

## FACTORS AFFECTING THE IMPROVEMENT OF SEVERITY OF CONCOMITANT URODYNAMIC STRESS INCONTINENCE AFTER A NOVEL TRANSVAGINAL MESH SURGERY FOR WOMEN WITH PELVIC ORGAN PROLAPSE

### Hypothesis / aims of study

A novel transvaginal mesh (TVM) surgery for women with pelvic organ prolapse (POP) had been reported [1]. However, factors affecting the efficacy of this novel TVM surgery are unknown; and the above information should be important for preoperative consultation, especially for POP women with concomitant urodynamic stress incontinence (USI). Thus, the aim of this study is to investigate the factors responsible for anti-incontinence effect of this novel anterior TVM surgery.

### Study design, materials and methods

All women with POP and concomitant overt or occult USI, who underwent the novel anterior TVM surgeries, were enrolled in this study. Medical records, including urodynamic studies, questionnaires and 3-day bladder diaries, were retrospectively reviewed. Linear regression analysis was used to identify factors that were responsible for the changes in pad weights from baseline [i.e., 100 \* (postoperative pad weight - baseline pad weight)/baseline pad weight].

### Results

A total of 134 women were enrolled in this study, including anterior TVM surgery only (n=45), anterior and posterior TVM surgeries (n=88), and ATVM and total vaginal hysterectomy (n=1). Sustained therapeutic effects were observed according to persistent decrease of pad weights (Table 1, Figure 1). Besides, sustained improvements of lower urinary tract symptoms and health-related quality of life were also noted by the persistent decrease of the scores of the questionnaires and the bladder diaries parameters (Table 1). However, persistent decrease of maximum urethral closure pressures was found (Table 1). Multivariate backward stepwise regression analysis revealed that only functional profile length (coefficient=61.1) and the score of general health perceptions in King's Health Questionnaire (coefficient=-3.3) were independent factors affecting the anti-incontinence effect (Table 2).

### Interpretation of results

The novel anterior TVM surgery has good effects in the improvement of USI, lower urinary tract symptoms and health-related quality of life. Shorter functional profile length and poorer perception in general health have higher improvements in the pad weights.

### Concluding message

This novel anterior TVM surgery is helpful for POP women with concomitant USI. Greater anti-incontinence effect can be found in women with short functional profile length and poor general health perception.

**Table 1.** Comparison of clinical data before and after anterior TVM therapy (n=134)

Variables	Baseline (n=134)	3 months (n=134)	1 year (n=22)	P†
Pad weight (g)	32.2±39.0	9.3±26.3	11.1±19.1	<0.0001
Qmax (mL/s)	20.2±9.7	22.4±15.3	19.4±6.6	0.64
Voided volume (mL)	278±137	297±136	279±142	0.26
Post-void residual (mL)	44±25	36±35	32±9	<0.0001
Strong desire (mL)	250±50	263±42	258±42	0.01
VLPP (cmH2O)	63.0±19.5	58.1±23.8	61.8±19.7	0.76
PdetQmax (cmH2O)	22.8±13.3	27.7±26.6	29.3±17.8	0.63
MUCP (cmH2O)	53.3±26.3	42.4±22.9	46.1±23.4	<0.0001
FPL (cm)	2.8±0.9	2.6±0.8	2.5±0.4	0.35
PTR at MUP (%)	110±51	101±35	103±20	0.47
Detrusor overactivity	18 (13)	11 (8)	0 (0)	a vs. b, P = 0.21; a vs. c, P = 0.50
USS	1.9±1.2	1.0±1.0	1.2±1.2	<0.0001
OABSS	6.1±3.8	4.2±2.8	4.6±3.7	<0.0001
PPBC	3.5±1.4	2.1±1.2	2.4±1.6	<0.0001
UDI-6	6.9±4.5	3.6±3.3	4.0±3.8	<0.0001
IIQ-7	7.7±6.0	2.3±3.6	4.4±5.8	<0.0001
General health perceptions	52.4±19.8	45.9±27.8	46.1±15.1	0.003
Incontinence impact	45.4±32.7	16.8±23.3	28.1±27.8	<0.0001
Role limitations	41.3±33.1	13.4±21.9	17.5±25.7	<0.0001
Physical limitations	45.6±33.5	15.0±21.2	21.9±24.9	<0.0001
Social limitations	28.8±29.0	9.0±17.2	15.2±21.3	<0.0001
Personal relationships	23.7±29.2	7.8±15.4	10.3±12.8	0.005
Emotions	50.2±31.5	22.4±19.1	35.7±28.3	<0.0001
Sleep/energy	38.7±29.2	20.3±22.3	29.8±25.2	<0.0001

Severity measures	32.1±29.3	16.1±18.9	24.6±29.6	<0.0001
Nocturia episodes (72 hrs)	5.2±8.0	3.4±2.7	2.5±1.8	0.001
Urgency episodes (72 hrs)	6.8±14.4	3.5±6.6	3.2±7.2	0.09
Daytime frequency (72 hrs)	31.3±43.3	22.1±6.4	22.7±6.4	<0.0001
Incontinence episodes (72 hrs)	2.4±6.6	0.3±0.9	1.6±5.5	0.09

†Skillings-Mack test or McNemar's test. ‡Values are given as the mean ± standard deviation.

§FPL=functional profile length; IIQ-7=Incontinence Impact Questionnaire-7; MUCP=maximum urethral closure pressure; OABSS=overactive bladder symptom score; PdetQmax=detrusor pressure at Qmax; PPBC=patient perception of bladder condition; PTR at MUP= pressure transmission ratio at maximum urethral pressure; Qmax=maximum flow rate; UDI-6=Urinary Distress Inventory-6 Questionnaire; USS=indevus urgency severity Scores; VLPP=Valsalva leak point pressure.

**Table 2.** Factors predicting the percentage of the changes in pad weights from baseline pad weights<sup>§</sup>

Variables	Univariate <sup>†</sup> (n=134)		Multivariate <sup>†</sup> (n=134)	
	Coefficient	P <sup>†</sup>	Coefficient	P <sup>†</sup>
Pad weight (g)	-1.0 (-2.1, 0.0)	0.04	-	-
Qmax (mL/s)	2.7 (-1.4, 6.8)	0.20	-	-
Voided volume (mL)	0.2 (-0.1, 0.4)	0.30	-	-
Post-void residual (mL)	-0.4 (-2.0, 1.2)	0.64	-	-
Strong desire (mL)	0.5 (-0.3, 1.3)	0.18	-	-
VLPP (cmH2O)	-2.1 (-4.1, -0.1)	0.04	-	-
PdetQmax (cmH2O)	-2.0 (-5.2, 1.2)	0.23	-	-
MUCP (cmH2O)	-0.6 (-2.1, 1.0)	0.46	-	-
FPL (cm)	41.6 (-3.5, 86.6)	0.07	61.1 (8.3, 113.8)	0.02
PTR at MUP (%)	0.2 (-0.6, 1.0)	0.65	-	-
Detrusor overactivity	79.0 (-37.7, 195.7)	0.18	-	-
USS	-35.9 (-79.7, 8.0)	0.11	-	-
OABSS	-8.0 (-19.4, 3.3)	0.16	-	-
PPBC	-20.1 (-50.8, 10.6)	0.20	-	-
UDI-6	-6.8 (-16.1, 2.6)	0.15	-	-
IIQ-7	-2.9 (-10.0, 4.3)	0.42	-	-
General health perceptions	-3.3 (-5.4, -1.2)	0.002	-3.3 (-5.4, -1.2)	0.002
Incontinence impact	-0.8 (-2.1, 0.5)	0.24	-	-
Role limitations	-0.3 (-1.6, 1.0)	0.63	-	-
Physical limitations	-0.4 (-1.7, 0.9)	0.54	-	-
Social limitations	-0.1 (-1.5, 1.4)	0.94	-	-
Personal relationships	-1.0 (-2.7, 0.7)	0.24	-	-
Emotions	-0.5 (-1.8, 0.9)	0.50	-	-
Sleep/energy	-1.3 (-2.8, 0.2)	0.08	-	-
Severity measures	-1.0 (-2.5, 0.5)	0.18	-	-
Nocturia episodes (72 hrs)	-1.7 (-8.2, 4.90)	0.62	-	-
Urgency episodes (72 hrs)	-1.0 (-4.6, 2.7)	0.60	-	-
Daytime frequency episodes (72 hrs)	-0.2 (-1.4, 1.0)	0.74	-	-
Incontinence episodes (72 hrs)	-3.8 (-11.7, 4.1)	0.34	-	-

†Linear regression analysis. The variables used in the backward stepwise multivariate analysis included those with P<0.10 in the univariate analysis. ‡Values are given as the coefficient (95% confidence interval). §The percentage of the changes in pad weights from baseline = 100 \* (postoperative pad weight - baseline pad weight)/baseline pad weight. The abbreviations are as in Table 1.

**Figure 1.** Pad weights before and after anterior transvaginal mesh surgeries (baseline, 3 and 12 months)



## References

1. Chang TC, Hsiao SM, Chen CH, Wu WY, Lin HH. Clinical Outcomes and Urodynamic Effects of Tailored Transvaginal Mesh Surgery for Pelvic Organ Prolapse. Biomed Res Int 2015;2015:191258.

## Disclosures

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