

Transurethral Incision of the Bladder Neck in Treatment of Chronic Urinary Retention after Radical Hysterectomy

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ABSTRACT

Transurethral incision of the bladder neck (TUI-BN) was performed in a 64 year-old woman with detrusor underactivity after radical hysterectomy. The bladder neck incision was performed by electrical cutting of the bladder neck muscles at the 5 and 7 o'clock positions. The incision was not extended to the middle urethra to avoid injury to the striated urethral sphincter. After TUI-BN, the patient could void 200-250 mL by abdominal straining. Although the postvoid residual remained 100-150 mL after TUI-BN, the patient needed to catheterize herself only once per day before bed-time. Her quality of life improved and no urinary incontinence was noted after TUI-BN. *Key words:* neurogenic voiding dysfunction, radical hysterectomy, chronic urinary retention

CASE REPORT

A 64 year-old woman underwent radical hysterectomy and bilateral pelvic lymphadenectomy for cervical cancer 3 years previously. After surgery, urinary retention developed and she was instructed to use clean intermittent self-catheterization (CISC) 5 to 6 times per day. She was given an alpha-blocker (tamsulosin 0.4 mg Q.D.) and a skeletal muscle relaxant (baclofen) but she still had difficult urination and a large postvoid residual (PVR). She had frequent urinary tract infections during the previous 3 years and wanted to improve her voiding status to improve her quality of life. Cystoscopy revealed no definite bladder outlet obstruction. During videourodynamic study, the bladder sensation was reduced and no detrusor contractility could be elicited at a bladder capacity of 500 mL (Fig. 1). She could only void a few drops of urine with an abdominal pressure of more than 120 cm water. The bladder neck was tight during abdominal straining. TUI-BN was recommended to decrease the bladder outlet resistance and allow her to void by abdominal pressure at a lower pressure and increase voiding efficiency.

Surgical technique

The patient was put in the lithotomy position. Under intravenous general anesthesia, TUI-BN was performed with a 26 Fr resectoscope and an incision cutting knife. The bladder neck was incised at the 5 and 7 o'clock positions starting from the mucosa through the muscle layer with exposure down to the perivesical tissue. After TUI-BN, the

bladder neck was wide open (Fig. 2). The bladder neck incision was not extended to the middle urethra to avoid injury to the striated urethral sphincter [1]. Meticulous hemostasis was achieved and a two-way 14 Fr Foley catheter was inserted for 2 days. After removal of the catheter she could void with lower abdominal pressure and PVR was less than 150 mL. Repeated videourodynamic study 3 months after surgery revealed that the bladder neck had a funnel shape and the urethral sphincter was competent (Fig. 3). During the voiding phase she could void with an abdominal pressure of 120 cm water and a maximum flow rate of 8 mL/s. The patient had to catheterize herself only before bed-time and there was no stress urinary incontinence after the operation. The patient was regularly followed-up in the outpatient department and she maintained efficient voiding.

DISCUSSION

Voiding is a synchronized interaction between the detrusor and urethral sphincter. During the bladder filling phase, the detrusor relaxes and the bladder neck and urethral sphincter increase activities to keep the bladder outlet competent. During detrusor contraction, the urethral sphincter should relax until the bladder is completely empty. In addition, the bladder neck will open through inhibition of sympathetic activity by increased activity of the parasympathetic ascending limb during voiding. Radical hysterectomy and pelvic lymph node dissection result in parasympathetic decentralization and detrusor areflexia. The bladder neck and urethral sphincter no longer coordinate with bladder filling or emptying [2,3]. Therefore, patients with detrusor areflexia must void by abdominal straining and increasing intra-

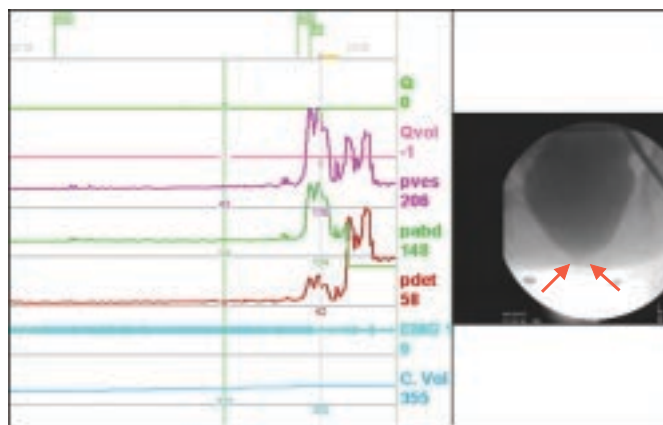


Fig. 1. Preoperative videourodynamic study reveals high abdominal voiding pressure with no flow and a tight bladder neck when the patient attempted to void (arrows).

Received: March 27, 2007 Accepted: April 13, 2007

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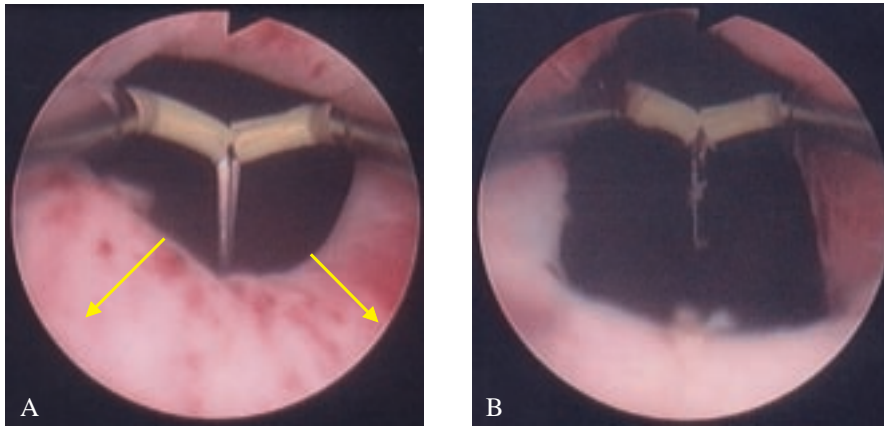


Fig. 2. Transurethral incision of the bladder neck. (A) The incision was performed at the 5 and 7 o'clock positions of the bladder neck and did not extend to the middle urethra. (B) The bladder neck is shown wide open after transurethral incision.

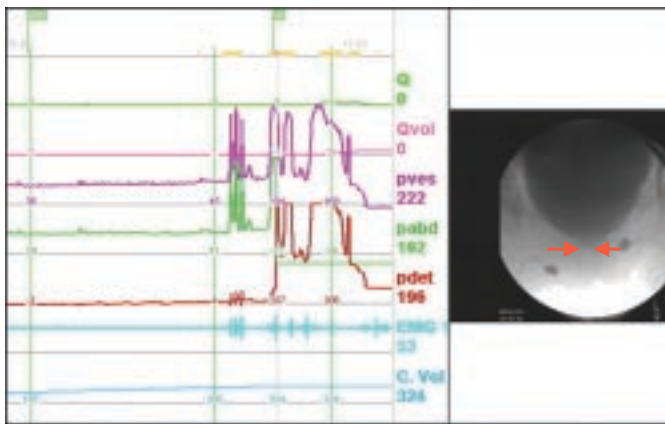


Fig. 3. Post TUI-BN videourodynamic study reveals a funnel-shaped bladder neck during voiding (arrows). The patient could void with increased abdominal pressure.

vesical pressure to overcome urethral resistance. If the bladder neck and urethral resistance are low, patients with detrusor areflexia might be able to void adequately with abdominal straining [2]. However, in a portion of women with detrusor areflexia after radical hysterectomy, the bladder outlet resistance is too high to overcome and patients must use CISC to empty their bladders periodically.

There are many treatments for chronic urinary retention from detrusor underactivity after radical hysterectomy. Medical treatment with alpha-blockers and skeletal muscle relaxants has limited effects in increasing the voiding efficiency of these patients. Urethral sphincter injection of botulinum toxin A (Botox) provides an alternative treatment in patients refractory to medical treatment [4]. However, not all patients are satisfied with urethral Botox treatment. Among patients who are successfully treated with Botox, nocturnal incontinence or stress urinary incontinence might become a de novo problem.

The structure of the bladder outlet consists of the bladder neck, urethral smooth sphincter and urethral striated muscle. Bladder neck incompetence may be found in nulliparous women, but most women without urinary incontinence have a competent bladder neck during the bladder filling phase. If a patient cannot open her bladder neck during voiding by abdominal straining, high bladder neck resistance

might inhibit efficient voiding. Under this condition, TUI-BN is a rational procedure to reduce bladder outlet resistance to achieve a higher voiding efficiency in patients with detrusor underactivity. After TUI-BN, the bladder neck becomes funnel-shaped during bladder filling, and the urethral sphincter resistance is more easily overcome by increased passive intravesical pressure. The result of videourodynamic study after TUI-BN in this case demonstrated the expected therapeutic results.

TUI-BN has been demonstrated to have effects in primary bladder neck dysfunction in women and in detrusor underactivity due to various causes [5-7]. This case report further reveals that TUI-BN can be used to treat chronic urinary retention in women after radical hysterectomy. Limited bladder neck incision without injury to the urethral sphincter will not result in stress urinary incontinence during the daytime or at night. Because the urethral sphincter tone is not altered after TUI-BN, patients can achieve efficient voiding after surgery without complications such as de novo urinary incontinence.

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