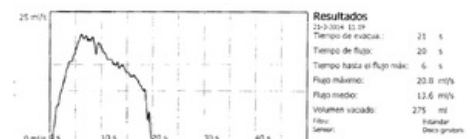


# Urodynamic examinations

## Uroflowmetry (UFM)

- Non-invasive measurement flow rate urine ( amount urine for time –  $Q = \text{ml/s}$ );
- if pathological results we indicate a PQ study [1];
- for execution this examination is needed sufficient micturition volume (at least 150 ml);
- depends on quality detrusor, fill bladder, patency throats and urethras;
- patient urinate into specially adjusted toilets , urine turns out on constantly a rotating disk that is a stream urine braked – quantity energy needed to maintain constant the rotation is direct proportionately weight falling urine;
- on curves we evaluate:
  - whether the flow **is continuous or dashed**;
  - maximum flow** (maximum flow rate,  $Q_{\max}$ ) – men above 15 ml/s, women above 20 ml/s;
  - average flow**;
  - further timewise delay between the beginning efforts to micturition and the beginning micturition (up to 5 s), shape ascending parts, time achievement maximal micturition (steep), volume micturition, total time, average flow rate, total face curves;
  - $Q_{\max} < 12 \text{ ml/s}$  means obstruction whose hypoactivity urinary bladder [1].



Uroflowmetry - normal find

The investigation is being evaluated according to worked out of nomograms because maximum and average flow urine changes depending on micturition volume.

## Filling cystometry

- We determine value detrusor pressure during fulfillment urinary bladder by catheter ( $P_{\text{detrusor}} = P_{\text{ves}} - P_{\text{abd}}$ );
- during examination an intravesical and rectal catheter is inserted;
  - intravesical catheter measures intravesical pressure;
  - rectal catheter measures abdominal pressure.
- At examination we evaluate:
  - sensitivity** of the detrusor – patient indicates feeling the first, normal and strong compulsion on urine. These information they are considered with maximum capacity urinary bladder;
  - activity** of the detrusor – for physiological conditions does not occur during fulfillment of the so-called *uninhibited contractions of the detrusor*, which manifest themselves sudden and wavy rise pressure;
  - capacity** of the detrusor – in an adult human is normal capacity bladder between 350–500 ml;
  - compliance** of the detrusor – describes compliance walls urinary bladder. This is a share volume and change pressure (ml/cm  $\text{H}_2\text{O}$ ). Physiological value is approximately 20 ml/cm  $\text{H}_2\text{O}$  [2].

## Miction cystometry

- Otherwise also *manometric-flow study*, *pressure-flow study*, *PQ study*, *simultaneous urodynamic entry* [3];
- we determine detrusor pressure during micturition;
- this is dynamic examination with record current urine, intravesical pressure during micturition and intra-abdominal pressure [3];
- indicated from differentially diagnostic reasons for:
  - benign hyperplasia prostate and weak current on UFM to reduced contractility detrusor;
  - irritating micturition symptomatology and strong current on UFM to rule out obstruction lower ones honor urinary.

## Determination of Leak point pressure

- Determination values intravesical pressure, at which occurs escape urine from the bladder .

It has two forms.

### Abdominal

- the so- called valsalva (LPP-VLPP);
- we measure help rectal catheter;
- for diagnostics stressful incontinence (used therefore especially in women);
- Mon application rectal catheter we invite the patient to cough (Valsava's maneuver), and we observe whether and at what kind pressure runoff occurs urine;
  - if value abdominal pressure is at incontinence **higher than 90 cm  $\text{H}_2\text{O}$** , this is probably hypermobile urethras;

- if value abdominal pressure is at incontinence **less than 60 cm H<sub>2</sub>O**, this is most likely an insufficiency urethral sphincter;
- values between 90 and 60 cm H<sub>2</sub>O are in a “gray zone”.

## Detrusor

- The so- called BLPP (bladder leak point pressure);
- the catheter is in the urinary tract bladders;
- examination is indicated at risk vesicoureteral reflux, e.g. in children with congenital developmental defects;
- values above 40 cm H<sub>2</sub>O (in children above 40 cm H<sub>2</sub>O) are unfavorable from the point of view emergence megaureters.

## Profilometry

- At sliding out measuring catheter constant at blistering speed we record pressure in the urethra;
- or *urethral pressure profile*;
- not performed routinely <sup>[1]</sup>;
- at use stressful of maneuvers (cough) is **stress profilometry**.

## Videourodynamics

- Combination filling cystometry and PQ study with rtg cystography, or ultrasonography<sup>[3]</sup>;
- most complex, however laborious, that's why it's not done often

## Links

### Source

- SOBOTKA, R. *Urodynamic examinations* [lecture for subject Urology, specialization General medicine, 1.LF UK]. praha. 12/12/2013.
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3. NOVAK, Květoslav. *Incontinence urine in men* [online]. Postgraduate medicine, ©2011. [cit. 2013-12-12]. <<https://web.archive.org/web/20160331222721/http://zdravi.e15.cz/clanek/postgradualni-medicina/incontinence-moci-u-muzu-457068>>.