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Guidelines

BAUS consensus document for the management of male genital emergencies: priapism

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Consensus Committee members are listed in Appendix 1.

Male genital emergencies relating to the penis and scrotum are rare and require prompt investigation and surgical intervention. Clinicians are often unfamiliar with the management of these conditions and may not work in a specialist centre with on-site expertise in genitourethral surgery. A series of consensus statements have been developed by an expert consensus committee comprising members of the BAUS Section of Andrology and Genitourethral Surgery together with experts from urology units throughout the UK. Priapism requires prompt assessment and treatment and these consensus statements provide guidance for UK practice.

Keywords

priapism, genital, ischaemic, consensus, non-ischaemic, penile prosthesis

Background

Male genital emergencies relating to the penis and scrotum are rare and require prompt investigation and surgical intervention. Clinicians are often unfamiliar with the management of these conditions and may not work in a specialist centre with on-site expertise in genitourethral surgery. As a consequence of a previous consultation relating to the management of urological injuries following pelvic trauma, the BAUS Section of Andrology and Genitourethral Surgery (AGUS) decided to develop a series of consensus statements for genital emergencies which would provide a resource for clinicians to help manage these emergencies in an appropriate and safe manner and within the framework of the UK healthcare system.

Methods

The BAUS Section of AGUS executive committee are an elected group of experts in the field of andrology. The committee formatted a series of consensus statements relating to genital emergencies which were to be used by clinicians within the UK. As the conditions are rare and unsuitable for randomized trials, a meta-analysis was not deemed to be suitable and the recommendations were therefore developed by an expert consensus, existing guidelines from the European Association of Urology (EAU) and the American Urological Association (AUA), UK best practice and data from large case series (Level 4 Evidence, Oxford Centre for Evidence-Based Medicine).

A meeting was convened in January 2017, whereby urological surgeons based in urology units allied to UK trauma centres as well as those offering a specialist andrology service were invited to a joint meeting with the BAUS AGUS executive committee to discuss the proposed consensus statements, which were then modified to reflect urological practice in specialist centres as well as non-specialist centres.

The final statements were then sent to all the members of BAUS Council comprising 36 members for final approval. The final consensus statements were then modified based on the feedback, and were then subject to BAUS AGUS final approval.

The consensus statements provide guidance for the management of four conditions: priapism; penile fracture; penile amputation; and testicular trauma. Each one will be published separately.

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Introduction

Priapism is defined as a prolonged penile erection (>4 h) which is maintained without sexual stimulation and persists despite ejaculation and orgasm. Priapism is a medical emergency requiring an accurate diagnosis and urgent medical intervention.

Classification

The two main subtypes of priapism are ischaemic priapism (also referred to as low-flow priapism), and non-ischaemic priapism (also referred to as high-flow priapism). A rarer subtype, referred to as stuttering or recurrent priapism, is defined by frequent prolonged and painful erections which are generally self-limiting and are common in patients with sickle cell disease (SCD).

BAUS Recommendation

Acute priapism should be classified using the clinical terms ischaemic or non-ischaemic priapism to ensure that prompt intervention is undertaken in order to preserve long-term erectile function in ischaemic cases, and the terms low-flow or high-flow should be avoided.

Clinical History

The duration of the priapism episode should be established and categorized into one of three time periods: (i) duration <48 h; (ii) duration 48–72 h; and (iii) duration >72 h.

Key points to establish from the clinical history include:

1 Onset of the erection.
2 Any underlying haematological disorders.
3 Current medication.
4 Illicit drug use.
5 Symptoms to suggest an underlying pelvic malignancy.
6 Previous episodes including stuttering priapism.
7 Recent perineal or penile trauma;
8 Any neurological symptoms.

BAUS Recommendations

The duration of priapism should be established and recorded in the medical records. Any associated medical condition should also be managed concurrently and, in the case of haematological disorders, such as SCD, the haematology team should be consulted.

Patient Examination

With regard to patient examination, the following points should be considered.

- It is important to differentiate between ischaemic priapism and non-ischaemic priapism. Ischaemic priapism presents as a painful rigid erection with a progressive increase in the pain as the duration of the priapism increases.
- Non-ischaemic priapism is painless or uncomfortable. There may be evidence of perineal or penile trauma.
- An abdominal examination and a digital rectal examination is required as there may be an underlying pelvic malignancy.
- A neurological examination should also be performed and documented.

BAUS Recommendations

Abdominal, rectal, penile and neurological examination is mandatory.

Investigations

Blood Tests

A full blood count and, in selected cases, a blood film should be performed to diagnose haematological disorders, and an autoimmune screen is also required. Blood aspirated from the penis should also undergo blood gas analysis.

Imaging

When possible, arrange an urgent penile Doppler study and note that paradoxical increased systolic velocities are often noted in the proximal penile shaft on penile Doppler studies if aspiration or shunt surgery has already been attempted or when there is fibrosis starting to develop in the distal corpus cavernosum.

Abdominal and pelvic imaging using CT/MRI is performed in patients with a possible underlying pelvic or abdominal malignancy and in idiopathic cases.

Penile MRI can be used in order to assess the viability of the corpus cavernosum in refractory cases and aid in the decision to proceed with an early penile prosthesis.

BAUS Recommendations

Haematological investigations and a corporal blood aspiration should be analysed. Imaging using penile Doppler and penile MRI can help confirm the underlying diagnosis.

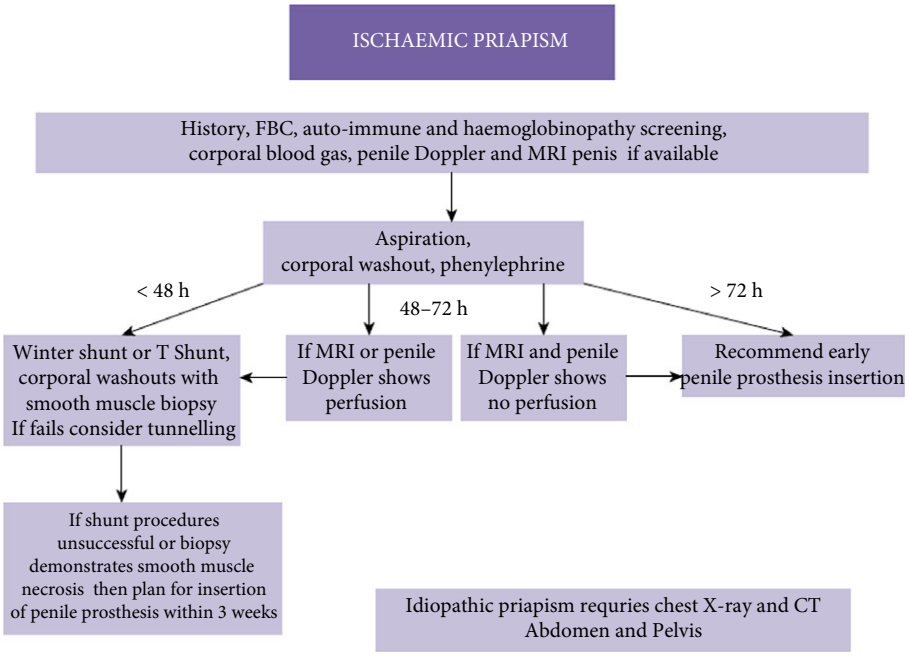
Management of Ischaemic Priapism

The management of ischaemic priapism should be undertaken in a stepwise algorithm based on the duration of priapism (Fig. 1).

Priapism Duration <48 h

In the majority of patients presenting within 24 h, prompt intervention should be able to achieve penile detumescence; however, with presentations up to 48 h there

Fig. 1 Algorithm for the management of ischaemic priapism.



Modified from BJUI Zacharakis et al 2014 [1]

is a decreased probability of achieving complete penile detumescence.

Patients with SCD should be managed jointly with the haematology team.

Ensure that patients have adequate analgesia and antibiotic cover. Arrange Doppler ultrasonography urgently, but do not let this delay aspirating blood from the penis which is both diagnostic and therapeutic.

Technique for Aspiration and Instillation of Phenylephrine

Following a local anaesthetic penile block, a large 19-gauge needle or butterfly is inserted into the corpus cavernosum, either through the lateral penile shaft or through the glans penis into the tip of the corpus cavernosum, followed by aspiration of blood from the corpus cavernosum. A sample of blood is sent for estimation of pO_2/pH and glucose using a standard blood gas analyser. The presence of hypoxia, acidosis and glucopenia confirms a diagnosis of ischaemic priapism. The presence of normoxia correlated with the clinical history indicates that this is a non-ischaemic priapism; however, this should be confirmed with penile Doppler studies.

Following aspiration of blood from the corpus cavernosum, failure of detumescence should be followed by instillation of a sympathomimetic or α-adrenergic agonist. Phenylephrine is recommended and can be given in 200–250-μg aliquots. Steps for the preparation of the phenylephrine solution are shown in Table 1.

Table 1 Preparation of the phenylephrine solution.

1	Administer broad spectrum antibiotics.
2	Phenylephrine ampoules are available as 10 mg in 1 mL.
3	Either dilute the 1-mL phenylephrine ampoule (10 mg) in 49 mL normal saline using a 50-mL syringe and use 1-mL aliquots (200 μg) at a time. Alternatively dilute the 1-mL ampoule in 19 mL normal saline, which is the equivalent of 500 μg/mL. With this dilution use 0.5 mL of the solution as an aliquot (250 μg).
4	Ensure that the patient has blood pressure monitoring whilst administering phenylephrine.
5	Use 1 mL of the solution (200 or 250 μg) for injection directly into the corpus cavernosum at the 3 or 9 o'clock position, therefore avoiding the urethra and dorsal neurovascular bundle.
6	Repeat after 10 min up to a total dose of 1000 μg, provided that there is no significant systemic hypertension.
7	If the priapism persists then proceed to shunt surgery.

Technical Points: Shunt Surgery

Under local or general anaesthetic the simplest shunts to perform are distal shunts. In non-specialist centres either a Winter shunt or a T-shunt can be performed. A Winter shunt uses a Tru-cut biopsy needle placed through the glans penis and into the tip of the corpus cavernosum, which creates a fistula between the corpus cavernosum and the glans penis. A T-shunt can be performed using a #11 blade

inserted through the mid-glans and into the tip of the corpora. It is then rotated 90°, with the blade rotated away from the urethra and then withdrawn. This can be repeated on the contralateral corpus cavernosum if there is still a failure of detumescence. The penis is compressed manually to encourage drainage of deoxygenated blood from within the corpus cavernosum until oxygenated blood appears, followed by closure of the glans wound with absorbable sutures. Distal shunts are uncomplicated and should be performed promptly when patients present to general urologists after aspiration and pharmacological agents have failed to resolve the priapism.

If, despite these measures, the priapism persists, the patient should undergo a tunnelling procedure if the centre has the expertise or experience to perform this, or they should be referred to a specialist andrology unit for further management.

Priapism Duration 48–72 h

Corporal blood aspiration, followed by instillation of phenylephrine can still be attempted if there is doubt regarding the duration of priapism. Refractory priapism should then undergo distal shunts. If a distal shunt or T shunt fails then, depending on the surgeons' experience, a TTT shunt can be performed. This involves insertion of a metal dilator (8-F) through the incision in the glans and passing it through into the corpus cavernosum. If the surgeon does not have the experience to perform this then the patient should be referred urgently to a specialist unit where the procedure can be undertaken and combined with more advanced diagnostic imaging can also be undertaken using penile MRI. If imaging shows absent distal corpus cavernosum perfusion and a TTT shunt has failed, patients should be counselled regarding a penile prosthesis.

Priapism Duration >72 h

Patients presenting with a priapism after 72 h are unlikely to have viable smooth muscle within the corpus cavernosum. Corporal blood aspiration followed by the instillation of phenylephrine can still be undertaken if there is doubt regarding the duration of the priapism. The patient should then be referred urgently to a specialist andrology unit for further intervention or suitability for an early penile prosthesis insertion.

BAUS Recommendations

The duration of priapism will govern the success of the interventions.

An accurate diagnosis followed by a stepwise approach should be adopted within the expertise of the urology unit.

All urology units should be able to undertake corporal blood aspiration and instillation of phenylephrine and to perform a distal shunt (either a Winter shunt or T shunt) as a minimum.

Referral to specialist units should be made urgently if there is still failure to achieve detumescence.

Accurate documentation in the medical notes of the time periods from the onset of priapism is essential.

Management of Non-Ischaemic Priapism

If the underlying diagnosis is non-ischaemic priapism, based on the clinical history, penile Doppler studies and blood gas analysis, then the initial management can be conservative. If a fistula is demonstrated then duplex compression of the fistula can be performed. Failure of resolution of the priapism requires referral to a specialist unit offering superselective arteriography and embolization with absorbable material.

BAUS Recommendations

Non-ischaemic priapism can initially be managed conservatively. Failure of conservative treatment requires superselective embolization.

Management of Stuttering Priapism

Stuttering priapism is a rare condition and the management is mainly based on small case series or anecdotal reports. In idiopathic cases, hormone manipulation using antiandrogens appears to be the most effective treatment to control the frequency of these episodes; however these should be avoided in prepubertal boys. Patients with SCD should be managed jointly with the haematology team. In patients with SCD etilefrine has been shown to be useful, but only available on a named patient basis.

BAUS Recommendations

Antiandrogens and etilefrine can be used in stuttering priapism. Patients with SCD should be managed jointly with the haematology team.

Follow-Up

All patients should undergo long-term follow-up to assess the degree of late-onset erectile dysfunction. Patients who develop erectile dysfunction can initially undergo a trial of pharmacotherapy, including phosphodiesterase-5 inhibitors and intracavernosal prostaglandins. Failing this, patients can be offered penile prosthesis surgery in a specialist centre.

Acknowledgements

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Reference

1 **Zacharakis E**, **Garaffa G**, **Raheem AA**, **Christopher AN**, **Muneer A**, **Ralph DJ**. Penile prosthesis insertion in patients with refractory ischaemic priapism: early vs delayed implantation. *BJU Int* 2014;114:576–81

Appendix 1

Consensus Committee

BAUS Section of Andrology and Genitourethral Surgery Executive committee. Additional committee members: Ahsanul Haq, Lancashire Teaching Hospital NHS Foundation Trust; Alvaro Bazo, Nottingham University Hospitals NHS Trust; David Ralph, University College London Hospital NHS Trust; Oliver Kayes, Leeds Teaching Hospitals NHS Trust; Raj Nigam, Royal Surrey County Hospital; Raj Persad, University Hospitals Bristol NHS Foundation Trust; Roland Donat, Western General Hospital; Suzanne Biers, Cambridge University Hospitals NHS Foundation Trust.

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Abbreviations: AGUS, Andrology and Genitourethral Surgery; SCD, sickle cell disease.

