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RESOLVED STRESS AND URGE INCONTINENCE IN WOMEN WITH MUI AFTER MID-URETHRAL SLING SURGERY BASED ON VARIABLE POSITIONING URODYNAMIC EVALUATION

Hypothesis / aims of study

In selected patients with mixed urinary incontinence (MUI), we observed that not only stress urinary incontinence (SUI) but also urge urinary incontinence (UUI) resolved after mid-urethral sling (MUS) operation[1)]. We hypothesize that urine leak into to the urethra could cause detrusor overactivity (DO)[2)] and this can be assessed by variable positioning during urodynamic testing. This study may help identify patients with MUI who may be appropriate candidate for surgery as initial therapy vs pharmacotherapy for overactive bladder symptoms.

Study design, materials and methods

A retrospective study was performed using preoperative urodynamic studies (UDS) for 20 consecutive SUI–dominant MUI women who received MUS operation. Sling method included tension-free vaginal tape (TVT) operation (Advantage fit^{TM} Boston Scientific) or transobturaor tape (TOT) operation (Monarc^{TM} American Medical System), between May 2014 and December 2015.
The diagnosis of MUI was based on a history of leakage during stress, assessment of symptoms by using questionnaires ICIQ-SF and OABSS, 1-h pad test and physical examination with a supine stress test in all patients. Cystometry was performed in the sitting position using a 7-French double lumen catheter. The bladder was filled at a constant rate of 50 ml/min by a flow restrictor using normal saline solution at room temperature. Soon after the first cystometry, the second cystometry was performed in the prone position for the MUI patients who showed DO in the sitting position.
All of the tests, except for UDS, was also carried out at the 3months after surgery.

Results

The mean age of the patients was 63.2 ± 14.5 years (range 38-85 years). The mean body mass index (BMI) was 23.2 ± 2.2 kg/m^2 (range 19.2-27.8 kg/m^2). The result of 1-h pad test was 38.7 ± 43.9g (range 0-146 g). The maximum urethral leak point pressure (MUCP) was 30±10 cmH$_2$O (range 14-48 cmH$_2$O) and the Valsalva leak point pressure (VLPP) was 53 ± 26 cmH$_2$O (range 19-125 cmH$_2$O).
Thirteen of 20 patients showed DO in the sitting position on cystometry. Seven of 13 patients also showed DO in the prone position (DODO group), but in 6 of 13 patients DO disappeared in the prone position on cystometry (DON group). The remaining 7 patients didn't show DO (NN group).
No significant difference was found between the three groups for age, BMI, MUCP, VLPP or the result of 1-h pad test. Nocturia in those younger than 65 years old was 2.33 ± 1.15 times in DODO group, 0.75 ± 0.96 times in NN group and 0.33 ± 0.58 times in DON group. There was a statistically significant difference between the DODO group and the DON group alone ($p < 0.04$), as well as between the DODO group and the DON and NN groups combined ($p < 0.05$).
All 7 patients who showed DO in both the sitting and prone position needed medical treatment including anticholinergic drug after MUS operation. However, in 5 of 6 patients who showed DO only in the sitting position on cystometry, both UUI and urgency disappeared after MUS operation. All 7 patients who didn't showed DO in the sitting position on cystometry didn't need medical treatment after MUS operation.

Interpretation of results

In 65% MUI, DO was observed in the sitting position on cystometry. In 46.2% (6/13) of them, involuntary detrusor contraction disappeared when the cystometric evaluation was repeated in the prone position. Both OAB symptoms and UUI disappeared in that 83.3% (5/6) after MUS operation.
In MUI patients under 65 years old who have DO in sitting but not prone position during urodynamic testing, nocturia averaged less than one time.

Concluding message

MUI is the complaint of involuntary leakage associated with urgency and also with stress. We hypothesize that there are two types of MUI. One is a condition that both SUI and OAB exist as separate diseases. The other is a condition that SUI introduces OAB. The results we observed suggests that urine leak to the urethra could cause DO, and that variable urodynamic positioning may help to predict whether OAB symptoms remains after MUS operation. Identification of DO in women with MUI in sitting but not prone position during urodynamic testing may select patients who will benefit from MUS operation as first line therapy.

References

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Disclosures
Funding: None **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics not Req'd:** All of the patients who were planning to undergo surgery for the treatment of SUI have received UDS on a regular basis in our hospital, for detecting neurogenic bladder. We received written informed consent stating that we may use any data obtained from all patients who received UDS. **Helsinki:** Yes **Informed Consent:** Yes