

## Hypothesis / Aims of Study

- Urodynamic studies aim to objectively assess the functions of the lower urinary tract and understand its clinical implications.
- Lack of a good quality test can put patients through to repeated invasive procedures.
- We have analysed the urodynamic traces and reports of patients referred to our tertiary unit for functional urologic problems and who had to undergo a repeat invasive urodynamic test due to inconclusive and/ or poorly informative previous tests. cv
- A good quality test can be defined as one which allows interpretation of the test trace by another urodynamicist that reaches the same conclusions regarding the diagnosis and subsequent management of patients.

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	Were all of the pressure axes displayed and scaled with the same height per cmH <sub>2</sub> O, with the zero pressure value visible?
2	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	Were the p <sub>ves</sub> and the p <sub>abd</sub> marked on the trace as being zeroed to atmosphere?
4	Was a good quality* cough test carried out at the very start of the test?
5	Were the initial resting p <sub>ves</sub> and p <sub>abd</sub> pressures in the physiological range**?
6	Was initial resting p <sub>ves</sub> in the physiological range**?
7	Were cough tests or Valsalvas visible on the printout during filling?
8	Was each set of cough peaks or Valsalvas good quality* throughout (or after correction)?
9	Were small 'live' pressure fluctuations (e.g. patient breathing) visible throughout the test (or after any correction) equally on p <sub>abd</sub> and p <sub>ves</sub> , but not visible on p <sub>det</sub> ?
10	If there was tube leakage (steady pressure descent) was it corrected?
11	Was the patient position recorded on the trace at any point?
12	If patient position change was evident on the trace, was the transducer level adjusted?
13	If detrusor overactivity was present, was it clearly marked at any point?
14	If poor compliance was seen (p <sub>ves</sub> rising continuously), were appropriate actions taken (e.g. pump stopped, filling speed reduced)?
15	Were the patient reported sensations of filling indicated at any point?
16	If the flow trace shows urine leakage was present, was it clearly marked as such?
17	Was a good quality* cough test done at the end of filling, before voiding?
18	Do all traces remain in view during very high or low pressures?
19	Was either 'permission to void' or 'void' indicated?
20	Were the markers for start and end of void correctly placed?
21	Was a good quality* cough test done after the final void?
22	Was the Q <sub>max</sub> marker placed on the flow trace?
23	Was the Q <sub>max</sub> marker placed away from artefacts?

## Study Design, Materials and Methods

- Patients assessed at our Functional Urology Outpatient Clinic between July 2020 and March 2024 were included.
- All patients came with a report of an invasive urodynamics (first test) performed elsewhere. The traces and reports of these examinations were scored using the **Bristol UTraQ tool**.
- Patients were assessed for their history, physical exam and urodynamics tests and when failure to reach a clinical conclusion to guide the patients further management, a second invasive urodynamics test following the ICS good urodynamics practice guidelines was performed. All patients had a videourodynamic test as a second invasive urodynamic test (second test)

## Results and Interpretation

A total of 27 urodynamic traces were analysed.

The median age was 39 (range: 14-78) years.

The first urodynamic tests were assessed and scored by 2 independent researchers.

Videourodynamics had been performed in 2 (7.4%) of the patients when 9 (33.3%) patients had neurogenic bladder dysfunction and/ or previous anti- incontinence surgery. Most of the urodynamic studies were conducted at an university or training hospital 19/ 27 (60.3%).

Most commonly detected errors in the traces were:

- lack of zero pressure values (21, 77.8%),
- lack of zeroing to the atmosphere (5, 18.5%),
- lack of good quality cough testing (8, 29.6%).
- In the filling phase, the traces lacked good quality cough tests in 13/27 (48.1%) and live pressure fluctuations in 23/27 (85.2%) of the traces.

Patient position was denoted only in 3.7%.

Patient reported sensation were marked in 21/27 (77.8%) but only consisted of first desire, normal desire and maximum capacity, other sensations such as pain urgency, fullness was not noted in any of the traces.

Four patients (4/ 27; 14.8%) did not have a voiding phase done

Cough test before and after voiding was only available in 2/27 (7.4%) of the patients.

Qmax was marked properly in 1/27 (3.7%).

## Conclusions

A good quality urodynamic test is crucial in proper assessment of the lower urinary tract function and for subsequent correct management of patient' s conditions. Our results showed significant errors in urodynamics practice in the patients referred to our centre. Significant errors were visible in pre- filling, filling and voiding phases. This highlights the importance of audits in the urodynamics units and we hope the results of this study could be a basis for local/ national audit programmes in urodynamics units.

## References

1. Gammie A, Hashim H, Abrams P. Bristol UTraQ: A proposed system for scoring the technical quality of urodynamic traces. *Neurourol Urodyn*. 2022 Feb;41(2):672-678. doi: 10.1002/nau.24872. Epub 2022 Jan 15. PMID: 35032349.

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