Urodynamic Saline Fill
- Full Clinical Guideline

UHDB/Gynae/10:23/U1

Contents

1. Introduction

Urodynamics is an invasive procedure, carried out to determine the cause of urinary symptoms such as incontinence and voiding difficulties.
There are two basic aims of urodynamics:

- To reproduce the patient's symptoms
- To provide a pathophysiological explanation for the patient's problems. (Abrams P. 2021)

The term urodynamics encompasses a number of varied physiological tests of the bladder and urethral function, which aim to demonstrate an underlying abnormality of storage or voiding.
Urodynamic techniques include:

- Bladder diary, urine dip testing and assessment of post voiding residual volume
- Uroflowmetry
- Filling cystometry
- Voiding cystometry
- Video cystourethrography
- Urethral profilometry
- Ambulatory urodynamic monitoring

The last 3 tests are out of the scope of this document.

2. Abbreviations

ANTT - Aseptic Non touch Technique
HCP - Health Care Professional
MSU - Midstream Specimen of Urine
UI - Urinary Incontinence
UTI - Urinary Tract Infection

3. Section 1

3.1 Aims of Urodynamics

- increase diagnostic accuracy above that which can be achieved by non-urodynamic means.
- make a clinical observation on which a management plan can be based.
- If there are co-existing abnormalities to provide evidence to determine which should be treated first.
- define the current situation, knowing the likely abnormalities, as a baseline for future surveillance.
- predict problems that may follow treatment interventions.
- assess the natural history of lower urinary tract dysfunction.
- provide evidence that influences the timing of treatment.
- exclude abnormalities which might interfere with the management of that patient.
- To assess the results of treatments designed to affect lower urinary tract function. (Abrams P. 2021)

The following recommendations have been identified as priorities for implementation by NICE (2019)
The use of multi-channel cystometry, ambulatory urodynamics or videourodynamics is not recommended before starting conservative treatment.

Multi-channel filling and voiding cystometry is recommended in women before surgery for urinary incontinence (UI) if there:

- is clinical suspicion of detrusor over activity,
- has been previous surgery for stress incontinence or anterior compartment prolapse or
- are symptoms suggestive of voiding dysfunction.

We as a trust offer cystometry for all patients prior to surgical intervention for stress urinary incontinence symptoms. Videourodynamics may also be considered in certain circumstances, according to clinical discretion.

3.2 Indications for Urodynamic Investigation

- Selected patients who are considering surgery for Stress incontinence (failed conservative treatments).
- Selected patients who are having prolapse surgery who have incontinence or where it is suspected they may develop incontinence (e.g. leaked in the past before the prolapse got worse).
- Patients with failed surgery for stress incontinence.
- Patients who have failed to respond to anticholinergics treatment for overactive bladder symptoms.
- Patients with symptoms suggesting voiding dysfunction.
- Neurogenic bladder dysfunction

3.3 Clinic Structure

Three times weekly clinics, each to run alongside the Consultant's Urogynae clinic. On completion of the test, the patient will also see the consultant in his/her Urogynae clinic for the results and to commence treatment if required.

- 3 patients per clinic. 60 minutes time slot per patient

3.4 Training and Accreditation

Only clinical staff that have attended an accredited urodynamics course and obtained a certificate of competence should perform Urodynamic investigations. Clinicians must also have received training in the use, care and maintenance of the equipment and be assessed as competent in its usage; this should be carried out following a period of supervised practice.

Manufacturer's recommendations on the correct use, maintenance and calibration of urodynamic equipment, including all consumables, must be followed at all times. (MHRA 2021)

3.5 Health and Safety / Infection Control

Universal precautions for infection control should be taken during this procedure when handling equipment, following principles of Aseptic Non touch Technique (ANTT). All equipment is disposed of or cleaned as per hospital policy and according to manufacturer's recommendations.

Patients who have or, who are susceptible to a latex allergy should be identified prior to the test. Clinicians must then refer to their employing authority's policy for prevention and management of latex allergy.

3.6 Prevention and Detection of Infections

All patients will have a routine urinalysis of urine from the flow test. The presence of nitrites could indicate a urinary tract infection (UTI) and will usually necessitate postponement of the test until appropriate antibiotic treatment has been completed. For patients whose urinalysis is positive for nitrites, an MSU should be sent to microbiology for culture and sensitivity and the patient to be commenced on a course of antibiotics (usually Nitrofurantoin 50mgs 4 times a day for 3 days Culture results should be checked, and treatment adjusted accordingly if necessary.

A further appointment to perform the test should be made for 2-3 weeks and given to the patient. The patient should be advised to have a check urinalysis at their GP's surgery 2-3 days prior to next test date to ensure that the urine infection has been successfully treated.

Following the procedure, the patient is reminded of the risks and signs of UTI following urodynamic studies and is advised to contact her GP if she develops any such symptoms.

3.7 Anticholinergic Medication

Ensure patient has stopped any anticholinergic medication for at least 14 days prior to investigation. If medication has not been stopped, test should be postponed until this has taken place.

3.8 Patient Information

Patient information sheet should be sent with appointment and should include a bladder diary/frequency volume chart and contact number for any queries or concerns.

Good practice points: bladder diaries should be used in the initial assessment of women with urgency incontinence or overactive bladder. Women should be encouraged to complete a minimum of 3 days of the diary covering variations in their usual activities, such as both working and leisure days. (NICE 2019)

4. Section 2 – The Procedure

4.1 Patient History

A comprehensive history for every patient must be taken prior to commencement of the test. This should include main symptoms, previous surgery, fluid intake/output, obstetric history, allergies, and medication.

4.2 Consent

A full verbal explanation of the test must be given as a supplement to the written information given to the patient with their appointment details. Verbal consent should be obtained and documented.

Good practice points: Chaperones
It is recommended that all patients should be offered a chaperone. Wherever possible, patients are given notice of a proposed vaginal examination and are offered a chaperone or invited to bring a relative/friend to the consultation, irrespective of the gender of the examining health care professional (HCP).
If a patient is offered but does not wish to have a chaperone present, this should be recorded in the case notes.
If a chaperone is present the chaperones name and job title should be recorded. (Trust chaperoning Policy 2020)

4.3 Equipment:
Sterile gloves
2 x transducers
2 x 2-way taps
2 x dual end stoppers
2 x 20ml syringes
2 x 10ml water for injection
Pink filling needle
Catheter pack
Filling catheter
Abdominal pressure catheter
Bladder pressure catheter
Pump infusion set.
Litre bag of normal saline
Instillagel
KY jelly
Normasol sachet
These items may vary from clinic to clinic depending on what make/type of equipment is being used, what general supplies are available locally, infection control policies and hospital policies.

4.4 Practical
Every effort should be made to ensure procedure is carried out in a private room, with the number of staff in the room, kept to a minimum. The patient's privacy and dignity are always maintained. The patient is asked to remove their lower items of clothing and put on a gown.

4.5 Uroflowmetry
Uroflowmetry measures the flow rate of urine over time and plots it on a chart. It can be used to screen for voiding difficulties and is an essential part of any urodynamic assessment. The test is simple and non-invasive, however, for any flow rate assessment to be meaningful the patient should be asked to attend with their bladder comfortably full.
The patient should be encouraged to sit to void into the flow meter and instructed to place tissue/wipes into the bin provided. The utmost privacy must be afforded during the test and the patient made to feel comfortable and relaxed. Documentation of the results of uroflowmetry should include the maximum flow rate together with the voided volume and the post void residual volume.
Good practice points: When resources allow, use a bladder scanner to check for residual volume.

4.6 Cystometry
Good practice points: The test should be performed as per ICS recommendations.
- Importance of calibration of the flow meter and pressure transducers.
- setting zero at atmospheric pressure
- Establishing a reference level for pressures.

If a vaginal pessary is insitu, confirm with consultant if it should be removed before the start of the test. Ensure that it is washed and reinserted following the test if requested by the patient.
- Ask the patient to lie on the examination couch, providing a sheet for cover.

- Urethral catheterisation is carried out with the appropriate urodynamic catheters following principles of Aseptic non touch technique (ANTT) and following the Royal Marsden Manual guidelines, (2020). Catheterisation is performed with the patient supine, immediately after voiding and the residual noted. Catheters are passed into the bladder to allow filling and simultaneous measurement of intravesical pressure.

- Intra-abdominal pressure is also measured simultaneously through a catheter placed in the vagina or rectum. The simultaneous measurement of bladder pressure and the intra-abdominal pressure ensures that any pressure changes observed during the investigation can be interpreted correctly.

- With the catheters in position, the bladder filling catheter is connected to the filling medium such as saline.

- The pressure catheters are connected to the appropriate transducers.

- To ensure accurate measurements, the pressure lines are flushed to exclude any air bubbles.

- Before recording starts the patient should be asked to cough and the traces observed. The necessary adjustments are made, and the cough repeated until the traces on the intravesical and intra-abdominal lines are identical.

- To ensure quality control, the patient is asked to cough at regular intervals during the procedure.

- Bladder filling is usually commenced at a rate of 50ml/min, ideally with patient in sitting position and not supine. The rate may be reduced in a patient with an overactive bladder or hypersensitive bladder.

- At commencement of filling, the patient is asked to indicate sensations of bladder filling as they happen during the test.

- At the end of the filling phase, the bladder filling catheter is removed.

- The intravesical and the intra- abdominal pressure lines remain in position and whilst the patient is still lying, she is asked to cough to try to induce urinary leakage.

- The patient is then asked to stand and further provocative tests are carried out to try to induce leakage.

During the filling phase of the procedure the following should be assessed and noted

- Bladder sensation
- Detrusor activity
- Bladder compliance
- Bladder capacity

Good practice points: If a prolapse has been identified, then to exclude occult stress incontinence, the prolapse should be reduced either by insertion of a ring pessary/sponge forceps or by simple digital reduction.

4.7 Voiding Cystometry

- For a complete functional assessment of the lower urinary tract pressure flow studies are essential.

During the voiding phase, it is important to respect the patient's privacy and for staff to leave the room whist patient voids.

- The patient is instructed to void, using the flow meter, with the pressure lines still insitu.
- To ensure quality control and that no displacement of the catheters has occurred, the patient is asked to cough before and after voiding.

- With the test now complete, the remaining pressure lines are removed. Ensure that the patient is comfortable and in no discomfort before escorting them to the changing room where they can wash and dress in private.

All patients should be advised to expect some dysuria for up to 72 hours.

4.8 Urodynamic Results

On completion of the investigation, the results should be printed from the computer and added to ICM by the nurse who has performed the investigation. The Consultant overseeing the clinic will be notified that the test is complete, and the results and patient are ready for review. Diagnosis will then be confirmed by the Consultant and any necessary treatment will be commenced i.e., medications, referrals to other health care professionals or add to appropriate waiting list for surgical intervention.

5. Record Keeping

- The nurse performing the investigation should abide by the Nursing & Midwifery Council Code: Professional Standards of Practice and Behaviour for Nurses, and Midwives (2018).

- The patient's case notes should always be available for patients who are having urodynamic investigations and it is the responsibility of Health records to ensure that they are available on the day required.

- The patient's case notes should be dated with the date the investigation took place, and that the test has been performed. They should be stamped with the catheter stamp, recording the types of catheters used (along with the batch/lot numbers), when and why they were inserted and by whom. If any problems were encountered throughout the test they should be recorded.

6. Monitoring Compliance and Effectiveness

As per Business Unit Audit Forward Programme

7. References

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