

## PREOPERATIVE RISK FACTORS OF FAILURE AFTER MID-URETHRAL SLING OPERATION FOR TREATING WOMEN WITH MIXED INCONTINENCE

### Hypothesis / aims of study

Although application of the mid-urethral sling (MUS) operation has expanded to more complicated cases such as patients with mixed urinary incontinence (MUI), the success rates and preoperative factors predicting the outcome in patients with MUI have been reported to be lower than those in patients with pure stress urinary incontinence (SUI). We evaluated the risk factors for failure after MUS operation in patients with MUI.

### Study design, materials and methods

The data was collected for 87 women with MUI and who underwent a MUS operation between July 2006 and January 2009 with at least 1 year follow up. The average follow-up period was 14 months (range, 12-19 months). The following measures were recorded before MUS: age, number of delivery, body mass index (BMI), history of hysterectomy, history of hormone replacement, severity of incontinence, degree of cystocele, duration of symptom, a disease-specific validated questionnaires, 1-hour pad tests, maximal flow rate, postvoid residual urine volume, standardized stress tests and urodynamic study. Urodynamic study included maximal urethral closure pressure (MUCP), maximal cystometric capacity, involuntary detrusor contraction and Valsalva leak point pressure (VLPP). Patients underwent retropubic (34/87, 39.1%) or trans-obturator (53/87, 60.9%) MUS surgery. All patients were asked to visit the clinic at 1 month, 3 month, 6 month and 1 year after surgery. At those times, they were evaluated with a careful symptom review, stress test, a disease-specific validated questionnaires, uroflowmetry, postvoid residual urine volume. Questions about satisfaction with the procedure were completed by the patients. Cure of urinary incontinence was defined as the absence of any episodes of involuntary urine leakage during stressful activities and stress test. Improvement was defined subjectively as a significant reduction of urine leakage, such that it did not require further treatment. All other outcomes were regarded as failure.

The chi-square test was used to compare the clinical operative results and subjective satisfaction. Univariate logistic regression analysis and multivariate logistic regression analysis was used to determine the risk factors of failure after MUS operation.

### Results

At 1 year after surgery, 67.8% of patients were rated as "cured", 81.6% as "cured and improved", and 74.7% as "very satisfied and satisfied".

We analyzed the pattern of post-operative persistent incontinence in improved and failed group (28 patients). 7 patients (25%) were mixed incontinence type, 4 patients (14.3%) were stress incontinence type, and 17 patients (60.7%) were urge incontinence type.

We conducted a Logistic regression analysis on factors of clinical characteristics of patients and results of urodynamic study to investigate the risk factors of failure after mid-urethral sling operation for treating women with mixed Incontinence. Weight of the 1-hour pad test, AUA Symptom Index-QoL score, maximal cystometric capacity (MCC), and involuntary detrusor contraction (IDC) were the risk factors in the univariate analysis, but only MCC (adjusted odds ratio [OR]=1.1; 95% confidence interval [CI]=0.719-1.088, p=0.034) and IDC (adjusted OR=2.5; 95% CI=1.046-4.032, p=0.046) were independent risk factors in the multivariate analysis. The route of tape insertion was not risk factor.

### Interpretation of results

If we know the risk factors of failure after mid-urethral sling operation for treating women with mixed incontinence, which have relatively lower success rate after MUS operation, we may revise treatment plan according to existence of risk factors, and it can help we have consultations with patients for MUS operation.

This study had shown that lower maximal cystometric capacity (MCC) lead to much failure of MUS operation. Average MCC of success group was 380ml, but in the failed group average MCC was 321ml. The result was statistically significant. It suggests that the pathophysiologic condition of bladder itself is concerned with failure of MUS operation for mixed urinary incontinence.

Involuntary detrusor contraction (IDC) was also risk factor of failure of MUS operation for mixed urinary incontinence in this study. In cases with IDC, the rate of failure was 2.5 times higher than the others. But it is fact that there are conflicting results about prognostic significance of IDC for patients with mixed urinary incontinence. So, in-depth studies will be necessary for this point.

Although some studies reported that maximal urethral closure pressure (MUCP) is risk factor of persistent urge incontinence after MUS operation for mixed urinary incontinence, MUCP was no difference between success group and failure group in this study.

So, MCC and the degree of IDC will be useful during counselling and deciding the treatment plan for patients with mixed urinary incontinence.

### Concluding message

MCC and IDC, which indicate the pathophysiologic condition of the detrusor muscle itself, were important predictors of failure of MUS operation in patients with mixed urinary incontinence.

### References

1. Lewis JB, Ng AV, O'Connor RC, Guralnick ML. Are there differences between women with urge predominant and stress predominant mixed urinary incontinence? *Neurourol Urodyn* 2007;26:204-7
2. Schrepferman CG, Griebing TL, Nygaard IE, Kreder KJ. Resolution of urge symptoms following sling cystourethropexy. *J Urol* 2000;164:1628-31

<i>Is this study registered in a public clinical trials registry?</i>	No
<i>Is this a Randomised Controlled Trial (RCT)?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	Ethics Committee of Busan Veterans Hospital
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes