

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

For use in:	Wards and A&E
By:	All Medical staff
For:	Junior Doctors / Specialist Nurses / Physician Associates
Division responsible for document:	Surgical Division
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from the recommendations of NICE? If so why?	
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1.1	27/07/2020	Monitoring compliance wording added	Melissa Gabriel

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Objective

To ensure eligible staff safely undertake management of Urine + Post-Obstructive Diuresis.

Rationale

This document was written to enable staff to follow the correct procedure for nephrostomy tube problems according to current agreed evidence based clinical practice in the urology department.

Urinary 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.

Presentation

History

- Acute symptoms - Not passing urine, lower abdominal pain (may be absent), constipation.

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- 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.

Examination

- Abdominal examination.
- 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.

Investigation and Management

- 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.
- Urine dipstick - If positive for wbc 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 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).
- If haematuria with clots the patient will need a 22f 3-way urethral catheter and both an USS and KUB X Ray.

Post-obstructive diuresis

Is defined as a state of marked polyuria following the relief of bilateral ureteric obstruction or obstruction of a solitary functioning kidney. Most commonly 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.

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

- Nephrostomy tubes.

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- 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 on a daily basis to provide a further indicator of fluid status.
- Serum electrolytes (including sodium, potassium, magnesium and phosphate) urea and creatinine should be checked on a daily basis.

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 always been the way that this situation has been managed in Norwich.

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- 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.

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.
- 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).

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.

Summary of development and consultation process undertaken before registration and dissemination

The authors listed above drafted this document on behalf of the urology department who have agreed the final content.

This version has been endorsed by the Clinical Guidelines Assessment Panel.

References

No references were applicable.