiation sequalae, treatment has typically involved creation of either an ileal conduit or a cutaneous continent urinary diversion. As an alternative, a more limited resection with urinary tract reconstruction using ileum for interposition or augmentation may allow for the preservation of urethral voiding.

Cases. We describe the use of ileal segments for lower urinary tract reconstruction in the treatment of ten patients with advanced or recurrent gynecologic malignancies. The clinical history, surgical technique, and patient outcomes are reviewed.

Discussion. These cases demonstrate that limited bladder or ureteral resection with reconstruction using ileal segments may offer select patients preservation of urethral voiding.

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Introduction

The treatment of advanced or recurrent cervical and other gynecologic malignancies often entails high dose pelvic radiation therapy or exenterative type procedures requiring reconstruction of the pelvic viscera. The lower urinary tract is not infrequently injured by high dose pelvic radiation especially in the treatment of recurrent disease. Major urologic complications (grade 3 or 4) may occur in up to 14% of patients with cervical cancer who are treated with intracavitary and external beam radiation therapy [1,2]. Urinary tract sequelae from pelvic radiation may include ureteral obstruction or stricture, vesicovaginal and ureterovaginal fistulas, and bladder fibrosis and contracture. Urinary diversion with a cutaneous ureteroileostomy as described by Bricker has been employed in the majority of gynecologic oncology patients requiring repair of severe radiation induced injuries or during anterior exenteration [3]. Although many patients with a urinary stoma adapt well, it is obvious that quality of life is superior in patients who can avoid a stoma altogether.

An alternative to a cutaneous urinary diversion is an ileocystoplasty. Zoubek et al. were among the first to report on a series of 5 patients with cervical carcinoma who developed small fibrotic bladders as a result of their radiation therapy [4]. All five patients were successfully treated with augmentation cystoplasties and intermittent self-catheterization. Similarly, an ileal interposition can be utilized for those patients requiring extensive ureteral resection rather than performing a cutaneous urinary diversion or a transureteroureterostomy. Goodwin initially described the use of ileum for ureteric replacement in 1959 and helped coin the phrase “ileal ureter” [5]. Subsequent

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reports in the urologic literature have proven that use of ileum for ureteric replacement either isolated or in conjunction with the cecum is a standard in reconstructive urology [6,7]. The obvious benefit of both procedures, an ileocystoplasty and an ileal interposition, is preservation of urethral voiding. We report ten cases of patients with advanced or recurrent gynecologic malignancies requiring lower urinary tract reconstruction after tumor cytoreduction or for repair of radiation sequalae. Ileal segments were utilized in all cases to restore urinary tract integrity and function.

Patients and methods

A chart review was performed from 1984 to 2000 at the University of California, Los Angeles Medical Center and Cedars-Sinai Medical Center, Los Angeles, California. We identified ten patients with advanced or recurrent gynecologic malignancies who underwent lower urinary tract reconstruction using ileal segments for interposition or augmentation. The ten patients fell into three groups: (I) patients requiring subtotal cystectomy with ileocystoplasty; (II) patients with a contracted and fibrotic bladder requiring augmentation ileocystoplasty, and (III) patients requiring extensive ureteral resection and ileal interposition (ureteric replacement).

Group I—subtotal cystectomy with ileocystoplasty

Five patients underwent a subtotal cystectomy and urinary tract reconstruction with an ileocystoplasty (Table 1). Three patients had recurrent cervical carcinoma and two had recurrent ovarian neoplasms. All patients with recurrent cervical carcinoma had subtotal cystectomies performed at time of exenteration leaving only the bladder neck to include at least the urethral portion of the trigone. Overall, approximately 80% of the bladder was removed en bloc. A healthy appearing 20–30 cm segment of ileum 15 cm proximal to the ileocecal valve was selected for the cystoplasty (Fig. 1a). An attempt was made in each case to select ileum out of the prior radiation field yet have adequate mesenteric length to reach the residual bladder without tension. The ileal segment was then divided proximally and distally with a linear gastrointestinal cutter and then detubularized by opening it along its antimesenteric border (Fig. 1b). The ileal segment was folded into a "U" shape and the medial sides sewn together using a running delayed absorbable suture (Fig. 1c). If a larger reservoir is necessary, a larger segment of ileum can be isolated and the resultant limb can be folded into an "S" or "W" and again the medial sides sewn together. The ileal segment was then folded upon itself and the lateral sides sewn together again with a delayed absorbable suture (Fig. 1d). The ileal segment was then anastomosed to the bladder neck using two layers of a running delayed absorbable suture (Fig. 1e). Interrupted stay sutures were placed circumferentially and then the anastomosis completed beginning posteriorly. After the anastomosis was completed posteriorly, the ureters were reimplanted directly into the transposed ileal segment without tunneling. The ureters were reimplanted if the ureteral orifices were part of the primary resection or if the proximity of the anastomosis potentially compromised outflow. An ileoileostomy was performed using a gastrointestinal stapler. Where possible, an

Table 1
Subtotal cystectomy and ileocystoplasty

Patient	Diagnosis	Previous treatment	Findings	Procedure	Complications/follow-up
1	Recurrent Adenocarcinoma of the Cervix	WPR (4500 cGy) + RAH	Central Recurrence involving Bladder Base and Distal Ureters	Posterior Exenteration with Subtotal Cystectomy, Ileocystoplasty and Bilateral Ureteroileostomy	Vesicovaginal Fistula Failed Conservative Measures and Repaired Surgically; NED at 3 years
2	Recurrent Squamous Cell Carcinoma of the Cervix	RAH	Right Pelvic Sidewall Recurrence involving Right Ureter and Right Bladder Wall	Tumor Debulking, Subtotal Cystectomy, Ileocystoplasty and Unilateral Ureteroileostomy	None; NED at 1 year
3	Recurrent Adenocarcinoma of the Cervix	RAH; WPR (4500 cGy)	Central Recurrence involving Bladder Base and Distal Ureters	Radical Parametrectomy, Total Vaginectomy, Subtotal Cystectomy, Ileocystoplasty and Bilateral Ureteroileostomy	Vesicovaginal Fistula Conservative Management; NED at 5 years
4	Recurrent Ovarian Serous Adenocarcinoma, Grade 1	Primary Cytoreduction + Chemotherapy (8 cycles of Platinum, Adriamycin, Cytoxan)	Tumor involving Bladder and Ureter	Tumor Debulking, Subtotal Cystectomy, Ileocystoplasty and Unilateral Ureteroileostomy	Unilateral Ureteral Stenosis; Conservative Management; NED at 18 months
5	Recurrent Ovarian Serous Borderline Tumor	Primary Cytoreduction	Tumor involving Bladder and Ureter	Tumor Debulking, Subtotal Cystectomy, Ileocystoplasty and Unilateral Ureteroileostomy	None; NED at 1 year