

**Authors:** N. Shimoda, M. Iinuma, S. Satoh, K. Sato, T. Habuchi and T. Kato  
**Institution:** Department of Urology, Akita University School of Medicine  
**Title:** URODYNAMIC ANALYSES OF PUBOVAGINAL PATCH SLING APPLIED TO URETHRAL HYPERMOBILITY

### **Aims of Study:**

Sling, which was initially used for intrinsic sphincteric dysfunction, are nowadays widely used for stress incontinence and/or cystocele associated with urethral hypermobility as an alternative of colposuspension. We applied pubovaginal patch sling to stabilize the urethral hypermobility utilizing bone fixation procedure (VESICA<sup>TM</sup>). The purpose of this study is to evaluate our technique urodynamically.

**Methods:** Thirty-eight consecutive female patients (pts) (median age; 65) with symptomatic urethral hypermobility were included. Five have grade (G) 1, 10 did G2, 17 did G3 and 6 did G4 cystocele according to Raz's classification. The attenuated pubocervical fascia was reapproximated prior to sling procedure for grade 2 to 4 cystoceles. A 4 x 1.5 cm strip of artificial fabric (Hemashield<sup>®</sup>) or rectus fascia was used for patch material. The sling suture was tied on Suture Spacer<sup>TM</sup> without any force to regulate the sling tension. The SEAPI scoring system was used to estimate subjective symptoms<sup>1)</sup>. To estimate urethral hypermobility, the upper urethral inclination to the perpendicular and the bladder neck level from the horizontal line of the inferior edge of symphysis pubis were measured on lateral view of chain cystourethrogram during straining in an upright position. Urethral profilometry and voiding cystometry were performed to examine storage and voiding functions including urethral resistance.

### **Results:**

Postoperative evaluations were performed 1.5 months: (0.8, 3.8) [median: (25%, 75%)] after surgery. Total SEAPI score reduced to 1 points: (0, 2) from 5: (4, 7). The preoperative individual scores of stress-related leakage and emptying ability were correlated with the grade of cystocele [ $r_s = -0.57$  (95%CI: -0.76 to -0.30),  $r_s = 0.59$  (95%CI: 0.32 to 0.77), respectively]. Stress incontinence disappeared in 18 of 20 pts (90%). Obstructive symptom disappeared in 12 pts (52%), reduced in 9 pts (39%) and remained unchanged in 2 of 23 pts (9%). Mild *de novo* obstructive symptom occurred in 6 pts (40%), postoperatively. Preoperative upper urethral inclination was strongly correlated with the bladder neck level ( $r = 0.87$ , 95%CI: 0.75 to 0.93). Upper urethral inclination reduced to 23 degree: (5, 32) from 114: (74, 130). Bladder neck level reduced to -0.8 cm: (-1.4, 0) from 2.5: (1.4, 3.6). Maximum urethral closure pressure (MUCP) at resting reduced to 45.8 cmH<sub>2</sub>O (SD15.8) from 54.1 (SD17.9) ( $p = 0.02$ , 95%CI: 1.7 to 14.9). However, MUCP during voluntary sphincteric contraction remained unchanged ( $p = 0.11$ ). Maximum cystometric capacity reduced to 360 ml (SD 108) from 451 (SD 141) ( $p = 0.006$ , 95%CI: 30 to 153). Although the peak value of Watt factor remained unchanged ( $p = 0.24$ ), maximum and average flow rate reduced to 17.6 ml/s (SD 6.7) from 22.1 (SD 11.3) ( $p = 0.013$ , 95%CI: 1.1 to 8.0) and to 7.5: (5.2, 9.1) from 8.1: (5.1, 13.6) ( $p = 0.045$ , 95%CI: 0 to 4.4), respectively. Detrusor pressure at the maximum flow rate increased to 22 cmH<sub>2</sub>O:

(15, 30) from 14: (8, 26) ( $p = 0.037$ , 95%CI: 0.5 to 9.5). There were no significant differences in the urodynamic parameters between obstructive and non-obstructive patients postoperatively, except post-void residual volume ( $p = 0.011$ , 95%CI: 11 to 103).

### **Conclusions:**

Pubovaginal patch sling with VESICA<sup>TM</sup> bone anchoring system is an effective procedure for stress incontinence and/or obstructive symptom produced by urethral hypermobility. This technique slightly increases the urethral resistance during voiding, but this increase seems to be clinically insignificant. On the other hand, the decreased bladder capacity may be responsible for frequent urination.

### **Reference:**

- 1) Neurourol Urodyn 11: 187, 1992.