

**Abstract Reproduction Form B-1**

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Title (type in  
CAPITAL  
LETTERS)**THE EFFECT OF BLADDER VOLUME IN PATIENTS  
WITH GSI ON THE CHANGES OF ULTRASOUND  
PARAMETERS OF THE LOWER URINARY TRACT****AIMS OF STUDY**

Position and mobility of the bladder neck are important factors in the aetiology of genuine stress incontinence /GSI/. The aim of the present study was to evaluate the effect of bladder volume on the position and mobility of uretrovesical junction and determine the changes of another ultrasound parameters of lower urinary tract. We supposed that differences in the mobility of uretrovesical junction with different volume of bladder wouldn't be statistically significant.

**PATIENTS AND METHODS**

Twenty women with proven genuine stress incontinence /GSI/ participated in the study. Their average age was 46 , average weight 70 , average parity 1,57. The diagnosis of GSI was confirmed by urogynaecological examination which consisted of the history, vaginal and urodynamic assessments including pad weight test. Then, a perineal and introital ultrasound examination in the patients in supine position / by Acuson 128 XP 10, curved array probe 5 MHz and transvaginal ultrasound probe 7,0 MHz / were performed. Measurements of mobility of urethrovesical junction were performed by curved array probe and introital measurements of the urethral sphincter were taken in the sagittal and horizontal planes by transvaginal probe. In the sagittal plane, the bladder wall thickness was taken at the anterior wall, at the dome and at the trigone.

The position and mobility of UV- junction was observed by these parameters : the  $\gamma$  angle – the angle between the line connecting the inferior point of symphysis with bladder neck and the axis of symphysis / X / , p - distance between the inferior point of symphysis and UV- junction, h - distance between UV – junction and horizontal line which is coming from inferior point of symphysis, x–distance between UV-junction and axis Y, y - distance between UV–junction and axis X. The axis X is axis of symphysis and Y is perpendicular to axis X in the inferior point of symphysis / Fig. 1/.

The bladder was filled to 300ml , 200ml and the last measurement was performed when it was empty.

**RESULTS**

Based on our ultrasound imaging, we found a statistically significant difference in the mobility of urethrovesical junction during contraction pelvic floor between measurements when the volume of bladder was 300 ml or

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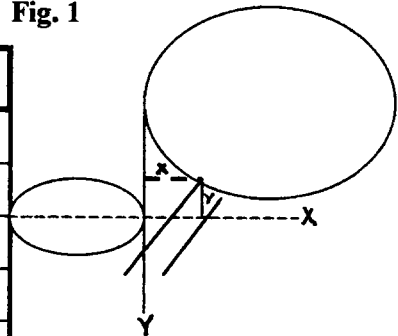
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empty /  $p = 0,00983$  / UV - junction of empty bladder is during contraction upper /  $p = 0,006$  / and mobility is higher. Distances  $x, y, p$  are shorter and angle  $\gamma$  is smaller /  $p < 0,01$  / Wall thickness of empty bladder was larger /  $p < 0,01$  / Tables 1, 2/. The differences considering the areas and thickness of the urethral sphincter in both planes and the thickness of pelvic floor muscles are not significant.

Tab.1. Ultrasound of the lower urinary tract - angle  $\gamma$

Fig. 1

Volume		300 ml	200 ml	empty
at rest	$\bar{x}$	86,3	78	83
Valsalva	$\bar{x}$	148	149	153
squeezing	$\bar{x}$	74,8	65,8	65
mobility between kontraktion and Valsalva	$\bar{x}$	71,8	83,3	83,3
mobility between rest and Valsalva	$\bar{x}$	62,5	71	70



Tab.2 Changes of US parameters during different filling of the bladder

			300 ml	200ml	empty	diff. 300/empty
	param.					
at rest	x	$\bar{x}$	-2,37	-5,3	-3,1	-0,75
	y	$\bar{x}$	27	29	27	0,5
	p	$\bar{x}$	30,1	30,8	30,2	0,37
	h	$\bar{x}$	25,12	27,2	26,5	1,37
Valsalva	x	$\bar{x}$	17,5	17,6	16,37	-1,12
	y	$\bar{x}$	10,8	8,5	9,3	-1,5
	p	$\bar{x}$	22,4	20,1	20,7	-1,62
	h	$\bar{x}$	-0,25	-0,5	0,62	0,87
squeezing	x	$\bar{x}$	-6,75	-8,75	-11,75	-5
	y	$\bar{x}$	27,6	25,3	25	-1,75
	p	$\bar{x}$	31,1	33,3	28	-3,12
	h	$\bar{x}$	28,8	31,2	27,9	-0,87

diff.300/emp.-the differences between results of parameters of empty bladder and bladder with filling 300 ml.

### CONCLUSIONS

From our preliminary results we can conclude - the volume of 300 ml of bladder is not so important for evaluation of mobility UV- junction . We didn't find larger mobility of UV- junction with larger volume of bladder. On the contrary the most mobility was with the empty bladder. The measurement of the thickness of the bladder is important performed with empty bladder . For common US - measurement of mobility UV- junction is sufficient measurement with empty bladder.

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