

## Original Article

# Prognostic Factors and Outcome of Management of Ischemic Priapism in Zaria, Nigeria

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### ABSTRACT

**Objectives:** The objective of this study was to determine the nuances of management, prognostic factors, and outcome of ischemic priapism in patients seen at Ahmadu Bello University Teaching Hospital, Zaria, Nigeria. **Patients and Methods:** We retrospectively studied the case notes of all patients managed for ischemic priapism in the Ahmadu Bello University Teaching Hospital, Zaria, over a period of 10 years (2006–2015). The data extracted included patients' age, occupation, duration of painful penile erection, and previous episodes. Addition information including precipitating factors, hemoglobin genotype, treatment, and complications was also retrieved. Data obtained were analyzed using SPSS version 20. **Results:** The records of a total of forty patients managed for priapism over the period under review were retrieved. Thirty-three (82.5%) of these patients had an operative intervention. The mean age was 23.7 years with a range of 8–53 years. Sixty percent of patients were young adults in their third decade of life. The minimum duration of erection at presentation was 18 h and a maximum period of 10 days with a mean of 105.5 h (4 days). Thirty-three patients (82.5%) had sickle cell anemia (HbSS). Erectile dysfunction (ED) accounted for 60% of all forms of postpriapism complications. Five patients (12.5%) had residual tumescence from fibrosis, and three patients had recurrence outside the immediate postoperative period. Duration of symptoms before surgical intervention, SSA and previous episodes were the most important prognostic factors. **Conclusion:** Priapism is a disease of the young, mostly sickle cell anemic patients. Late presentation remains the norm in our environment, hence a higher incidence of ED. The distal penile shunt is an effective means of achieving detumescence even with failed conservative management. Favorable outcome is highly dependent on the duration of erection and early intervention.

**KEYWORDS:** *Clinical presentation, ischemic priapism, prognostic factors, surgical treatment and outcome*

## INTRODUCTION

Since its description in modern literature, priapism has remained an important urological emergency requiring prompt intervention to avert the potentially catastrophic complication of permanent erectile dysfunction (ED). The term priapism has its origin in reference to the Greek god, Priapus, who was worshiped as a god of fertility and protector of horticulture. It is

defined as a full or partial erection that persists more than 4 h either beyond sexual stimulation and orgasm or is unrelated to sexual activity.<sup>[1]</sup> The erection is typically purposeless and often painful.

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The incidence in a population-based, retrospective cohort study was found to be 1.5/100,000 person-years and 2.9/100,000 person-years for men aged 40 years and older. The disease affects all age groups; however, the incidence is reported to be higher among patients with hemoglobinopathies, in which it is up to 3.6% in patients <18 years of age increasing to 42% in patients over 18 years.<sup>[2-5]</sup> The low-flow (Ischemic type) is the most common,<sup>[6,7]</sup> with the other types being the high flow and the stuttering priapism.<sup>[1,5]</sup>

Drug-induced priapism is most commonly encountered in the Western world, while hemoglobinopathies (particularly sickle cell disease) have been documented as the most important etiological factor in South-Western Nigeria and the West African subregion.<sup>[7,8]</sup> Other factors implicated include neurological conditions such as stroke, spinal cord trauma, and some malignant conditions among others.<sup>[1,6]</sup> Once the process starts, ischemic priapism assumes the course of a compartment syndrome. Impairment of venous outflow results in acidosis with pH fall to <7.25, thereby causing pain. Edema is noticed within <12 h of onset, platelet adherence to endothelium within 12–24 h, and eventually, necrosis of cavernosal delicate smooth muscles and fibrosis ensues after 48 h.<sup>[1,6,9,10]</sup> Effective treatment and prevention of long-term complications are predicated on early intervention before irreversible damage to the delicate tissues of the corporal bodies occurs.

Delay in presentation is the norm in most developing countries with often due to ignorance and inadequate health care; patients are often seen by unqualified persons or in substandard health facilities; such patients are often subjected to different conservative treatment and are only referred to specialized centers when their efforts fail, thus, the attendant high incidence of permanent ED. This is in contrast to the Western world where presentation is early and intervention prompt.<sup>[3,6,8-10]</sup> Surgical intervention remains the most reliable means of treatment, and it is recommended that it should be instituted early if conservative measures fail to achieve immediate detumescence.<sup>[7,11]</sup> This study aimed to determine the prognostic factors and outcome of surgical management of ischemic priapism in Zaria, Nigeria.

### PATIENTS AND METHODS

We retrospectively studied the case notes of all patients managed for ischemic priapism in Ahmadu Bello University Teaching Hospital, Zaria, over a period of 10 years (2006–2015). The case folders were retrieved from the records, units of urology out patient’s clinic, emergency theater, and hematology unit. The data extracted included patients’ age, occupation, duration of painful penile erection, and previous episode/s if any. Other information was

precipitating factors, hemoglobin genotype, treatment, and complications. Data obtained were analyzed using SPSS version 20 (IBM Corporation 2012).

### RESULTS

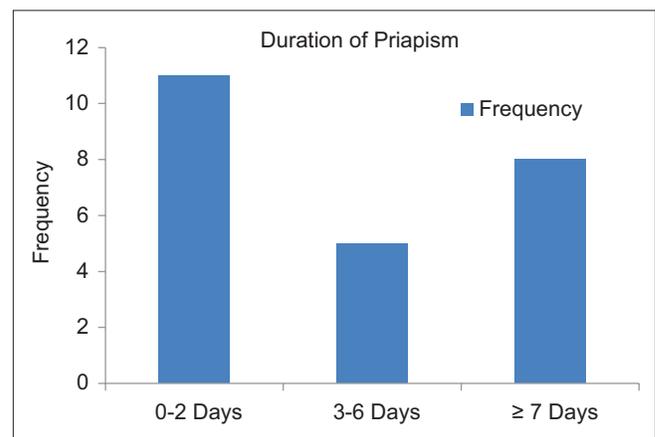
A total of forty patients were managed over the period under review. The majority (33 [82.5%]) of these patients had operative intervention while the rest were managed nonoperatively. The age range among the patients was 8–53 years with a mean of 23.7 years [Table 1]. Sixty percent of patients were in their third decade of life, while those in their second or third decades accounted for 82.5% of the patients. Regarding their marital status, 77.5% (31) were single and 22.5% (9) were married. Information on sexual activity was obtained in only 26 patients, of which, 11 (42.3) were sexually active while 2 of them were newly married.

The minimum period of presentation after the onset of symptoms was 18 h with 10 days being the longest duration and a mean of 105.5 h (4 days). 54.2% (*n* = 24) of the patients presented after 48 h [Figure 1]. All patients had a triad of penile pain, sustained erection, and penile turgidity [Table 2]. Thirty-three (82.5%) out of the forty patients had previous episodes of stuttering priapism, and of these, 10 (25%) had previous major priapism for which 3 had a surgical intervention (distal shunt).

The distribution of genotype among patients is shown in Figure 2. Erectogenic drugs were used by three

**Table 1: Age distribution of patients**

Age (years)	Frequency (%)	Cumulative (%)
0-10	2 (5.0)	5.0
11-20	9 (22.5)	27.5
21-30	24 (60.0)	87.5
31-40	4 (10.0)	97.5
≥41	1 (2.5)	100.0
Total	40 (100)	



**Figure 1: Mean range of duration of priapism in days**

**Table 2: Clinical features**

	Yes (%)	No (%)
<b>Symptoms/signs</b>		
Penile pain	40 (100)	-
Sustained erection	40 (100)	-
Previous major priapism	10 (25)	30 (75)
Previous stuttering	33 (82.5)	7 (17.5)
LUTS	3 (7.5)	37 (92.5)
Painful distress ( <i>n</i> =36)	31 (86.1)	5 (13.9)
Penile tenderness	39 (97.5)	1 (2.5)
Penile turgidity	40 (100)	-
Sexually active ( <i>n</i> =26)	11 (42.3)	15 (57.7)
Previous shunt	3 (7.5)	37 (92.5)
<b>Etiology/risk factors</b>		
Aphrodisiacs use ( <i>n</i> =30)	3 (10)	27 (90)
Sickle cell disease	33 (82.5)	7 (17.5)
Sickle cell anemia	28 (84.8)	-
Sickle cell trait	5 (15.2)	-
Psychoactive substance abuse ( <i>n</i> =30)	2 (6.7)	-
Perineal trauma ( <i>n</i> =30)	1 (3.3)	-

LUTS: Lower urinary tract symptoms

**Table 3: Relationship between complications and duration of symptoms**

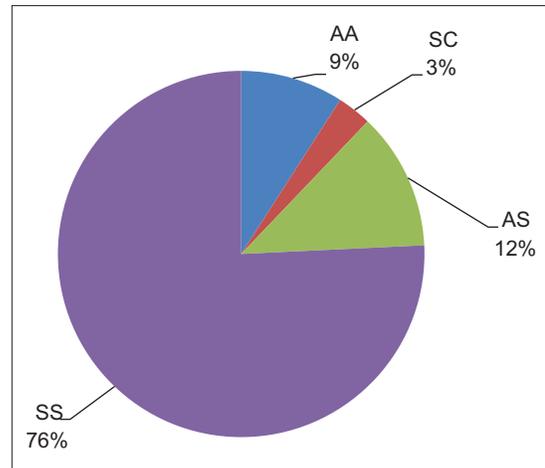
Duration (days) <sup>b</sup>	Residual tumescence (%)	Recurrence (%)	ED <sup>a</sup> (%)
0-2 ( <i>n</i> =11)	0	0	3 (60)
3-6 ( <i>n</i> =5)	2 (40)	1 (20)	80 (40)
≥7 ( <i>n</i> =8)	3 (37.5)	0	8 (100)

<sup>a</sup>Erectile dysfunction, <sup>b</sup>Duration of symptoms before presentation

patients (10%), mainly sildenafil and local nonorthodox medications. Conservative measures were attempted elsewhere and failed before presentation to us. At presentation, 18 (*n* = 30, 60%) were first attended to by urologists, 11 (36.7%) by hematologists, and 1 (3.3%) by physicians in internal medicine. All patients had ischemic priapism.

Of the 33 patients who had surgical intervention, 32 (97%) had Al-Ghorab distal penile shunt and only 1 (3%) patient had Ebbehøj procedure. No complication directly related to the surgical procedure was recorded. All patients thus treated had a variable degree of on-table immediate penile detumescence. Two (6.1%) patients had early postoperative re-tumescence, one each for the Al-Ghorab and Ebbehøj groups.

Complications on follow-up were highest [Table 3] in patients who presented after 48 hours of onset of symptoms in which ED accounted for 78.7%, five patients (35.7%) had residual tumescence and one patient (7.1%) had recurrence outside the immediate postoperative period. Complications were found in 60%



**Figure 2: The distribution of genotype among patients with priapism**

of patients who had a previous history of priapism compared to 43.3% in those who had no previous history. Seventy-eight percent (*n* = 15/19) of patients who had complications also had preceding stuttering priapism.

## DISCUSSION

Penile erection and detumescence are complex physiologic processes, which require delicate neurohormonal and cardiovascular response. A disruption of this process may lead to a persistent erection that is not relieved by ejaculation or persists beyond sexual stimulation (priapism). Priapism often results in ED and this may be permanent, especially in delayed or untreated cases. Unfortunately, it affects the young and active reproductive age group, in which the consequence of permanent ED is more devastating. The mean age of 23.7 years seen in this study is consistent with earlier findings by Dawam *et al.* of 25.2 years in this institution in 2000 and in Ife and Ilorin in Nigeria.<sup>[2,8,12]</sup> The second and third decades of life are the most commonly affected, accounting for 82.5% of patients.

Priapism is a compartment syndrome and if it is not timely relieved within 4–6 h, irreversible damage to the delicate erectile tissue occurs leading to permanent ED. However, a distressing observation in our environment is a frequent late presentation even among patients living in urban centers with access to appropriate health facilities and specialists' services. In this study, the earliest time of presentation was 18 h, only 45.8% presented within 48 h, and majority of these patients (80%) lived in urban centers. The mean duration of presentation in this study was 4 days (range 18 h-10 days). There was no significant improvement in the time of presentations as compared to finding of 10.2 days by Dawam *et al.* over 10 years ago. Delays in presentation can be partly attributed

to ignorance and initial orthodox and nonorthodox medical interventions. Another plausible reason is the sociocultural perspective and stigma of penile problems in our society, which could contribute to significant delay in seeking healthcare. We observed that up to 50% of our patients had some form of conservative management mainly in the form of intravenous fluids and analgesics in other medical facilities before eventually presenting to us. None of the patients had penile sludge aspiration or irrigation with sympathomimetics (adrenaline, ephedrine, or phenylephrine) in the referring centers. This is probably due to inadequate knowledge of the management of this condition by most primary and secondary caregivers in our environment; thus, bridging this knowledge gap might improve practice and encourage early referral.

Nigeria, like most Sub-Saharan Africa, has a high prevalence of sickle cell hemoglobinopathy, and thus, it is no surprise that sickle cell anemia is the most common (75.8%) etiologic factor in our patients and this is consistent with findings in other countries in this region.<sup>[6,8]</sup> In regions of the world with lower prevalence of solid-state drive, drug-induced and idiopathic priapism prevails. In this study only, it was only in three patients the cause of their priapism was attributable to the use of sex-enhancing medications (Sildenafil and local aphrodisiacs). Newlyweds have a tendency to want to show their sexual prowess and this could involve the use of sex-enhancing medications as seen in some of our patients.

Distal penile shunt described by Al-Ghorab was the predominant operative intervention among our patients. All patients achieved complete or near complete detumescence with only two patients requiring repeat shunt due to early postoperative recurrence. None of our patients had surgery-related complications such as urethral injury, and the average postoperative hospital stay was 5 days. One of the patients had a proximal penile shunt after recurrent episodes of priapism following an earlier distal penile shunt and he achieved sustained detumescence subsequently. The second patient was a known sickle cell anemia subject on antipsychotic medications and had 3 repeat penile shunts within a year.

We could only obtain complete follow-up information for 15 patients while the rest were lost to follow-up. The average follow-up period was 21.3 months (range 1–60 months). ED was the most common long-term sequelae of priapism among our patients (60%) out of all complications [Table 3]. El-Bahnasawy *et al.* reported increased incidence of ED among patients with delayed presentation and corroborated that failure to achieve complete detumescence and marked penile fibrosis are determinants of ED.<sup>[13]</sup> Incomplete detumescence was

noticed in five patients (33%) who had symptoms for up to 72 h and above. Penile fibrosis has been observed to be established by 48 h of onset of ischemic priapism<sup>[1]</sup> and this could be responsible for failure to achieve complete detumescence in some of our patients. The presence of ED in patients who presented before 48 h suggests that other factors might be implicated apart from penile fibrosis. Complications were less among patients who presented within 48 h and expectedly increased with delay in presentation. Those who had previous priapism were noticed to have a higher incidence of complications (60%) compared to 40% in those who were presenting for the first time. This is surprisingly less than in those who had previous stuttering, among which 78.9% of them developed postpriapism complications. A possible explanation to this might be the tendency to neglect symptoms of stuttering priapism, which tends to be recurrent, but to seek medical help earlier after a previous episode of major priapism, hence a likely cumulative ischemic effect on the delicate penile erectile tissues.

## CONCLUSION

This study has demonstrated the persistence of late presentation among our patients with priapism and sickle cell anemia being the most common etiological factor implicated. It also showed the common prognostic factors of long-term outcome of ischemic priapism including, time of presentation, previous episode of major priapism and stuttering priapism, and previous shunt procedure. Distal penile shunt (Al-Ghorab) has been shown to be effective in achieving immediate detumescence even in patients who had a late presentation and failed conservative management. Greater public awareness is necessary to curb delayed presentation and a collaborative approach to management with hematologist in the light of sickle cell anemia is highly recommended. ED still remains the most common long-term complication.

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## Conflicts of interest

There are no conflicts of interest.

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