ASSESSMENT OF THE TECHNICAL QUALITY OF URODYNAMIC TRACES USING THE BRISTOL UTRAQ TOOL

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Hypothesis and Aims

- Urodynamics aim to assess the function of LUT.
- Significant variability exists in the technical quality of urodynamic tests performed worldwide.
- Poor-quality testing may lead to repeated invasive procedures.

0		**Are all pressure and flow axes present and is each labelled and with timescale, and are the filled and voided volumes data presented in some form ?**
		Question
1	Pre-filling	Were all of the pressure axes displayed and scaled with the same height per cmH_2O, with the zero pressure value visible?
2	Pre-filling	Was the urine flow vertical axis displayed and scaled as recommended (i.e. 0-25 up to 0-50 ml/sec), with the zero flow value visible?
3	Pre-filling	Were the p_{ves} and the p_{abd} marked on the trace as being zeroed to atmosphere?
4	Pre-filling	Was a good quality* cough test carried out at the very start of the test?
5	Pre-filling	Were the initial resting p_{ves} and p_{abd} pressures in the physiological range**?
6	Pre-filling	Was initial resting p_{det} in the physiological range**?
7	Filling	Were cough tests or Valsalvas visible on the printout during filling?
8	Filling	Was each set of cough peaks or Valsalvas good quality* throughout (or after correction)?
9	Filling	Were small 'live' pressure fluctuations (e.g. patient breathing) visible throughout the test (or after any correction) equally on p_{abd} and p_{ves}, but not visible on p_{det}?
10	Filling	If there was tube leakage (steady pressure descent) was it corrected?
11	Filling	Was the patient position recorded on the trace at any point?
12	Filling	If patient position change was evident on the trace, was the transducer level adjusted?
13	Filling	If detrusor overactivity was present, was it clearly marked at any point?
14	Filling	If poor compliance was seen (p_{ves} rising continuously), were appropriate actions taken (e.g. pump stopped, filling speed reduced)?
15	Filling	Were the patient reported sensations of filling indicated at any point?
16	Filling	If the flow trace shows urine leakage was present, was it clearly marked as such?
17	Voiding	Was a good quality* cough test done at the end of filling, before voiding?
18	Voiding	Do all traces remain in view during very high or low pressures?
19	Voiding	Was either 'permission to void' or 'void' indicated?
20	Voiding	Were the markers for start and end of void correctly placed?
21	Voiding	Was a good quality* cough test done after the final void?
22	Voiding	Was the Q_{max} marker placed on the flow trace?
23	Voiding	Was the Q_{max} marker placed away from artefacts?

Study design, materials and methods

- Patients between July 2020 and February 2025 with reports of previously performed urodynamic tests elsewhere were included.
- Scored with Bristol UTraQ tool
- When in need, repeated in accordance with ICS Good Urodynamic Practice guidelines.
- 66 traces from 59 patients, mean age: 42 (±15.7).
- 89% of the traces at university or training hospitals
- Half were diagnosed with neurogenic bladder

Results

Pre-filling phase:
All showed correct pressure scale/axis values.
87.8% lacked a visible 'zero to atmosphere',
75.7% lacked a high-quality cough test at the start.
Physiological pressure curves not seen in **over 30%**.

Filling phase:
- Cough tests were present in **57.5%** but of good quality in only **31.8%**.
- Patient position was recorded in **3** cases, and the transducer level was adjusted in just **one** trace.
- Live pressure fluctuations were visible in only **9%**. Sensations were labeled in **71.2%**. Leaks were marked in only **half** of the cases.

Voiding phase:
- All pressure lines remained visible in **63.6%.**
- Permission to void was marked in **48.8%**.
- A cough test was before voiding in **21.1%** and after voiding in only **3%**.
- Qmax was accurately marked in only a few traces.

Interpretation

Substantial deficiencies in the technical quality of urodynamic traces referred to a tertiary centre were observed. The most frequent issues included:

- Missing zeroing at the start
- Poor-quality cough tests throughout the study.

Conclusion

High-quality urodynamic testing is essential for accurate assessment of lower urinary tract function and for appropriate patient management. These findings emphasize the need for routine quality audits in urodynamics units. Standardized training and regular audits are essential to maintain quality.