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REVIEW ARTICLE

Management of Neglected Ischemic Priapism

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ABSTRACT

The hallmark of neglected Ischemic Priapism is increasing tissue necrosis and hypoxia due to blocked venous outflow caused by unrelieved tissue pressure inside a confined compartment. inside six hours of start, irreversible changes to corporal tissue take place because of RIP, which causes time-dependent alterations inside the corpora cavernosa. While 50% of patients can maintain their erectile function if their priapism is treated within 24 hours, the maintenance of erectile function and the response rate to distal shunt procedures progressively decrease as priapism lengthens. Guidelines2022 from the American Urological Association state that once more conservative methods have failed, a distal penile shunt surgery is usually part of the management of neglected Ischemic Priapism. Distal shunts, such as intracavernosal tunneling, have poor results for protracted ischemic priapism, with just 30% of priapic episodes lasting more than 48 hours successfully treated. Penoscrotal corporal decompression (PSD) is a simple technique in the management of neglected Ischemic Priapismwith fewer complications & less cost with the restoration of erectile function than other techniques. PSD has favorable results in maintaining adequate sexual function as If PSD does not produce a long-lasting new shunt from the corpora cavernosa to the glans or spongiosum, there may be a greater chance of restoring physiological erectile function.

Keywords: Ischemic Priapism, Penile, Prosthesis.

INTRODUCTION

Priapism is a disorder in which the penis maintains a painful prolonged, rigid erection in the absence of appropriate stimulation. Definitions vary regarding duration, but any erection lasting four hours or longer is generally considered priapism **[1]**. The etiology of priapism includes idiopathic, Sickle cell disease, cavernosal injections of drugs and constrictive penile devices **[1]**.

Priapism has three types: nonischemic, stuttering (intermittent), and ischemic **[2].** Most cases of ischemic priapism, a serious urological condition, are due to venous outflow obstruction, leading to blood stasis, hypoxia, and potential long-term effects such as erectile dysfunction and cavernosal fibrosis **[3]**.

For the treatment of short-duration priapism, injections of α-agonists, aspiration, and corporal irrigation are used. In situations that are refractory or prolonged, distal shunting is then used **[3]**.The hallmark of neglected Ischemic Priapism is persistently high tissue pressure inside a confined compartment damage to corporal tissue if not treated within 6 hours **[4]**.

The American Urological Association recommendations 2014 state that a distal

penile shunt surgery is part of the management of neglected Ischemic Priapism following the failure of aspiration & irrigation with high failure rate if priapism lasts > 48 hours **[5, 6]**.

Priapism should be treated within 24 hours to maintain erectile function as delayed presentation make management more challenging **[7]**. Proximal shunting is the second option if distal shunting fails. But proximal shunting is no longer advised in practice as is time-consuming, challenging, need more experience **[1]**.

Penile prosthesis fixation is also an option, even though this procedure has been linked to a higher risk of erosion and infectious problems **[9, 10]**. Recently Penoscrotal corporal decompression (PSD) for neglected priapism has become a viable solution to achieve detumescence and relief of pain **[11, 12]**. Erectile function preservation is affected by the duration of priapism and the age of the patient **[11]**.

SURGICAL MANEGEMENT

For refractory cases, distal shunting is the first appropriate method (Winter technique). Usually, a unilateral shunt suffices, but bilateral shunts are indicated only if unilateral shunt was not enough to achieve complete detumescence (usually apparent after 10 min) **[13]**.

There is a more aggressive surgical cavernosal shunt like The El-Ghorab procedure which is indicated if the Winter shunt fails **[14, 15]**. Caverno-dorsal vein shunting (Barry shunt) is recommended in prolonged low-flow priapism. The penis's deep or superficial dorsal vein is cut. in the surgery, and it is anastomosed to the corpora cavernosa. If priapism reoccurs within the first few days following Surgery, the patient can "milk" the tumescence into the shunt, which is the benefit of this procedure **[14, 15]**.Quackel shunts which are an example of proximal shunt. They connect from the corpora spongiosum to the corpora cavernosa and are operated by a perineal approach. Because there is frequently existing corpora thrombosis, such shunts are rarely successful if a distal shunt (such as the El-Ghorab surgery) has previously failed **[14, 15]**.

The duration of priapism is important in decision making for treatment of ischemic priapism. Anticoagulation with shunting is recommended for people who have experienced priapism for less than a day and aspiration/injection fail and patients with priapism ≥ 24 hours. Preoperatively, anticoagulation consists of aspirin, 325 mg orally, and heparin, 5000 units subcutaneously. After surgery, five days were spent using clopidogrel (75 mg/day orally) and aspirin (81 mg/day) as anticoagulants **[14, 15]**.

Penile length loss can result from cavernosal fibrosis, which is a long-term source of low-flow priapism. Delaying the implantation of a penile prosthesis carries a high risk of problems and can be difficult. The rapid insertion of a penile prosthesis is simple and maintains the penile length in individuals with persistent low-flow priapism. As the risk Patients may be advised to do this at the time of initial presentation because the likelihood of complications is low and the prognosis is excellent **[16, 17]**.

Penoscrotal corporal decompression:

Penoscrotal corporal decompression (PSD) is regarded as the pioneering surgical method for treating priapism that promotes intracorporal tunnelling to play a bigger part across the whole corporal chamber. PSD is recommended in place of distal shunts after failure of aspiration & irrigation in patients presented with prolonged ischemic priapism. Reperfusion of the corpora is aided by PSD as it disturbs the coagulum more closely the cavernosal artery blood supply, the source of the end-organ blood supply **[18]**.

PSD is the first surgical method for decompression above shunting as a glans-sparing procedure. Through the subtunical venous plexus network's reactivation, effective decompression functionally forms an internal shunt, leading to intraoperative reperfusion of red oxygenated blood. In some patient reactive oedema and woody fibrosis often remain to some extent for a few days or weeks following PSD **[19]**.

Patients with protracted priapism often seem refractory, despite the fact that intracavernosal dilatation by "snaking" or corporal tunneling has been demonstrated to boost the effectiveness of distal corporoglanular shunts for short-duration priapism. With intracavernous tunneling, the T-shunt's success rate drops to 55% for people with priapism lasting between 24 and 48 hours, 30% when it lasts longer than 48 hours, and 0% when it lasts more than 96 hours. Therefore, PSD may be an effective substitute to distal shunt with tunnelling **[20]**.

Results proved that in cases of neglected ischemia priapism, bilateral PSD seems to function better than unilateral PSD. Ninety percent of men who experience priapism for longer than twenty-four hours will later develop ED. After PSD, physical erectile function may return more readily because it does not result in the formation of a permanent new shunt that runs from the glans or spongiosum to the corpora cavernosa **[11]**. In order to prevent corporal fibrosis and/or loss of penile length, it was customary to implant prostheses as soon as possible in neglected ischemia priapism patients. However, due to the high risks of infection and distal extrusion, the EAU advised against this approach for priapism that lasted more than 36 hours. The risk of distal extrusion is reduced by PSD in individuals who need to have a penile prosthesis placed later **[11]**. So, the role of (PSD) for prolonged priapism has been expanded because of the drawbacks and problems of previous methods **[12].**

After the PSD technique, sufficient level of spontaneous erectile activity was found with or without phosphodiesterase inhibitors.

Erectile function preservation is affected by the duration of priapism and the age of the patient **[11, 21].**

GUIDLINESSUMMARY OFMANAEGEMENTOF PRIAPISM

AUA guidelines (2022)

- In 2022, a joint guideline on the identification and treatment of priapism was released by the (AUA) and the Sexual Medicine Society of North America (SMSNA).
- According to the AUA/SMSNA recommendation, all priapism patients should have an urgent examination to ascertain whether they are experiencing ischemia or nonischemic priapism, since prolonged (> 4 hours) Emergency care is required for acute ischemic priapism.
- Painful episodes can occur in an ischemic priapism patient erections for days to weeks without therapy, followed by cavernosal fibrosis and a permanent loss of erectile function.
- Perform a physical examination on patients who present with priapism, paying particular attention to the genitalia and perineum.
- Complete a medical, sexual, and surgical history for patients who appear with priapism.
- When priapism first manifests, take a measurement of the corporal blood gas.
- When it is unclear if a patient has acute ischemic priapism or nonischemic priapism, consider using penile duplex Doppler ultrasonography.
- Ask for more diagnostic procedures to determine what is causing the acute ischemic priapism. That has been identified; however, these tests shouldn't postpone the start of effective therapy; they should be done concurrently with it **[22, 23]**.

The following characteristics should be noted in the history:

- Basic erection function, duration of priapism, and intensity of the pain.
- Previous episodes of priapism and how they were treated.
- Using drugs that could have set off the event.

- A history of damage to the pelvis, genitalia, or feet, particularly a straddle injury to the perineum.
- A family history of sickle cell disease (SCD) or other such hematologic abnormalities.
- Personal experience with cancer, particularly genitourinary cancer **[23].**

The following are some suggestions for treating neglected ischemic priapism:

• Conservative treatments, such as observation, oral medicines, ice packs, and exercise, are unlikely to be effective in treating acute ischemic priapism and should not be used as a stop gap measure
• Inform all patients who have chronic acute ischemic priapism that erectile dysfunction is a possibility
• Explain to patients who have acute ischemic if priapism persists for longer than 36 hours, there's a very small possibility that their ability to erection will return.
• Acute ischemic priapism is initially treated with intracavernosal phenylephrine and corporal aspiration, with or without irrigation.
• Patients receiving intracavernosal injections of phenylephrine to treat acute ischemic priapism should have their blood pressure and heart rate monitored.
• Perform a distal corporoglanular shunt, with or without tunneling, in patients whose acute ischemic priapism does not go away after intracavernosal phenylephrine and corporal aspiration, with or without irrigation.
• If acute ischemia priapism in a patient persists despite a distal corporoglanular shunt, you might want to think about corporal tunnelling
• Inform patients who continue to have acute ischemic priapism after distal shunting that there is insufficient data to determine whether conducting a proximal shunt (of any sort) is advantageous
• Before resuming surgical intervention in patients who still have an erection after shunting for acute ischemic priapism, conduct a corporal blood gas or colour duplex Doppler ultrasonography to assess cavernous oxygenation or arterial inflow
• Patients with acute ischemic priapism may be fitted with a penile prosthesis who have not responded to shunting, with or without tunneling, or who have not received treatment for more than 36 hours.
• Discuss the advantages and disadvantages of early vs delayed installation with patients who are thinking about getting a penile prosthesis
• Explain to patients there are no proven prevention interventions that are most helpful for recurrent ischemic priapism.
• Explain to individuals who have recurrent ischemic priapism that hormonal regulators may affect their ability to conceive and have sex **[23].**

The AUA/SMSNA recommendations encourage doctors not to postpone the usual care of acute ischemic priapism in patients with hematologic and oncologic illnesses like SCD or chronic myelogenous leukaemia in favour of disease-specific systemic therapies. Exchange transfusions shouldn't be utilised as the main therapy in individuals with acute ischemic priapism connected to SCD **[23].**

Following an intracavernosal injection of erectile dysfunction medicine, the AUA/SMSNA guideline recommends the following for managing prolonged erections:

• Intracavernosal phenylephrine is the first line of therapy for individuals who present with a persistent erection following intracavernosal injection lasting no more than four hours.
• Inform patients who receive in-office pharmacologically induced erections or intracavernosal instruction to come back in if their erection lasts more than four hours or visit the ER
• If treating a prolonged erection with conservative management is unsuccessful, use intracavernosal phenylephrine **[23].**

The following are some suggested treatments for non-ischemic priapism:

• Explain to patients that Nonischemic priapism indicates a period for initial monitoring and is not a medical emergency.

• If nonischemic priapism continues after a trial of observation and the patient desires to be treated, offer embolization as the first-line therapy.
• If nonischemic priapism persists if the patient wants to get treatment following a trial of observation, consider using penile duplex ultrasonography to determine the size and location of the fistula.
• In patients with nonischemic priapism that persists offer repeat embolization rather than surgical closure after the fistula has been embolized.
• Let these patients know that embolization may not be successful in treating nonischemic priapism and that there is a chance of experiencing a relapse of priapism and erectile dysfunction **[23,24].**

EAU guidelines

In 2023 The EAU recommended the following in management of priapism:

- Starting with administration of sympathomimetic medications intravenously and aspiration for early management of presented cases with priapism.
- Shifting to surgical options once conservative management for ischemic priapism fails.
- Prolonged priapism, necessitating the quick installation of a prosthesis.
- Selective embolization has showed high success rates for arterial causes
- In treating stuttering priapism keep in mind how to prevent the recurrence **[17].**

CONFLICTS OF INTEREST

The authors report no conflicts of interest. The authors along are responsible for the content and writing of the paper.

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