Clinical Procedure for the Management of Priapism

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?	

Version and Document Control:

Version Number	Date of Update	Change Description	Author
1.1	27/07/2020	Monitoring compliance wording added	Melissa Gabriel

This is a Controlled Document

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Objective

To ensure eligible staff safely undertake management of priapism.

Rationale

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

Priapism is a disorder of penile erection that persists beyond or is unrelated to sexual stimulation. The diagnosis of priapism is of a persistent erection lasting longer than 4 hours.

- Ischaemic: low-flow priapism (ischaemic, veno-occlusive priapism) an erection with little or no cavernous arterial inflow.
- Arterial: high flow priapism (non-occlusive).
- Stuttering: intermittent.

Incidence / prevalence

The incidence of all types of priapism is 1.5 cases per 100,000 person years.

Low-flow priapism is the most common type and represents 95% of all cases of priapism.

Low-flow priapism causes a compartment syndrome of the corporal bodies with poor circulation and progressive hypoxia, hypercarbia and acidosis. At 12 hours the corpora have interstitial oedema with destruction of the sinusoidal endothelium. This leads to exposure of the basement membrane and platelet adherence at 24 hours. At 48

hours there is clot formation in the sinusoidal space with loss of contractility, cell apoptosis, necrosis and fibrosis formation. These changes lead to irreversible erectile dysfunction after low-flow priapism.

Aetiology

- Ischaemic: idiopathic, haematological (e.g. sickle cell) medication, (vasoactive erectile agents, antipsychotics, anticoagulants, antidepressants, anti-hypertensives, hormone therapy).
- Arterial: Blunt perineal trauma, metastatic malignancy, acute spinal cord injury.
- Stuttering: Commonest cause is sickle cell disease.

Presentation

History

History-taking is key in the diagnosis of priapism and can often determine the underlying type of priapism. Key questions include:

- Duration of the erection.
- Presence and degree of pain.
- Prior episodes of priapism and treatment.
- Current erectile function.
- Medications.
- Use of recreational drugs.
- Trauma to the pelvis.
- Prior history of blood dyscrasias.
- Prior history of neurologic conditions, especially those affecting the spinal cord.

Low-flow priapism is typified by progressive penile pain.

Examination

In low-flow priapism the corpora are rigid and tender, but the glans penis is soft.

Investigation

- Bloods - U+E's, FBC, LFT's, CRP, Clotting screen.
- A sickle cell screen and haemoglobin electrophoresis if sickle cell disease suspected.
- Urine and blood toxicology should be performed if there is a history of drug abuse.
- A penile blood gas can be used to differentiate low-flow and high-flow priapism if they cannot be differentiated on history and physical examination alone.
- In low-flow priapism there is typically hypoxia (pO_2 < 30mmHg), hypercarbia (pCO_2 > 60mmHg) and acidosis (pH < 7.25) on the penile blood gas analysis.

Typical blood gas values:

Normal arterial blood: pO2 > 90mmHg, pCO2 > 40mmHg, pH 7.4

Normal venous blood: pO2 40mmHg, pCO2 50mmHg, pH 7.35

Low flow priapism (corporal aspirate): pO2 < 30mmHg, pCO2 > 60mmHg pH < 7.25

Penile imaging

Colour duplex ultrasonography

Colour duplex ultrasonography can be utilised to differentiate low-flow and high-flow priapism if needed. Patients with low-flow priapism will have no blood flow in the cavernous arteries with return of blood flow after successful detumescence.

Magnetic resonance imaging

Magnetic resonance imaging is of limited utility in the setting of low-flow priapism. Two possible indications include:

- Evaluation for corporal metastasis causing venous outflow obstruction.
- Demonstration of the extent of tissue thrombus and corporal smooth muscle infarction.
- Prior to surgical intervention, but this imaging would typically not change management.

Penile arteriography should only be used as part of an embolisation procedure in the setting of high-flow priapism; it has no place in the evaluation of low-flow priapism.

Management

Low-flow priapism is an emergency condition and intervention should proceed in a stepwise fashion with increasing invasiveness. As the duration of ischaemia is the most significant predictor of future erectile function, management should ideally begin within four to six hours of onset. Patients should be informed that erectile function outcomes decline significantly after 24 hours of continuous priapism and that complete erectile dysfunction is expected for a continuous priapism lasting longer than 36 hours. Treatment for erections of 36 hours duration is aimed at pain resolution, not potency preservation.

Ischaemic priapism:

< 4 hours duration	**Non-invasive measures:** Ice compresses and exercise successfullycauses detumescence in 25% of patients with low-flow priapism due to intracavernosal injection. **Oral medications**: Terbutaline can cause detumescence in 40% of patients with short duration (less than four hours) low-flow priapism caused by intracavernosal injection.

4 – 24 hours	**Intracavernosal aspiration / irrigation:** Aspiration alone may relieve priapism in 24-36% of cases. However, adding irrigation can cause successful detumescence in 67% of patients with low-flow priapism due to intracavernosal injection who have failed prior non-invasive measures. **Intracavernosal therapy:** Dilute phenylephrine (10mg in 10mLs normal saline (1mg/mL), Inject 0.5mLs (500mcg) every 5 mins for up to 1 hour (side effects: hypertension, reflex bradycardia, tachycardia and irregular cardiac rhythms).

If no resolution or > 24 hours	Distal surgical shunt procedure.
If no resolution	Proximal surgical shunt procedure.
If no resolution or > 36 hours	Consider immediate penile prosthesis insertion.

Arterial priapism

Confirm diagnosis with blood gas analysis. This is not an emergency; therefore, definitive management can be considered. Selective arterial embolisation has a high success rate.

Stuttering priapism

Manage acute episodes as with ischaemic priapism. Prevention includes gonadotrophin receptor agonists or antagonists +/- anti-androgens. Phosphodiesterase type 5 inhibitors can prevent priapism especially in idiopathic or due to sickle cell disease. These drugs should only be commenced when the penis is in flaccid state and not acutely.

In addition to irrigation, aspiration, injection of sympathomimetic medication, other specific systemic therapies for the management of sickle cell anaemia-related priapism include:

- Intravenous hydration.
- Narcotic analgesia.
- Supplemental oxygen administration.
- Alkalinisation with bicarbonate.

Follow up

All patients will require review at 6 weeks in the Andrology clinic.

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.