

FACTORS TO PREDICT SURGICAL OUTCOME OF TRANSURETHRAL INCISION OF PROSTATE IN MEN WITH SMALL BPH AND BLADDER NECK DYSFUNCTION

Hypothesis / aims of study

Transurethral incision of prostate or bladder neck (TUI-P, or TUI-BN) is regarded as the treatment of choice to relieve bladder outlet obstruction (BOO) in patients with small size prostate or bladder neck dysfunction (BND), respectively. Sometimes, low pressure type BND is observed in men with small prostate, and it is difficult to distinguish small BPH from BND. Although TUI-P is proven as an effective surgery for small BPH and BND, there is paucity of data in predicting the surgical outcome. This study was aimed to investigate the outcome of TUI-P in men with small BPH and/ or BND, in order to find out the predictive factors for a successful outcome.

Study design, materials and methods

Patients with refractory LUTS and small size prostate (total prostate volume, TPV, <40 mL) received the operation of TUI-P if BOO was proven in videourodynamic study (VUDS). Neurogenic voiding dysfunction, urinary retention, urethral stricture, and patients with the history of transurethral endoscopic surgery for lower urinary tract disease were excluded. Surgical outcome was evaluated by global response assessment (GRA) and uroflowmetry 1 month after the surgery. The surgery was considered to be successful, if $GRA \geq 2$.

Results

Totally 36 patients with a mean age of 68.2 ± 10.1 years old were included with a successful rate of 86.1% (31 patients) (Table 1). After TUI-P, maximal urinary flow (Qmax), corrected Qmax (defined as $Q_{max} / CBC^{1/2}$), and post-void residual (PVR) significantly improved. However, pre-operative parameters in prostate ultrasound and VUDS were similar between success and failure groups. According to VUDS, the patients were divided into 3 groups by Abrams-Griffiths (AG) number (Table 2). The group of AG number >40 had a significantly more improvement in the changes of Qmax, cQmax, and VE (voiding efficiency) after TUI-P than the other two groups with lower AG numbers.

Interpretation of results

TUI-P is an effective treatment for small BPH and/or BND with high successful rate. Parameters including Qmax, cQmax, and voided volume are significantly improved after TUI-P. However, above changes after the operation are not different between the successful and failure groups. It indicated that TUI-P could reduce the resistance of bladder outlet to facilitate voiding in most patients, but not the main cause of treatment failure. In patients with higher voiding pressure and lower flow rate (higher AG number), more improvements in Qmax, cQmax, and VE are noted than low pressure type small BPH and/or BND patients (lower AG number). Lower detrusor contractility in patients with small BPH and/or BND may complicate BOO and affect the surgical outcome.

Concluding message

TUI-P is an highly effective surgical treatment to decrease bladder outlet resistance and facilitate voiding in small BPH and/ or BND patients. Patients with higher AG number may have a better surgical outcome. Lower detrusor contractility in these patients may affect the outcome of TUI-P.

Table 1. Demographic data and surgical results of TUI-P in patients with small BPH and BND

	Success ($GRA \geq 2$)	Failure ($GRA < 2$)	Overall	P value
Number	31 (86.1%)	5 (13.9%)	36 (100%)	
Age	67.6 ± 10.6	71.4 ± 5.7	68.2 ± 10.1	0.446
TPV (mL)	28.0 ± 6.9	28.4 ± 9.8	28.1 ± 7.1	0.920
TZI	0.30 ± 0.13	0.41 ± 0.09	0.31 ± 0.13	0.289
IPP (mL)	4.1 ± 3.5	6.4 ± 3.0	4.4 ± 3.4	0.399
PUA (degree)	33.6 ± 5.3	37.0 ± 9.9	34.0 ± 5.7	0.448
Pre-OP VUDS Parameters				
CBC (mL)	281.1 ± 131.2	345.6 ± 131.2	290.1 ± 131.3	0.315
Vol. (mL)	169.0 ± 108.0	153.4 ± 86.0	166.8 ± 104.3	0.762
Pdet. (cmH ₂ O)	46.0 ± 27.5	58.4 ± 30.6	47.8 ± 27.8	0.363
Qmax (mL/s)	7.28 ± 3.02	6.40 ± 2.70	7.16 ± 2.95	0.546
PVR (mL)	69.3 ± 78.8	90.6 ± 93.2	72.3 ± 79.8	0.468
AG number	30.7 ± 29.4	44.4 ± 35.8	32.6 ± 30.2	0.356
cQmax	0.52 ± 0.22	0.41 ± 0.16	0.50 ± 0.22	0.312
VE	0.74 ± 0.24	0.65 ± 0.37	0.73 ± 0.25	0.486
Post-OP Parameters				

ΔQ_{max} (mL/s)	5.05 \pm 7.93*	7.56 \pm 7.19	5.40 \pm 7.78*	0.512
$\Delta Vol.$ (mL)	62.8 \pm 136.2*	98.6 \pm 108.3	67.76 \pm 131.9*	0.580
ΔPVR (mL)	-7.9 \pm 84.3	-47.0 \pm 98.5	-13.3 \pm 86.0	0.353
ΔcQ_{max}	0.18 \pm 0.51*	0.48 \pm 0.60	0.23 \pm 0.53*	0.242
ΔVE	-0.01 \pm 0.30	0.21 \pm 0.40	0.02 \pm 0.32	0.159

AG number: Abrams-Griffiths number, cQmax: corrected Qmax = Qmax / CBC^{1/2}, IPP: the length of intravesical protrusion of prostate, PUA: prostatic urethral angle, VE: voiding efficiency = voided volume/ CBC, Δ : changes after TUI-P;

*: The changes after the operation of TUI-P are significant (p < 0.05).

Table 2. Surgical outcome of TUI-P in patients with small BPH and BND by AG number

	AG Number > 40	AG Number 20-40	AG number < 20	Overall	P value
Number	10 (27.8%)	10 (27.8%)	16 (44.4 %)	36 (100%)	
Success rate	8 (80%)	9 (90%)	14 (87.5%)	31 (86.1%)	0.793
Age	66.4 \pm 10.4	66.8 \pm 10.7	68.9 \pm 9.4	68.2 \pm 10.1	0.780
TPV (mL)	28.8 \pm 7.4	29.4 \pm 6.7	26.8 \pm 6.9	28.1 \pm 7.1	0.606
TZI	0.32 \pm 0.11	0.33 \pm 0.13	0.28 \pm 0.14	0.31 \pm 0.13	0.660
Pdet	76.6 \pm 16.3	42.2 \pm 7.4	27.8 \pm 8.5	47.8 \pm 27.8	<0.001
Qmax (mL/s)	6.20 \pm 2.95	7.00 \pm 2.37	8.40 \pm 2.79	7.16 \pm 2.95	0.267
Post-OP Parameters					
ΔQ_{max} (mL/s)	10.44 \pm 7.75*	2.48 \pm 4.93	4.33 \pm 7.57 *	5.40 \pm 7.78 *	0.033
$\Delta Vol.$ (mL)	42.1 \pm 80.5	62.4 \pm 114.6	90.6 \pm 155.5*	67.76 \pm 131.9*	0.622
ΔPVR (mL)	-41.4 \pm 128.2	-4.5 \pm 95.3	-5.4 \pm 55.7	-13.3 \pm 86.0	0.552
ΔcQ_{max}	0.63 \pm 0.55*	0.15 \pm 0.34*	0.05 \pm 0.47*	0.23 \pm 0.53*	0.009
ΔVE	0.18 \pm 0.40	0.11 \pm 0.23	-0.09 \pm 0.30	0.02 \pm 0.32	0.050

*: The changes after the operation of TUI-P are significant (p < 0.05).

Disclosures

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