

## INCIDENCE AND PREDICTING FACTORS OF EARLY POSTOPERATIVE HIGH POST-VOID RESIDUAL AFTER MID-URETHRAL SLING PROCEDURE

### Hypothesis / aims of study

Although the mid-urethral sling is placed without tension under the mid-urethra, there appears to be significant effect on the voiding function (1). An obstructive effect would be of concern if it results in increased post-void residual (PVR) (2). The purpose of this study was 1) to compare the incidence of early postoperative high PVR after transobturator tape (TOT) procedure with that after tension-free vaginal tape (TVT) procedure, and 2) to identify the predictors of high PVR in female patients with stress urinary incontinence (SUI).

### Study design, materials and methods

Between March 1999 and June 2008 the clinical records of 671 women with complaints of UI who underwent mid-urethral sling procedures (TVT or TOT) were retrospectively reviewed. The preoperative evaluation included history and physical examination, urinalysis, urine culture, uroflowmetry, PVR urine measurement, 1-hour pad test and multichannel videourodynamic studies. Patients were followed at 1, 6 and 12 months, and every year thereafter. Followup evaluation included physical examination with stress test, Q-tip test, 1-hour pad test, uroflowmetry and PVR measurement. A total of 410 patients who underwent TVT (n = 132) or TOT (n = 278) procedure, had preoperative PVR of < 100 ml and received uroflowmetry with PVR at 1 month after surgery were included in this study. 'Early postoperative high PVR' was defined as PVR more than 100 ml at 1 month postoperatively.

### Results

The number of patients with early postoperative high PVR were 23 (17.4%) in TVT group and 18 (6.5%) in TOT group, which were significantly different between the two (p = 0.001). Mean ( $\pm$  SD) preoperative maximum flow rate (Qmax) in TVT group was 32.2  $\pm$  9.5 ml/sec, which decreased significantly to 21.8  $\pm$  10.1 at 1-month postoperatively (p < 0.001), whereas PVR increased significantly from 14.5  $\pm$  18.7 ml preoperatively to 49.5  $\pm$  65.7 ml (P < 0.001) at 1-month postoperatively. In TOT group, mean ( $\pm$  SD) Qmax decreased slightly from 26.9  $\pm$  9.7 ml/sec preoperatively to 25.7  $\pm$  9.8 at 1-month postoperatively without a significant difference, whereas PVR increased significantly from 20.2  $\pm$  25.2 ml to 24.7  $\pm$  42.6 (P=0.027).

On univariate logistic regression analysis, age, type of procedure (TVT vs. TOT), Valsalva leak-point pressure (VLPP), and detrusor pressure at Qmax (PdetQmax) were determined to be factors which influenced the early postoperative high PVR after mid-urethral sling procedure. On multivariate analysis, PdetQmax was the only independent predictor of early postoperative high PVR (OR 1.1; p = 0.029). For TVT group, VLPP of < 60 cmH<sub>2</sub>O on baseline urodynamics was the independent risk factor (OR 5.2; p = 0.012). For TOT group, PdetQmax on the preoperative urodynamics was the independent influencing factor (OR 1.1; p = 0.005).

### Interpretation of results

The mid-urethral sling procedure appears to be a potentially obstructive procedure with a significant increase of PVR in the early postoperative period although there has been considerable debate over it. Our study showed that the mid-urethral sling procedure increased the PVR and the magnitude of increase in PVR was greater in TVT group than in TOT group. Also, only TVT significantly decreased Qmax in early postoperative period but not TOT. PdetQmax on baseline urodynamics was the independent predictor of early postoperative high PVR following mid-urethral sling. The current analysis indicated that low VLPP (< 60cmH<sub>2</sub>O) and lower PdetQmax on baseline urodynamics were directly related to the early postoperative high PVR in TVT and TOT groups, respectively.

### Concluding message

Our data suggests that the incidence of early postoperative high PVR in TVT group was higher than that in TOT group. This present study indicates that counselling for risk of high PVR in the early postoperative period should therefore individualized according to type of procedure (TVT vs. TOT), particularly if low PdetQmax or VLPP of less than 60 cmH<sub>2</sub>O are observed on baseline urodynamics. The urodynamics can be beneficial to predict the possibility of the early postoperative high PVR after TVT or TOT.

### References

- Sander P, Sørensen F, Lose G. Does the tension-free vaginal tape procedure (TVT) affect the voiding function over time? Pressure-flow studies 1 year and 3(1/2) years after TVT Neurourol Urodyn 2007;26:995-7
- Dietz HP, Ellis G, Wilson PD, Herbison P. Voiding function after tension-free vaginal tape: a longitudinal study. Aust N Z J Obstet Gynaecol 2004;44:152-5

<b>Specify source of funding or grant</b>	<b>None</b>
<b>Is this a clinical trial?</b>	<b>No</b>
<b>What were the subjects in the study?</b>	<b>HUMAN</b>
<b>Was this study approved by an ethics committee?</b>	<b>Yes</b>
<b>Specify Name of Ethics Committee</b>	<b>Institutional Review Board at the Seoul National University Hospital</b>
<b>Was the Declaration of Helsinki followed?</b>	<b>Yes</b>
<b>Was informed consent obtained from the patients?</b>	<b>Yes</b>