

## CAN FEELING OF INCOMPLETE BLADDER EMPTYING REFLECT SIGNIFICANT POSTVOID RESIDUAL URINE? IS IT RELIABLE AS A SYMPTOM SOLELY?

**Hypothesis / aims of study:** Sensation of incomplete bladder emptying is an objective data for urologist to evaluate the patients with lower urinary tract symptoms (LUTS). Measurement of postvoid residual urine volume (PVR) test helps us to identify patients which needs further studies to detect optimal treatment modality. So, PVR measurement provide subjective hints and widely used in daily practice of urologists. Sensation of incomplete bladder emptying is not compatible with PVR volume in all patients. Also PVR volume is not correlate with symptoms.(1) The aim of this study is to reveals the relationship between voiding symptoms and PVR volume. Secondly to find answer to that question 'Can sensation of incomplete bladder emptying reflect significant PVR?'

**Study design, materials and methods:** Between October 2014 and February 2015, 939 patients were included to this study. All volunteers were >40 yr of age. A questionnaire was filled out by all volunteers, consisted of demographic characteristics, comorbidities, medications, history of surgery and the symptoms of LUTS. All patients were undergone PVR measurement according to suggestion of International Consultation of Incontinence with transabdominal ultrasonography. Measurements were performed with signosRT( Signostic Ltd, Thebarton, South Australia) bladder scan. Thereafter relationship between symptoms (including the sensation of incomplete emptying) demographic characteristics and PVR analyzed. Statistical Package for the Social Sciences (SPSS) 17 used to analysis. The study was approved by the local ethics committee and all patients gave written informed consent. All the patients had the right to draw off if they want.

**Results:** Totally 939 patients enrolled in this study, 756 men; mean age 63 years, 183 women; mean age 60. Patients' demographic characteristics shown in the Table-1. Prevalance of LUTS shown in the Table-2. Daytime frequency was detected  $6.6 \pm 3.3$  for men and  $7.9 \pm 4.9$  for women. Nocturia frequency was detected  $3.0 \pm 1.9$  for men and  $1.9 \pm 2.1$  for women ( $P < 0.001$ ).

	Male		Female	
	n	%	n	%
<b>Comorbidities</b>				
Diabetes	104	13.8	20	10.9
Hypertension	122	16.2	20	10.9
Heart disease	54	7.1	4	2.2
COPD	20	2.6	10	5.5
Other	64	8.5	36	19.7
<b>Medications</b>				
Alpha-blockers	96	12.7	0	0
5 $\alpha$ -reductase inhibitor	15	2	0	0
Anticholinergics	5	0.7	14	7.7
Antihypertensives	120	15.9	22	12
Antidiabetics	105	13.9	23	12.6
Others	107	14.2	53	29
Age(mean)	63.0		60.1	

	Male		Female	
	n	%	n	%
<b>LUTS</b>				
<b>Storage Symptoms</b>				
Frequency	459	60.7	121	66.1
Nocturia	594	78.6	135	73.8
Urgency	381	50.4	86	47.0
<b>Voiding symptoms</b>				
Slow stream	425	56.2	57	31.1
Splitting or spraying	334	44.2	30	16.4
Intermittent stream	427	56.6	67	36.6
Hesitancy	378	50.0	48	26.2
Straining	272	36.0	26	14.2
Terminal dribble	447	59.1	86	47.0
<b>Postvoiding symptoms</b>				
Sensation of Incomplete emptying	413	54.6	72	39.3
Postmicturition dribble	391	51.7	45	24.6

The relationship between LUTS, PVR volume and sensation of incomplete bladder emptying shown in Table-3

Table-3 PVR volumes (ml) according to LUTS in both gender						
	Male PVR volumes			Female PVR volumes		
	Sensation of incomplete bladder emptying			Sensation of incomplete bladder emptying		
	No	Yes	p	No	Yes	p
<b>Storage symptoms</b>						
Frequency	62.2	65.1	0.674	22.7	21.0	0.786
Nocturia	62.6	64.3	0.7	18.3	22.5	0.47
Urgency	55.6	72.0	<b>0.007</b>	22.3	21.0	0.802
<b>Voiding symptoms</b>						
Slow stream	56.5	69.6	<b>0.03</b>	19.1	27.0	<b>0.03</b>
Splitting or spraying	58.7	69.6	0.059	21.3	22.6	0.38
Intermittent stream	50.6	73.8	<b>0.0001</b>	20.5	23.3	0.132
Hesitancy	55.7	71.8	<b>0.002</b>	20.1	25.7	0.362
Straining	53.6	81.7	<b>0.0001</b>	21.0	25.0	0.556
Terminal dribble	60.5	66.4	0.194	18.4	25.1	<b>0.001</b>
<b>Postvoiding symptoms</b>						
Postmicturition dribble	62.1	65.3	0.686	20.6	24.4	0.401
Sensation of incomplete emptying	54.4	71.2	<b>0.001</b>	16.5	29.3	<b>0.0001</b>

Sensation of incomplete bladder emptying is related with PVR volume in all age groups of women, but this relationship was found only in men over the age of 60( In the analysis of subgroups for age). Post-void residual urine volume is increasing in men by age. (0.65 cc per year of age, P=0.011). In generally, men with voiding symptoms and urgency PVR volume is greater than the others. In women storage symptoms and voiding symptoms (except slow stream, terminal dribble) are not correlate PVR volume. We did not find any relationship between PVR volumes and comorbidities, medications.

**Interpretation of results:** In our study there is not an association between high PVR and sensation of incomplete emptying in men under 60 age. This correlation was detected for all ages of women and also for men whom over 60 age. Also we detected that PVR increases 0,65 cc for per age in men group. No correlation was detected between age and PVR volume for women.

**Concluding message:** Urologists should not rely on the patients' statements in men younger than 60 years regarding feeling of incomplete bladder emptying. Further studies including younger age groups and specific patient groups are needed to confirm and generalize these conclusions.

#### References

1. Al-Shahrani M, Lovatsis D Do subjective symptoms of obstructive voiding correlate with post-void residual urine volume in women? Int Urogynecol J Pelvic Floor Dysfunct. 2005 Jan-Feb;16(1):12-4;

#### Disclosures

**Funding:** None **Clinical Trial:** Yes **Public Registry:** No **RCT:** No **Subjects:** HUMAN **Ethics Committee:** Pamukkale University Ethic Committee **Helsinki:** Yes **Informed Consent:** Yes