Position of Suburethral Sling at the Bladder Neck May Predict a Higher Recurrent Rate of Stress Urinary Incontinence

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INTRODUCTION
Currently, many anti-incontinence surgery for stress urinary incontinence (SUI) have been developed and reported to be effective1, but the best one remains controversial. Pubovaginal sling (PVS) procedure emphasizes the hammock effect on the bladder neck and proximal urethra, and the tension-free vaginal tape is based on the integral theory and the dynamic urethral kinking at the mid-urethra2,3,4. However, few medical literatures discussed the effects of the different sling positions on the surgical results. This study was conducted to investigate the relationship between the position of the suburethral sling and the outcomes of surgery.

MATERIALS AND METHODS
From 1998 to 2010, 153 women with SUI who received PVS procedure using a polypropylene suburethral sling were retrospectively reviewed. Patients with preoperatively undynamic proven detrusor overactivity, detrusor underactivity, neurogenic bladder dysfunction, high grade cystocele requiring concomitant colporrhaphy or pelvic floor reconstruction were not included. All patients had been investigated preoperatively and postoperatively by transrectal sonography of the bladder and urethra (TRUS-B). The center of the tape was set as the point of measurement of the sling position in TRUS-B. The positions were classified as at the bladder neck (BN, 0-20% of the total urethral length (UL)), proximal urethra (PU, 21-40% of UL), middle urethra (MU, 41-60% of UL), and distal urethra (DU, 61-80% of UL). (Fig.1) In TRUS-B, BN incompetence was defined as opening of the BN at resting status, and urethral incompetence was defined as opening of the urethra with urine leakage during straining. Their post-operative continent status and the lower urinary tract symptoms such as urgency/urgency urinary incontinence and difficult voiding were compared among different groups of patients with different suburethral sling positions.

RESULTS

<table>
<thead>
<tr>
<th></th>
<th>Bladder neck</th>
<th>Proximal urethra</th>
<th>Middle urethra</th>
<th>Distal urethra</th>
<th>Total</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients</td>
<td>18</td>
<td>81</td>
<td>45</td>
<td>9</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>56.9±11.5</td>
<td>59.8±10.8</td>
<td>63.2±19.0</td>
<td>64.3±11.6</td>
<td>60.7±10.6</td>
<td>0.091</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>23.5±15.1</td>
<td>25.3±14.2</td>
<td>26.1±13.9</td>
<td>26.1±12.2</td>
<td>25.5±3.8</td>
<td>0.835</td>
</tr>
<tr>
<td>Parity</td>
<td>4.1±2.4</td>
<td>3.7±1.8</td>
<td>3.9±1.6</td>
<td>4.1±1.6</td>
<td>3.8±1.8</td>
<td>0.790</td>
</tr>
<tr>
<td>Follow-up duration (month)</td>
<td>77.2±39.4</td>
<td>69.4±33.2</td>
<td>57.2±241.4</td>
<td>57.6±36.5</td>
<td>66.3±242.1</td>
<td>0.235</td>
</tr>
</tbody>
</table>

(1): percentage. Data are expressed as mean ± standard deviation

Table 1. Demographic data among groups with different sling positions. There was no difference among the four groups in age, BMI, number of parity, or follow-up duration.

CONCLUSION
The position of the suburethral sling has an important role in the anti-incontinence effect after PVS procedure. Positioning of the suburethral sling at the BN may have the highest recurrent rate of SUI. Sling position has an important role in the anti-incontinence effect after PVS procedure. Sling locating at the PU and MU had the best continent rate, which implies a good hammock effect can be achieved when placing the suburethral sling at these positions. The sling position has no direct effect on de novo urge or difficult voiding symptoms.

REFERENCES