

## URODYNAMICS FOR LOWER URINARY TRACT SYMPTOMS AFTER MIDURETHRAL SLING REMOVAL IN WOMEN

### Hypothesis / aims of study

To report on the usefulness of urodynamics (UDS) in women with persistent or recurrent lower urinary tract symptoms (LUTS) following mid urethral sling removal (MUSR).

### Study design, materials and methods

Following IRB approval, the prospective database of women who underwent MUSR and experienced bothersome persistent or recurrent LUTS was reviewed for demographics, interval time between MUSR and UDS (early: < 8 months, versus later), type of MUS, additional prior anti-incontinence procedures, storage and emptying symptoms, UDS findings, and UDS role in LUTS management. Women with neurogenic bladder, urethro-vaginal fistula or those who had concomitant autologous sling surgery at the time of MUSR were excluded from the study. Multichannel UDS was performed according to ICS guidelines. During filling at slow fill rate in sitting position, recording was made for detrusor overactivity alone or associated with incontinence (DOI), incontinence with cough or Valsalva efforts (VLPP), and voiding events, including volume voided, maximum flow (Qmax), detrusor pressure at maximum flow (PdetQmax), and residual (PVR). Each UDS tracing was reviewed by a neutral investigator (BC) and classified based on Qmax and PdetQmax as underactive (UDA) (< 15 cm H<sub>2</sub>O), normal (15 to 25 cmH<sub>2</sub>O), or obstructed (> 25 cmH<sub>2</sub>O). The impact of voiding information on patient counselling was evaluated in regards to the management of stress urinary incontinence (SUI), the options ranging from injectable agent, bladder neck suspension, or autologous sling [as generally patients did not desire another MUS]. It was hypothesized that women who underwent earlier UDS were more symptomatic than those who were studied late. Statistical analysis was performed with SPSS version 19.0. (Armonk, NY: IBM Corp.). A p-value <0.05 was considered statistically significant.

### Results

From 5/06 to 11/13, 67 of 227 (30%) patients who had UDS after MUSR. Fourteen women were excluded (neurogenic bladder - 7, urethro-vaginal fistula-2, rectus fascia sling at the time of MURS-5). For the 53 women in the final analysis, mean age was 59.8 ± 11.2, with mean BMI 30.7 ± 6.1 and median parity of 2 (0-6). Median time between tape removal and UDS was 8 months (4-65). The median follow-up after MUSR was 24 months (7-79). MUSR included TVT in 29 (55%), TOT in 13 (25%), mini-sling in 4 (8%), unspecified in 3 (6%) and ≥ 1 MUS in 4 (8%). Twelve (23%) women had one or more anti-incontinence procedure before the MUS placement. After MUSR, symptoms included MUI (32), SUI (5), UUI (13) and incomplete emptying (3). Following UDS, SUI was diagnosed in 19 (36%), DOI in 6 (11%), MUI in 14 (26%). Mean maximum cystometric capacity (MCC) was 277 ± 135 ml and mean VLPP 61 ± 30 cm H<sub>2</sub>O, with 58% having VLPP less than 60 cmH<sub>2</sub>O. During voiding, 35 voided with normal parameters while 4 were obstructed, 2 had UDA, 6 voided only with Valsalva, and 6 were either unable to void or lost the catheter. UDS findings comparing the early UDS group versus the late UDS group based on the study median interval time of 8 months did not show differences, thus rejecting our hypothesis (Table 1). Based on UDS storage and emptying findings, and subsequent counselling with the patient, women with SUI or stress- predominant MUI chose observation (8), injectable agents (20), and autologous slings (3). Women with UUI or urge-predominant MUI chose observation (1), anticholinergic medications (9), Botox (3), and Interstim (1).

### Interpretation of results

The management of LUTS after MUSR represents a new challenge in the field of Female Pelvic Medicine and Reconstructive Surgery because many women are fearful of another surgical procedure. Storage and emptying symptoms can be further investigated by UDS. Obstruction and urge incontinence related to DOI are easier to care for than residual SUI. In our experience, UDS has an important role to evaluate the precise mechanism(s) of incontinence and to guide SUI therapy. Although the numbers may be insufficient, we did not observe UDS differences between those studied early or late after MUSR.

### Concluding message

To our knowledge, this is the first series which reports on the role of UDS in women with bothersome persistent or recurrent lower urinary tract symptoms (LUTS) following mid urethral sling removal. UDS findings did not differ significantly between the group studied early after MUSR and presumably more bothered, compared to the group studied later.

Table 1: Comparison of Urodynamic findings in women who underwent UDS early after MUSR ( $\leq 8$  months) or later ( $> 8$  months).

Variable	EARLY GROUP N= 27 UDS performed $\leq 8$ months after MUSR	LATE GROUP N=26 UDS performed $>8$ months after MUSR	p
Mean age (months)	63.7 $\pm$ 9.9	55.7 $\pm$ 11	0.01
Urodynamic diagnosis of incontinence (n)			0.22
No incontinence	10	4	
SUI	10	9	
DOI	2	4	
MUI	5	9	
MCC (ml) Mean $\pm$ SD	292 $\pm$ 125	262 $\pm$ 146	0.42
VLPP (cmH <sub>2</sub> O) Mean $\pm$ SD	53 $\pm$ 25	67 $\pm$ 33	0.23
VLPP $\leq 60$ (n)	9	6	0.09
Volume at DOI (ml) Mean $\pm$ SD	158 $\pm$ 127	90 $\pm$ 72	0.11
Voiding parameters (n)			
No obstruction	20	15	0.5
Obstruction	2	2	
UDA	0	2	
Valsalva voiding	3	3	
Unable to void or recording problems	2	4	

Disclosures

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