

SIMPLE CYSTECTOMY: OUTCOMES OF A NEW OPERATIVE TECHNIQUE

1) Hypothesis/Aim of Study

Urinary diversion for benign indications is a relatively rare procedure. It is performed in refractory cases of radiation cystitis, neurogenic bladder, interstitial cystitis or incontinence. However, diversion alone without accompanying cystectomy results in a significant risk of complications such as pyocystis, hematuria, pain and secondary carcinoma [1]. These complications are virtually eliminated with simultaneous simple cystectomy. A simple cystectomy is indicated during the time of urinary diversion if there is not anticipated future need of the bladder and there is no prior history of or current bladder malignancy. Many surgeons would perform a radical cystectomy in these instances, being more familiar with the technique. However this is a morbid procedure with significant blood loss and operative time, 750 ml and 287 minutes respectively on average in one contemporary series, that this often fragile population could not tolerate [2]. We present a more efficient technique for simple cystectomy that we will show can be performed at the time of diversion quickly with minimal blood loss and complications.

2) Study design, materials and methods

We retrospectively reviewed our institutional experience with this simple cystectomy technique, which included 17 patients from 2007 to 2010 performed by three surgeons. There were 10 females and 7 males. All patients had exhausted all other possible conservative therapies and many had already undergone failed surgical treatments prior to decision to perform urinary diversion. Urinary diversion and simple cystectomy are considered last resort options in our institution. Indication for the procedure included neurogenic bladder and resulting complications in 8 patients (fistulas 3, urethral erosions 1, incontinence despite SP tube 1, incontinence unmanaged by intermittent catheterization 3) complications from prostate radiation therapy in 4 patients (2 with external beam, 2 with brachytherapy), refractory interstitial cystitis in 3 patients, and refractory incontinence in 2 patients. None had a prior diagnosis of bladder cancer. Our operative technique is as follows. The ureters are divided as part of the urinary diversion and are reflected upward and protected for later anastomosis. The lateral peritoneal attachments and pedicles of the bladder are divided using an electrothermal bipolar tissue sealing system (LigaSure, Valleylab Inc., Boulder, Colorado, USA) mobilizing down to the level of the trigone. The dome of the bladder is exposed and the bladder filled with sterile saline via the indwelling catheter. The peritoneum is scored in the midline and peeled off the detrusor, to be used to cover the resulting urethral defect after the bladder is removed and to prevent pelvic adhesions. With the bladder still full, it is entered using standard electrocautery in the midline and the lumen examined. The bladder is then bivalved from anterior to posterior using the LigaSure (Figure 1). Each lateral segment, or wing, is then amputated in a similar fashion (Figure 2), leaving the trigone in place and taking care not to injure the vas deferens in the male. The trigonal mucosa is then peeled off piecemeal by grasping it with an allis clamp and cauterizing the plane between it and the detrusor with standard electrocautery (Figure 3). Any trigone bleeding is fulgurated with cautery and the peritoneal flaps are re-approximated to cover the urethra.

3) Results

The average patient age was 62.4 years old and had undergone 2.7 prior abdominal or pelvic surgeries and 3.1 prior urinary operations. The average operative time was 30.8 minutes for the simple cystectomy portion of the case (recorded in 13 cases) and average blood loss was 46.7 ml for the 9 cases in which it was recorded separately. For the entire procedure including diversion with bowel segment the average blood loss was 248.5ml. The mean entire operative time was 318.8 minutes. There were no complications noted intra-operatively or post-operatively specifically attributed to the cystectomy portion. All pathology specimens revealed no evidence of malignancy.

4) Interpretation of results

We present a technique for simple cystectomy that can be easily performed at the time of urinary diversion. Operative time, complications and blood loss are minimal. Blood loss with this technique is less than in previously described simple cystectomy techniques with similar operative times [1]. The risk and morbidity of leaving a defunctionalized bladder have previously been documented [3]. The risk of pyocystis has been estimated to be as high as 67%. The relative risk of urothelial carcinoma is 4.6 [1]. One series noted a secondary cystectomy rate of 25% after diversion alone [3]. It is our opinion, however, that there are instances where a simple cystectomy is not indicated. These include diseases such as pelvic lipomatosis or severe fibrosis of the bladder where simply mobilizing the organ could result in severe bleeding, or in the case of very large vesicovaginal fistula where the remaining opening between the vagina and peritoneal cavity after cystectomy could not be closed. In these instances the fistula itself by draining the bladder prevents many of the complications associated with the retained bladder. We believe the benefit of a simple cystectomy significantly outweighs the risks of the procedure.

5) Concluding message

Simple cystectomy, in the majority of cases, should be performed at the time of urinary diversion for benign indications due to its relative ease and successful prevention of significant complications.

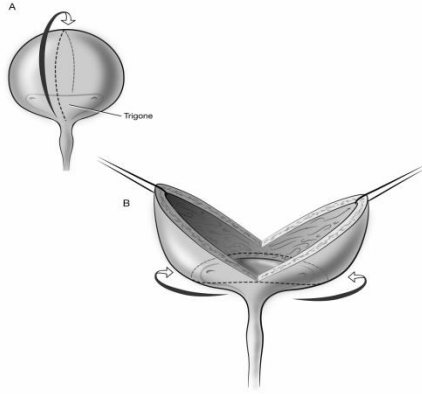


Figure 1: Bladder is bivalved from the bladder neck posteriorly

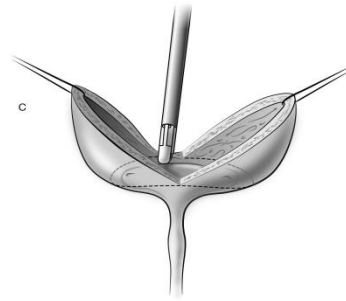
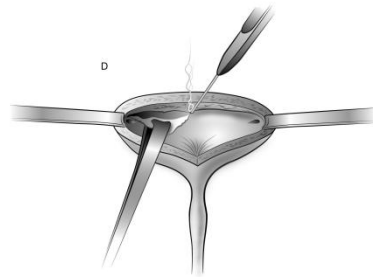


Figure 2: The lateral pedicles are amputated



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References

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Specify source of funding or grant	none
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Institutional Review Board of University of Michigan Health System
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	No