

TRANSURETHRAL INCISION OF THE BLADDER NECK COULD IMPROVE VOIDING EFFICIENCY IN FEMALE PATIENTS WITH DETRUSOR UNDERACTIVITY

Hypothesis / aims of study

Detrusor underactivity (DU) is defined by the International Continence Society as a contraction of reduced strength and/or duration resulting in prolonged or incomplete emptying of the bladder. Treatment such as bladder decompression with indwelling urethral catheter, alpha-blocker and bethanechol could not always provide an excellent therapeutic result in the patients with DU. The bladder neck constitutes the proximal 20% of the bladder outlet resistance. Transurethral incision of the bladder neck (TUI-BN) may decrease urethral resistance and patient might urinate efficiently by abdominal pressure. This study investigated the surgical outcomes of TUI-BN in treatment of female patients with DU.

Study design, materials and methods

Since 2003 to 2012, the female patients who had chronic urinary retention or having large postvoid residual (PVR), and videourodynamic study (VUDS) proven DU underwent TUI-BN were retrospectively analyzed. All of these patients were failure to conservative treatment including indwelling urethral catheter and medication. TUI-BN was performed by incision over the 5 and 7 o'clock positions of the bladder neck. The incision was made only limited to the bladder neck without extension to the external sphincter. VUDS parameters before and after operation were recorded and compared, including voiding efficiency, PVR, maximum flow rate (Qmax), detrusor pressure (Pdet) and voided volume. The patients with postoperative voiding efficiency of less than 0.33, between 0.33 and 0.66, more than 0.67 were considered as poor, moderate and excellent surgical outcomes, respectively.

Results

Among a total 31 patient, overall voiding efficiency, PVR, Qmax and voided volume were significantly improved after TUI-BN (Table 1). Among them, 21 patients needed intermittent catheterization or indwelling catheter before the operation and only 5 patients (5/21=23.8%) still needed intermittent catheterization after TUI-BN. Among the seventeen patients with acontractile detrusor before operation, 6 (35.3%) regained detrusor contractility after the operation. There were 9 (29%), 10 (32.3%) and 12 (38.7%) patients having poor, moderate and excellent surgical outcome, respectively. After analyzing the baseline VUDS parameters among 3 groups, the patients having excellent surgical outcome had significantly smaller baseline PVR and bladder capacity (Table 2). One patient developed vaginal-vesicle fistula after operation, and the fistula recovered well after immediate fistula repair.

Interpretation of results

The results of this study revealed that 71% of the patients with DU had moderate or excellent surgical results after TUI-BN. Even in the group of patients with poor outcome, PVR also decreased significantly after TUI-BN. Decreased bladder outlet resistance after TUI-BN allows patients to void with less abdominal pressure, improve voiding efficiency and decrease PVR after TUI-BN. Previous study has suggested an increased sympathetic tone might cause bladder neck dysfunction and inhibit bladder contractility in part of patients who had no neuropathy. Since TUI-BN could destroy the bladder neck continuity, the electric incision might also include the alpha-adrenergic nerves and interrupt the sympathetic reflex circle, which might lead to regaining bladder contractility in some patients with DU after operation. However, a baseline larger PVR and larger bladder capacity are associated with poor surgical outcome, suggesting a true detrusor failure cannot be reversed through this operation.

Concluding message

TUI-BN is an effective procedure to treat female patients with DU. TUI-BN could improve voiding efficiency, PVR, Qmax and voided volume. The patients with larger PVR might be associated with poor outcome.

Table 1. Surgical outcome of TUI-BN

		Overall outcome (N=31)	Poor outcome (N=9)	Moderate outcome (N=10)	Excellent outcome (N=12)
Voiding efficiency	Baseline	0.05 ± 0.16	0.02 ± 0.06	0.04 ± 0.07	0.09 ± 0.24
	Post-OP	0.52 ± 0.33*	0.10 ± 0.11*	0.48 ± 0.08*	0.87 ± 0.11*
PVR (ml)	Baseline	391.5 ± 180.3	495.1 ± 196.2	414.3 ± 110.7	293.6 ± 162.3
	Post-OP	171.1 ± 163.5*	313.4 ± 185.7*	211.6 ± 90.2*	41.8 ± 46.2*
Qmax (ml/s)	Baseline	1.10 ± 2.13	0.86 ± 1.57	0.20 ± 0.45	1.88 ± 2.95
	Post-OP	7.82 ± 5.74*	1.71 ± 1.50	6.34 ± 2.19*	12.73 ± 4.37*
Pdet (cmH ₂ O)	Baseline	4.53 ± 6.24	6.86 ± 7.27	6.67 ± 6.11	0.00 ± 0.00
	Post-OP	18.07 ± 30.63	25.0 ± 43.31	15.33 ± 20.03	10.00 ± 10.00

Voided volume (ml) Baseline	22.0 ± 59.2	14.5 ± 36.4	10.6 ± 19.3	39.5 ± 93.8
Post-OP	171.9 ± 121.5*	61.1 ± 100.7	192.3 ± 90.2*	264.9 ± 70.6*

PVR= post voiding residual volume, Qmax: maximum flow rate, Pdet: detrusor pressure

* P-value < 0.05

Table2. Baseline VUDS parameter between different group of surgical outcome

	Poor outcome (N=9)	Moderate outcome (N=9)	Excellent outcome (N=9)	P value
Voiding efficiency	0.02 ± 0.06	0.04 ± 0.07	0.09 ± 0.24	0.527
PVR (ml)	495.1 ± 196.2	414.3 ± 110.7	293.6 ± 162.3	0.023
Bladder capacity (ml)	507.3 ± 62.4	432.4 ± 117.9	353.5 ± 90.3	0.045
FSF (ml)	194.4 ± 98.4	163.4 ± 64.5	159.7 ± 53.0	0.535
Compliance (ml/cmH2o)	94.6 ± 111.8	46.3 ± 64.6	22.69 ± 20.4	0.127

Disclosures

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