

## A SIMPLE TEST FOR EVALUATION OF DETRUSOR CONTRACTILITY IN PATIENTS WITH ACUTE ON CHRONIC URINARY RETENTION.

### Hypothesis / aims of study

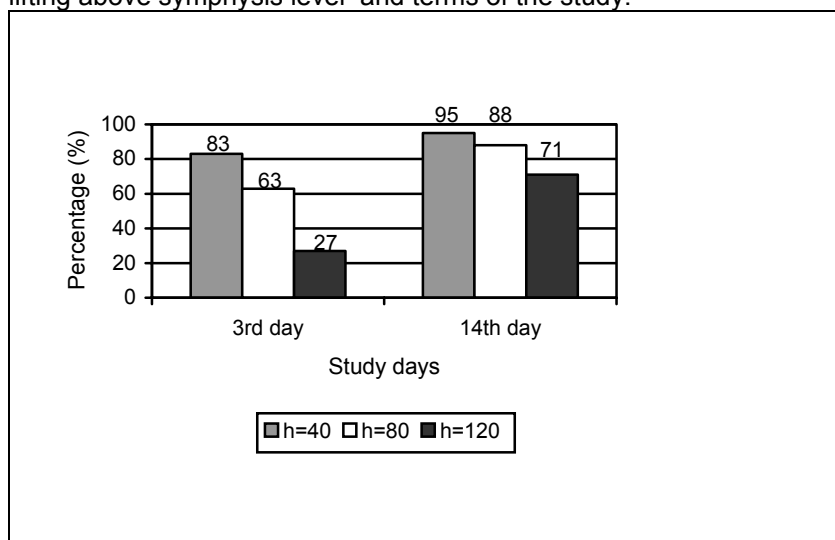
We propose a method for evaluation of detrusor function in voiding phase when urethral resistance factor is ignored. Aim of the study was a development of a simple method of detrusor contractility (DC) assessment in acute on chronic urinary retention (A/C UR) followed by the trial without catheter (TWOC).

### Study design, materials and methods

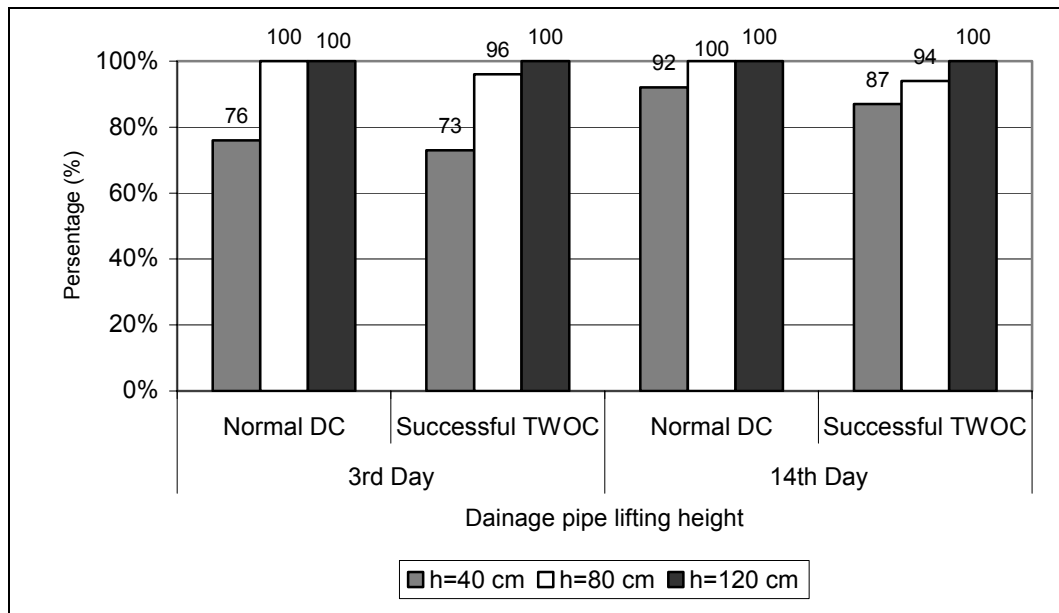
Results of the study in 41 men of mean age 69 (range 52-79) have been analyzed. It included patients with A/C UR caused by BPH. Patients with BOO, not caused by BPH, who undergone surgery on prostate, who had system disturbances contributing a function of lower urinary tract and with renal failure were excluded. Patients were examined according to the Guidelines on BPH (1). Foley catheters Ch 20 (Rusch, Germany) were used for bladder catheterization. On 3<sup>rd</sup> and 14<sup>th</sup> days after catheterization the patients were examined as follows: their bladders were filled up with a warm saline (37° C) at a rate of 50 ml/min up to maximum cystometric capacity (MCC), after they were advised to void via artificial "urethra", i.e. through introduced Foley catheter. Artificial voiding (AV) has been assessed for three times with an increment of a draining pipe by a latex tube Ch 20. Its distal end was lifted up to 40cm, 80cm and 120cm above pubic symphysis level, so providing hydrostatic resistance to urinary flow correspondingly by the meanings of 40cm, 80cm, 120cm H<sub>2</sub>O (artificial urethral resistance). Concomitantly, presence or absence of residual urine (RU) has been evaluated. The results were compared with those of standard ICS "pressure-flow study" and "continuous occlusion test" (2). After completion of the study, TWOC was carried out in all patients with bladders previously filled up to MCC with the method described above.

### Results

Figures 1 and 2 demonstrate the results of the AV study depended on height (h) of drainage lifting above symphysis level and terms of the study.



**Fig.1** Number of patients (%) artificially voided without RU at different drainage pipe lifting height levels on days 3<sup>rd</sup> and 14<sup>th</sup> (n=41).



**Fig.2** Number of patients (%) with normal DC and successful TWOC of those artificially voided without RU.

### **Interpretation of results**

On the 3<sup>rd</sup> day of the study normal DC was observed in 26 patients (63%) (BCI>90; pdetQmax>55 cmH<sub>2</sub>O; pdet max iso>51 cmH<sub>2</sub>O), 25 patients (61%) had successful TWOC. In 1 patient a spontaneous voiding did not restore due to a high urethral resistance that was the reason for TURP. Fig.1 shows a number of patients (%) who had voided artificially without RU on drainage pipe lifted up at a height of 40cm, 80cm and 120cm. Among the patients (n=34) who voided artificially without RU on the 3<sup>rd</sup> day of the study on drainage pipe lifted up to 40 cm, only 76% had a normal DC and in 73% of them spontaneous voiding had restored (Fig.2). Among patients (n=26) who emptied their bladders at h=80cm without RU, absence of detrusor insufficiency was confirmed in 100%, and in 96% of them urination had restored. Of 11 patients who could void artificially without RU at a h=120cm everyone had a successful TWOC. The remaining 15 patients, in spite of their normal DC could not empty a bladder without RU at a given height of drainage pipe lifting.

On the 14<sup>th</sup> day of the study 36 (88%) patients showed a normal DC; 34 (83%) were undergone TWOC successfully. As Fig. 2 shows, patients (n=39) who had voided artificially without RU at h=40cm, in 92% contractility restored on the 14<sup>th</sup> day and 87% of them had successful TWOC. In all of the patients (n=36) artificially voided without RU at h=80 cm, DC was restored and in 94% spontaneous voiding had recovered.

In one, in spite of restored DC, urination did not improve and he had undergone TURP. Among patients (n=14) artificially voided without RU at h=120cm, in 100% restoration of DC was observed and in 100% TWOC was successful. The remaining 22 patients in spite of a normal DC were not able to empty their bladders without RU at h=120cm. At the end of the study only 5 (12%) could not restore DC (BCI<35; pdetQmax<25 cmH<sub>2</sub>O; pdetmax iso<35 cm H<sub>2</sub>O), TWOC was unsuccessful and they required suprapubic cystostomy.

### **Concluding message**

The results show that described method of evaluation of DC in combination with TWOC has diagnostic and prognostic value in the period preceded radical or palliative intervention aimed to remove BOO, and AV at h = 80cm in absence of RU is a criterion of DC preservation.

1. Guidelines on BPH, EAU 2003
2. M. P. Sullivan et al. The Journal of Urology, Vol. 154: 1834-1840

