Clinical Procedure for the Management of High-Pressure Chronic Retention of Urine and Post-Obstructive Diuresis

Document Control:

For Use In:	Norfolk and Norwich University Hospitals (NNUH), James Paget University Hospital (JPUH) and The Queen Elizabeth Hospital King's Lynn (QEHKL)		
	All clinical areas		
Search Keywords	Retention, high pressure, diuresis, hydronephrosis		
Document Author:	Mr Hany Hussein, Urology specialty doctor Miss Charlotte Dunford, Consultant urologist		
Document Owner:	Norfolk and Waveney Urology Clinical Network Governance meeting.		
Approved By:	Clinical Guidelines Assessment Panel		
Ratified By:	Clinical Safety and Effectiveness Sub-board		
Approval Date:	NNUH: 19th October 2024 QEHKL: 18th June 2024 JPUH: 18th June 2024	**Date to be reviewed by:** This document remains current after this date but will be under review	19th October 2027
Implementation Date:	19th October 2024		
Reference Number:	16931		

Version History:

Version	Date	Author	Reason/Change
V.1	10/12/2019	Neil Burgess	To originate document
V1.1	27/07/2020	Melissa Gabriel	Monitoring compliance wording added.
V2	18/06/2024	Hany Hussein	Follow up plan updated. Reformatting as per new trust template requirements.

Previous Titles for this Document:

Previous Title/Amalgamated Titles	Date Revised
None	Not applicable

Note which Trust, where applicable.

Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

The following were consulted during the development of this document:

- Miss Charlotte Dunford, Consultant Urologist (NNUH)
- Mr. William Finch, Consultant Urologist (NNUH)
- Mr. Petre Ilie, Consultant Urologist (QEHKL)
- Mr. David Manson-Bahr, Consultant Urologist (JPUH)

Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g., changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

This document is a clinical guideline applicable to Norfolk and Norwich University Hospitals (NNUH), James Paget University Hospital (JPUH) and The Queen Elizabeth Hospital King's Lynn (QEHKL); please refer to local Trust's procedural documents for further guidance.

Clinical Procedure for the Management of High-Pressure Chronic Retention of Urine and Post Obstructive Diuresis

Contents Page

Clinical Procedure for the Management of High-Pressure Chronic Retention of Urine and Post Obstructive Diuresis

1. Introduction

1.1. Rationale

High-pressure chronic retention of urine (HPCR) and post-obstructive diuresis (POD) are urological conditions that require prompt and effective management to prevent complications and restore normal urinary function. HPCR occurs when there is prolonged urinary retention with bladder distension, leading to increased intravesical pressure and potential sequelae such as hydronephrosis, renal impairment, and urinary tract infections. Post-obstructive diuresis, on the other hand, is characterized by excessive urine output following relief of urinary obstruction, which can result in electrolyte imbalances, dehydration, and hemodynamic instability.
Timely and appropriate management of these conditions is essential to alleviate patient discomfort as well as to prevent complications that can lead to increased morbidity and healthcare utilisation.

1.2. Objective

This guidance has been created to provide healthcare providers with a systematic approach to the identification, assessment, and management of patients presenting with high-pressure chronic retention and post-obstructive diuresis. It is aligned with current evidence-based clinical practice, aiming to enhance patient safety and improve overall outcomes. By standardizing care, this guideline seeks to minimize complications, ensure timely intervention, and support optimal recovery through best-practice protocols tailored to individual patient needs.

1.3. Scope

This guidance applies to all adult patients over 18 years of age presented with high pressure chronic retention and post obstructive diuresis.

1.4. Glossary

The following terms and abbreviations have been used within this document:

Term	Definition
HPCR	High pressure chronic retention
POD	Post obstructive diuresis
MSU	Mid-stream urine

2. Responsibilities

All medical staff and allied healthcare professionals involved in the care of patients presenting with high-pressure chronic retention and post-obstructive diuresis should be fully aware of the recommendations outlined in this guidance. It is essential that staff ensure they have received appropriate training and acquired the necessary competencies before performing any invasive procedures. Adherence to these guidelines and maintaining relevant skills are critical for delivering safe, effective care and achieving optimal patient outcomes.

3. Policy Principles

3.1. Urine retention

In the male is usually caused by obstruction at or below the bladder neck (Bladder neck stenosis benign or malignant prostate enlargement and urethral stricture).

- **Acute urinary retention** is usually painful.
- **Chronic urinary retention** is usually painless and is either low or high pressure.

The pressure refers to the detrusor pressure at the end of the micturition cycle. It is this high pressure in both storage and voiding phases that can cause hydronephrosis and obstructive uropathy, which when relieved can result in a significant post-obstructive diuresis. Also post decompression haematuria is not uncommon.

3.2. Assessment

3.2.1. History

- Acute symptoms - Not passing urine, lower abdominal pain (may be absent), constipation.
- Preceding symptoms - Dysuria, haematuria (clot retention), urinary frequency, urgency, nocturnal enuresis, hesitancy, poor stream, terminal dribbling, incomplete emptying. There may also be symptoms of associated uraemia with thirst and an abnormal taste in the mouth.
- Consider cauda equina syndrome (bladder/bowel dysfunction, saddle anaesthesia, weakness of lower leg muscles), if suspected, patient requires urgent orthopaedic/oncology review for consideration of spinal decompression of radiotherapy.
- Red flag symptoms - Weight loss, bone pain, cauda equina syndrome, haematuria.

3.2.2. Examination

- Abdominal examination, full bladder
- Digital rectal examination: look specifically for faecal loading, prostate size, prostate consistency, malignancy, tenderness, and blood on the glove.
- If any suspicion of cauda equina: Neurological examination, assess anal sphincter tone, saddle anaesthesia.

3.2.3. Investigations

- Urine dipstick - If positive for WBCs and nitrites send MSU and start an empirical antibiotic.
- Check serum U+E’s and PSA (if prostate examination suspicious of malignancy).
- If U+E’s are deranged, large diuresis or patient cannot manage for social reasons admit patient for observation and assessment (this will include USS and KUB X Ray if U+E’s deranged).

3.2.4. Management

- Bladder Decompression: Urgently relieve urinary obstruction by inserting a urethral catheter or performing suprapubic catheterization to drain the distended bladder and alleviate symptoms of urinary retention.

- Insert a 16f 2-way urethral catheter and record the urine volume drained after 5 minutes. In chronic high-pressure urinary retention, the residual volume is usually > 1 litre.
- If haematuria with clots the patient will need a 22f 3-way urethral catheter and both an USS and KUB X Ray.
- Fluid and Electrolyte Management: Monitor fluid intake, output, and electrolyte levels closely, especially in patients with post-obstructive diuresis. Correct dehydration and electrolyte abnormalities promptly to prevent complications such as hypovolemia, hyponatremia, and hyperkalaemia.

3.3. Post obstructive Diuresis.

3.3.1. Definition

Is defined as a state of marked polyuria following the relief of bilateral ureteric obstruction or obstruction of a solitary functioning kidney.
Most accepted definitions are a urine output of greater than 200mL/hr for two consecutive hours or greater than three litres over a 24-hour period.

3.3.2. Management

Depending in part on where the level of obstruction is, relief of obstruction may be achieved with:

- Nephrostomy tubes.
- Ureteric stents.
- A urethral or a suprapubic catheter.

Careful monitoring and fluid management are important to reduce the risk of complications such as circulatory collapse, electrolyte abnormalities and acid-base imbalance. Once water and solute homeostasis has been attained the diuresis will usually settle. This usually takes place within the first 24 to 48 hours.
Pathologic diuresis occurs when water and salt elimination continue despite a homeostatic position being achieved, potentially resulting in:

- Hypovolaemia.
- Electrolyte abnormalities.
- Acid-base imbalance.
- Patients with bilateral ureteric obstruction can often present with hypertension prior to the relief of obstruction, primarily due to volume overload.
- After relief of obstruction the blood pressure usually normalises but may become abnormally low in pathological post-obstructive diuresis.

A largely historical debate has been whether bladder decompression in patients with chronic retention should be performed rapidly or gradually. The rationale for the latter was that slow emptying would have a lower risk of decompression haematuria and hypotension. There is no good evidence in the literature of an advantage for gradual decompression, therefore catheters should not be clamped.

It is recommended that:

- Urine output is monitored on an hourly basis initially following relief of obstruction.
- Vital signs should be regularly checked (including standing and lying blood pressure measurement).
- Patients should be weighed daily to provide a further indicator of fluid status.
- Serum electrolytes (including sodium, potassium, magnesium, and phosphate) urea and creatinine should be checked daily.

It is generally recommended that patients be commenced on oral hydration, with intravenous fluids being reserved only for when there are signs of intravascular fluid depletion (tachycardia, hypotension), or electrolyte disturbances.

The goal of fluid therapy should be to maintain an overall negative balance.

- Replacing half of the previous hour's urine output with intravenous Hartman's solution has been the way that this situation has been managed in Norwich.
- Glucose solutions should be avoided as they can overcome the proximal tubules capacity to reabsorb glucose, leading to a prolonged iatrogenic diuresis.
- Intravenous fluids should be discontinued as soon as the patient's oral intake is sufficient.

High pressure chronic retention recovery occurs in two phases:

- An early tubular phase lasting up to two weeks.
- A subsequent glomerular phase between two weeks and three months.

3.4. Follow Up

- Patients presenting with an episode of chronic high-pressure retention are not suitable for a trial without catheter and should be offered surgical treatment if fit.
- Address the underlying cause of obstruction through definitive interventions such as transurethral resection of the prostate (TURP), urethral dilation, or surgical repair of urethral strictures.
- Patients having surgery should be counselled regarding the surgical options available and their surgery postponed until their biochemistry has stabilised (which may take 12 weeks).

4. Monitoring Compliance

To ensure that this document is compliant with the above standards any adverse outcomes will be entered onto Datix and reviewed by the Departmental Governance Team who will ensure that these are investigated and are discussed at relevant governance meetings to review the results and make recommendations for further action.

5. Appendices

There are no appendices for this document.

6. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	Surgical	**Department**	Urology
Name of person completing form	Hany Hussein	**Date**	18/06/2024

Equality Area	Potential Negative Impact	Impact Positive Impact	Which groups are affected	Full Impact Assessment Required YES/NO
Race	None	None	NA	No
Pregnancy & Maternity	None	None	NA	No
Disability	None	None	NA	No
Religion and beliefs	None	None	NA	No
Sex	None	None	NA	No
Gender reassignment	None	None	NA	No
Sexual Orientation	None	None	NA	No
Age	None	None	NA	No
Marriage & Civil Partnership	None	None	NA	No
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?	No			

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.