The Impact of Transtomal Rigid Endoscopy in Continent Cutaneous Urinary Diversions

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OBJECTIVE To determine if transtomal rigid endoscopy damages the continence mechanism of continent cutaneous reservoirs. We report the largest and longest series to date from a single institution demonstrating the safety of transtomal rigid endoscopy.

MATERIALS AND METHODS We conducted an institutional review board-approved retrospective review of a prospectively accrued database of all patients with urinary diversions that underwent rigid endoscopic procedures for various reasons between 2000 and 2013. Pre- and postoperative continence, difficulty with catheterization, and need for surgical revision post procedure were evaluated.

RESULTS From 2000 to 2013, 71 patients with continent cutaneous diversions underwent 191 endoscopic procedures by a single surgeon. Mean follow-up was 603 days. Mean age was 58.4 years. The mean number of procedures per patient was 2.7 (1-7). All procedures were performed by gaining access through the stoma with an offset rigid nephroscope and a 28-30Fr access sheath. Two patients reported incontinence postoperatively; 1 patient was treated conservatively by way of indwelling catheter for 1 week and full continence returned. The second patient had small-volume incontinence preoperatively that worsened postoperatively. The procedure uncovered an existing efferent limb-cutaneous fistula. Patients undergoing repeated procedures were not at any higher risk of incontinence. There were no patients that had difficulty with catheterization postoperatively. No surgical revisions were required for worsened continence postoperatively.

CONCLUSION Transtomal rigid endoscopic procedures do not negatively affect the continence mechanism in continent cutaneous diversions. Transtomal rigid endoscopy allows for safe endoscopic access in these difficult to treat patients. UROLOGY 87: 60–63, 2016. © 2015 Elsevier Inc.

The choice of urinary diversion after radical cystectomy has evolved over time and is an integral step of this major extirpative urologic surgery.[1-3] Over the years, the choices for urinary diversions have progressed such that various types of diversions are now being utilized, including noncontinent vs continent diversions and can be orthotopic or heterotopic.[1] Urinary diversions have well-known early and late complications.[4] Complications may be general in nature, such as metabolic abnormalities and pouch calculi, or those that are more unique to the type of reservoir utilized, such as afferent valve stenosis in the Koch or the T pouch.[5] The goal of managing these complications must take into account the specific type of urinary diversion to best preserve the urinary diversion's functionality.[6]

Recently, endourologic techniques have been the mainstay in managing such complications. However, the continent cutaneous diversions pose a special dilemma because of their efferent continence mechanism. Historically, there has been resistance to instrument such stomas. There is an unfounded concern that transtomal manipulation may compromise the continence mechanism and potentially lead to long-term issues such as leakage, stomal stenosis, or efferent limb strictures from procedural trauma.[7] As such, percutaneous access into the pouch, thus bypassing the efferent limb, has been described as a safe method to manage specific complications.[8]

There are very few studies in the literature regarding the technique for endoscopic management of continent urinary diversions. Likewise, there have been no long-term, large series of complications post transtomal manipulation. Herein, we present our experience with transtomal endoscopic management of complications of continent cutaneous urinary diversions. Our specific objective is to determine whether the urinary diversion has any deleterious effect on the continence mechanism.

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MATERIALS AND METHODS

An institutional review board-approved database was retrospectively reviewed to analyze the medical records of patients with continent cutaneous urinary diversion who underwent rigid transtomal endoscopic interventions, the majority by a single surgeon (MD). Information gathered included patient demographics, indication for cystectomy and diversion, and the reason for endoscopic evaluation and treatment. The technique and number of endoscopic procedures performed was analyzed. Urinary continence, new onset of difficulty in catheterization was evaluated pre- and postoperatively as well as any need for surgical revision post transtomal manipulation. Continence was defined as "absolutely no leakage" from the stoma, and for those that may have had some minor leakage *prior* to the procedure, was it worsened post transtomal endoscopy.

At our center, transtomal endoscopy through cutaneous continent urinary diversions is optimized by the use of an access sheath, 28-30Fr (Amplatz sheaths, Cook Medical, Bloomington, IN) and an offset non-fiberoptic rigid nephroscope. This combination allows for superior visualization secondary to the continuous flow mechanism and the access sheath permits the use of a variety of instruments to be able to properly treat the underlying pathology.

RESULTS

From 2000 to 2013, 71 patients who had continent cutaneous diversions who underwent 1 or more rigid endoscopic procedures by a single surgeon (MD) were identified.

Mean follow-up was 603 days (range 33 days-6.3 years). Mean age of the patients at time of first transtomal procedure was 58.4 (range 38-94) with 42% of patients being male and 58% being female.

The underlying pathology for continent cutaneous diversion is outlined in Table 1.

The mean number of procedures per patient was found to be 2.7 (range 1-7). Twenty-six (36%) of patients had 3 or more procedures, 30 patients had 2 procedures, and 15 patients had a single procedure as noted in Table 1.

The primary indications for treatments are listed in Table 2.

The specific type of transtomal procedure is noted in Table 3.

Table 2. Primary indications for treatment

Afferent valve stenosis	67
Urolithiasis	60
Afferent valve stenosis/urolithiasis	22
Diagnostic	14
Ureteric stricture	9
Difficulty catheterization	5
Retained stent	4
Hematuria	4
Pain	2
Stomal prolapse	4
Total	191

Table 3. Type of procedure

Laser incision, dilation of stenotic afferent valve	106
Laser lithotripsy	46
Removal of stones/CyberWand	14
Ureteric stone manipulation	7
Diagnostic	6
Ureteric dilation	6
Dilation of stoma	6
Total	191

Continence

There was a single patient who reported de novo incontinence postoperatively (1 of 71). This patient had a T

Table 1. Summary of results

	1 Procedure	2 Procedures	>3 Procedures
N (%)	15 (21%)	30 (42%)	26 (37%)
Mean age (years)	64.4	65.7	69.2
Gender (M/F)	6M/9 F	12M/18 F	12 M/14 F
Reason for diversion			
Bladder cancer	8	15	13
Neurogenic bladder	3	5	5
Interstitial cystitis	4	3	1
Exstrophy	1	3	2
Spinal cord injury	2	1	0
Other:	T4 prostate Ca Vulvar melanoma	GU TB T4 prostate Ca VACTERL Imperforate anus	Eosinophilic cystitis
Results			
Incontinence	1*	0	0
Difficulty in catheterization	0	0	0
Need for open surgical revision	0	0	0

* Resolved after 1 week of conservative management (catheter).