

## Case Report

# Isolated Ischemic Gangrene of the Glans Penis Post Catheterization in a Diabetic Patient: A Case Report

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**Abstract:** Gangrene of the glans penis is a rare but serious condition because of rich collateral circulation and blood flow in the perineum and lower abdomen. The etiologies are diverse, with mainly predisposing factors of diabetes mellitus, arthritis and chronic renal failure. We report the case of a 64-year-old diabetic patient with chronic smoking who presented to the emergency room of the nearest hospital for acute urinary retention which required the placement of an indwelling catheter, the patient developed severe penile pain after the placement of an indwelling catheter which was neglected by the care giver, four days later the patient presented again to the emergency room, but this time with severe supra pubic pain and necrosis of the glans, the patient was hospitalized and broad spectrum antibiotic was administered and he prepared for surgical treatment and had undergone a partial amputation of the penis after suprapubic urinary diversion. The evolution was marked by the installation of a stenosis of the urethral orifice which required repeated dilation, and the Histological examination of the specimen revealed no pathology other than severe necrosis, Indwelling catheter is frequently used to manage male urinary retention, but it should not be used carelessly or overlooked as it can cause severe complications such as penile gangrene.

**Keywords:** Ischemic Gangrene, Glans, Catheter, Diabetes, Mauritania

## 1. Introduction

Gangrene of the glans penis is a rare entity which often indicates severe peripheral arterial disease and can create difficulties in management. It mainly occurs in patients with diabetes, arteritis or chronic renal failure. While the penis and distal glans have abundant arterial supply, arterial occlusion can cause distal necrosis similar to ischemic gangrene often seen in the extremities of the limbs. Medical imaging, essentially MRI, allows the boundaries of the necrotic zone to be clearly defined. In our days the treatment is mainly surgical. We report a case of necrosis of the glans penis post indwelling catheter, treated by partial amputation.

## 2. Patient and Observation

A 64-year-old male patient, chronic smoker (22 packs per Year), type 2 diabetes, discovered 7 years ago, actually on oral

antidiabetics, unbalanced. He presented to the emergency room of the nearest hospital for acute urinary retention which required the placement of an indwelling catheter, the patient developed severe penile pain after the placement of an indwelling catheter but the care giver neglected this pain, 4 days later he presented again in the emergency room but this time with blackish coloration of the glans (Figure 1).



Figure 1. Localized necrosis in the glans.

On clinical examination, the patient was hemodynamically stable, afebrile. The external genitalia examination reveals total necrosis of the glans penis (Figure 1).

The scrotum was of normal appearance. No urinary signs. Labstix: glycosuria and ketonuria.

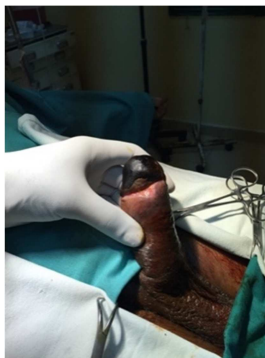
The biological assessment showed hyperglycemia at 3.3 g / l, hyperleukocytosis at 14,300 / ml, creatinine at 26 mg / l. The isolation of *Proteus mirabilis* in urine analysis. MRI was not immediately available. The patient was hospitalized and putted on antibiotics and heparin with introduction of insulin therapy for his diabetes.

He urgently benefited from a suprapubic urinary diversion, followed by local care (Figure 2).



**Figure 2.** Suprapubic urinary diversion.

The evolution was marked by the appearance of a demarcating line (Figure 3) and auto amputation.



**Figure 3.** Demarcation line.

Surgical revision and re-operation with partial amputation of the penis was performed (Figure 4).



**Figure 4.** Glans amputation.

The postoperative progression is marked by the installation of localized suppuration which responds well to antibiotic treatments (Figure 5), and the Histological examination of the specimen revealed no pathology other than severe necrosis.



**Figure 5.** Appearance 3 years postoperative.

### 3. Discussion

Gangrene of the glans is a rare but serious complication. Just a few cases of gangrene of the penis have been reported in the literature. It is often a symptom of severe peripheral arterial disease [1–4]. Ischemia of the penis develops gradually [5], due to well vascularization of the penis by deep arteries, branches of the internal peduncular artery: two cavernous arteries, the bulbar artery and the urethral artery and by superficial arteries, branches of the external peduncular [6].

The main aetiologies implicated are diabetes mellitus and the accumulation of calcium deposits caused by end-stage renal disease [6]. Other causes have been reported [1] including tourniquet effect [2], thromboembolic disease, coagulation disorders secondary to neoplastic disease, trauma and infection. In our case, ischemia exerted by the balloon of the retro-meatic catheter would probably be the factor responsible for the occurrence of gangrene [1].

The clinical differentiation between dry gangrene due to ischemic disease and wet gangrene with infection is decisive for the choice of the appropriate treatment [4]. For dry gangrene, the two treatment strategies include conservative treatment and partial or total penectomy [7]. The indication for conservative treatment usually involves small, circumscribed lesions or high-risk patients. However, conservative treatment is often followed by surgery for disease progression or liquefaction and development of infection.

Expectant management should be reserved for critically ill or terminally ill patients. Aggressive treatment is recommended for patients without severe comorbidities [3, 5, 8].

A tourniquet should not be used during surgery in these cases to avoid further damage to ischemic tissue. Harris and

Mydlo reported no progression of necrosis in three patients who received initial debridement of necrosis, combined with local care and antibiotic therapy [5]. Stein et al. reported a 71% mortality rate in a series of five patients [9, 10]. Among the five patients kept for observation, two had spontaneous resolution of gangrene and three cases stabilization. The two patients treated by penectomy and three of the five patients kept for observation died within three months. Their deaths were unrelated to gangrene.

The authors concluded that there was no advantage of radical surgery compared to monitoring alone. Weiner and Lowe, in a series of seven patients with ischemic gangrene of the penis in diabetes, reported a 57% death rate within six months of diagnosis [11]. They noted that early penectomy does not decrease the death rate, but can improve quality of life by preventing or limiting locoregional complications [12]. With proper patient selection, surgery can be successful and provide a better quality of life. Since partial penectomy is technically easier and has less psychological consequences than total penectomy, it is usually chosen. In our case, the conservative treatment was completed by a partial penectomy.

## 4. Conclusion

Dry gangrene of the glans is a rare entity that often indicates severe peripheral arterial disease. Diabetes mellitus and end stage renal disease are the main factors involved. Two therapeutic strategies can be considered. Conservative treatment and radical surgical treatment based on penectomy. To avoid medico-legal complications, informed consent should be signed, including the possibility of penectomy, as clinical signs may not reflect intraoperative findings. Indwelling catheter is frequently used to manage male urinary retention, but it should not be used carelessly or overlooked as it can cause severe complications such as penile gangrene.

## Conflicts of Interest

The authors declare no conflict of interest.

## Consent

Written informed consent has been obtained from the patient for publication of this case report and accompanying images.

## Authors Contributions

Doctor TFEIL YAHYA: main author, writing of the

manuscript. Doctor Diagana Mouhamedou: co-author / bibliographic research. Doctor Baya Mohamed Mahmoud: co-author / bibliographic research. Doctor Mohamed el Béchir Essalem: co-author / bibliographic research. All authors declare that they have read and approved the final version of the manuscript.

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