

## EVALUATION OF BLADDER FUNCTION FOLLOWING TENSION-FREE VAGINAL MESH IN PELVIC ORGAN PROLAPSE PATIENTS

### Hypothesis / aims of study

The use of transvaginal polypropylene mesh in pelvic organ prolapse (POP) repair surgery has become more common in recent years. Several small randomized controlled trials have shown that use of transvaginal polypropylene mesh for the treatment of POP decrease recurrence rates compared with traditional repair. One of the most established transvaginal surgical procedure for the treatment of POP patients is tension-free vaginal mesh (TVM) technique developed by TVM group<sup>1</sup>. Several lines of studies have revealed anatomical data following TVM surgery. However, little is known about the effect of TVM surgery on bladder function especially during mid- to long-term follow-up. In the present study, we retrospectively investigated changes of bladder function before and after TVM surgery depending on type of procedure and POP stage.

### Study design, materials and methods

157 patients who undertaken TVM (anterior TVM (A-TVM), anterior-posterior TVM (AP-TVM), complete-TVM (C-TVM) were included in the present study. POP patients with D<-3 and Bp<-1 were undertaken A-TVM. The rest of POP patients with uterus were undertaken AP-TVM. Patients without uterus were undertaken C-TVM. Patients using concomitant with vaginal hysterectomy and midurethral sling were excluded. Patients underwent only posterior-TVM were excluded. The type of surgery was A-TVM in 20 (12.7%), AP-TVM in 115 (73.3%), 22 (14.0%), respectively. POP stage assessed using POP-quantification system was stage 2 in 59 (37.5%), stage 3 in 71 (45.3%), and stage 4 in 27 (17.2%), respectively. Bladder function was examined preoperatively and 6, 12, and 24 months postoperatively. We assessed maximum desire to void (MDV), uroflowmetric parameter such as maximum flow rate (Qmax) and average flow rate (Qave) and post-voiding residual (PVR) urine volume as bladder function. The TVM surgery was performed based on the procedure reported by the French TVM group<sup>1,2</sup>. Since the recurrent case was 8 out of 157 (5.1%) and all 8 recurrent cases belonged to stage 2, we included them for statistical analysis.

### Results

No significant changes of MDV, Qmax, and Qave were observed at preoperative and postoperative 6, 12, and 24 months. The PVR was significantly decreased at 6 months postoperatively and significant lower PVR continued until 24 months after the TVM surgery regardless of POP stage and type of surgery. Preoperatively, PVR in stage 3 and 4 were significantly higher compared to that in stage 2. Postoperatively, PVR in stage 3 and 4 was decreased significantly. The MDV in C-TVM and A-TVM groups was significantly decreased compared to that in AP-TVM group at preoperative and postoperative time points.

### Interpretation of results

Functional bladder capacity was significant increased with a significant decrease in PVR. Since there were no significant changes in MDV and uroflowmetric parameters up to 24 month after the TVM surgery, transvaginal mesh implant did not cause negative impact on bladder function. Previous hysterectomy may cause negative impact on bladder capacity.

### Concluding message

We report bladder function up to 24 months following TVM surgery for the treatment of POP. The present results indicate that TVM did not affect bladder capacity and voiding function and decreased significantly PVR up to 24 months postoperative followup

Table 1: Preoperative and postoperative bladder function

	Pre-ope	Post-ope		
		6 months	12 months	24 months
MDV (ml)	333.7 ± 12.4	342.6 ± 9.2	361.2 ± 10.8	<b>350.0 ± 9.9</b>
Qmax (ml/s)	22.9 ± 1.0	22.0 ± 1.9	21.3 ± 0.6	<b>21.9 ± 1.9</b>
Qave (ml/s)	13.7 ± 0.6	15.0 ± 1.3	13.2 ± 0.4	<b>13.6 ± 1.2</b>
PVR (ml)	<b>24.6 ± 5.2</b>	<b>11.3 ± 2.4*</b>	<b>12.6 ± 1.6*</b>	<b>12.2 ± 1.8*</b>

\* P<0.05 vs pre-ope

Table 2: PVR in each POP stage

POP-Q stage	Pre-ope	Post-ope		
		6 months	12 months	24 months
Stage 2	9.6 ± 3.3	10.6 ± 3.6	13.4 ± 2.6	10.3 ± 2.3
Stage 3	22.2 ± 6.6 <sup>a</sup>	10.4 ± 3.1*	12.9 ± 0.6*	15.6 ± 2.5
Stage 4	63.5 ± 22.5 <sup>a</sup>	15.4 ± 6.5*	12.4 ± 1.1**	7.4 ± 3.5**

\* P<0.05 vs pre-ope, \*\* P<0.01 vs pre-ope, <sup>a</sup> P<0.05 vs stage 2

Table 3: MDV in each type of surgery

Surgery	Pre-ope	Post-ope		
		6 months	12 months	24 months
<b>A-TVM</b>	285.9 ± 17.4 <sup>a</sup>	296.2 ± 18.7 <sup>a</sup>	310.2 ± 18.4 <sup>a</sup>	281.0 ± 19.6 <sup>a</sup>
<b>AP-TVM</b>	350.2 ± 15.3	360.2 ± 11.2	383.4 ± 13.2	375.6 ± 12.0
<b>C-TVM</b>	283.2 ± 18.7 <sup>a</sup>	292.7 ± 18.9 <sup>a</sup>	291.8 ± 22.8 <sup>a</sup>	285.2 ± 16.6 <sup>a</sup>

<sup>a</sup> P<0.05 vs AP-TVM

References

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2. Takeyama M. Basic procedures in tension-free vaginal mesh operation for pelvic organ prolapse. *Int J Urol.* 2011;18:555-556

Disclosures

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