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**Title:** CONTRIBUTION OF NATURAL BLADDER FILLING DURING FILLING CYSTOMETRY (CMG)

### **Aim of study:**

Daily urodynamic practice shows that patients often have a bladder volume that exceeds the volume infused. Patients are asked to drink large amounts of fluid several hours prior to the investigation, and to hold urine in order to have a proper filled bladder since urodynamic investigation starts with an uroflowmetry. Physiological filling rate varies from 0.6 ml/min to 15 ml/min after maximal fluid intake. Consequently excessive fluid-intake can distort interpretation of urodynamic markers (e.g. first sensation, normal desire, cystometric bladder capacity) as well as evaluation of the effect of therapies on bladder function. This study compares the cystometric capacity (i.e. the infused volume) with real bladder capacity (i.e. voided volume and residual volume). We tried to determine the influence of excessive fluid-intake prior to CMG and to assess the contribution of forced natural filling on total bladder capacity.

### **Methods:**

Retrospective study of CMG's performed between September 2000 and February 2001. Only those CMG's where total bladder capacity could be calculated were taken into account (i.e. catheterization before and after CMG, and no urine loss during the investigations).

### **Results:**

After screening 186 investigations were used for further analysis. Mean cystometric capacity was  $346 \pm 152$  ml, but mean real bladder capacity (e.g. voided volume + residual urine) was  $391 \pm 170$  ml. In all patients 14% extra urine was produced due to natural filling (mean filling rate 6.1 ml/min). In 41.9% of the investigations the real bladder capacity was more than 10 % larger than the infused volume. (See table) In 18.2 % the real bladder capacity was more than 25% of the cystometric capacity.

### **Conclusion:**

Careful catheterization prior to CMG is obligatory. The advice to drink large amounts of fluid prior to urodynamic investigation increases natural bladder filling and disturbs urodynamic parameters. Careful interpretation of evaluating studies on real bladder capacity is necessary and urodynamic parameters should be corrected according to the volume produced by natural filling.

**Table: Determination of contribution of extra urine produced during UDS**

<b>Mean <math>\pm</math> SD</b>	<b>N</b>	<b>CC (ml)</b>	<b>RC (ml)</b>	<b>Urine produced (%)</b>	<b>Natural filling rate (ml/min)</b>
<b>All</b>	<b>186</b>	<b><math>346 \pm 152</math></b>	<b><math>391 \pm 170</math></b>	<b><math>14.3 \pm 30</math></b>	<b><math>6.1 \pm 16</math></b>

Less than 10% extra urine production	108 (58.1%)	354 ± 156	360 ± 160	-0.1 ± 14.6	-0.6 ± 11.5
Between 10 and 25% extra urine production	44 (23.6%)	382 ± 142	445 ± 168	16.46 ± 4.4	7.7 ± 3.1
Between 25 and 50% extra urine production	18 (9.7%)	284 ± 150	386 ± 204	36.2 ± 8.2	14.2 ± 6.6
More than 50% extra urine production	16 (8.6%)	262 ± 107	449 ± 161	80.1 ± 52.5	38.2 ± 26

\* CC: cystometric bladder capacity; RC: Real bladder capacity