

Inflammation and infection

Severe penile necrotizing infection with subsequent glandular gangrene after distal corporal aspiration and irrigation procedure for ischemic priapism

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ABSTRACT

Necrotizing penile infection following ischemic priapism takedown is a rare complication. A 60-year-old man presented with 1-week history of green and pink purulent discharge, penile swelling, and inability to void. Computed tomography demonstrated gas and fluid accumulation within the corporal bodies, suggestive for bilateral penile necrotizing corporal infection with possibility of intra-corporal abscesses. The patient underwent extensive serial surgical debridement of the penile and corporal tissues which was complicated with poly-microbial tissue cultures, growing *Candida albicans* and *Staphylococcus epidermidis*. Despite maximal penile drainage, glans penis gangrene was developed to level of mid penile shaft necessitating a partial penectomy.

1. Introduction

Priapism is defined as a full or partial erection persisting beyond orgasm or sexual stimulation and is associated with significant morbidity.¹ According American Urologic Association/Sexual Medicine Society of North America (AUA/SMSNA) guideline, surgical management of percutaneous corporal shunting is often warranted in patients with refractory priapism.^{2,3} Severe corpus cavernosum infection and subsequent abscess formation after priapism shunting remains a rare complication with only a few previous case reports.⁴⁻⁶ In our case report, we describe a case of bilateral severe necrotizing and abscess formation of penile corporal complicated with poly-microbial and fungal organisms and unfortunate development of glans penis gangrene necessitating partial penectomy.

2. Case presentation

A 60-year old man with past medical history significant for hypertension and type II diabetes mellitus with Hemoglobin A1c of 9.2 was transferred from an outside emergency department due to persistent purulent penile drainage consistent with severe infective presentation. A month prior to this presentation, the patient was seen at an outside emergency department due to an acute ischemic episode of priapism and underwent corporal aspiration and irrigation followed by corporal distal

shunting that resolved the priapism. However, subsequently, he reported continuous green and light pink drainage from a corporal incision at the penoscrotal incision with difficulty voiding.

On arrival to our emergency department, the patient had hemodynamically stable vital signs. Evaluation of genitals revealed extensive edema within the foreskin and semi-rigid corporal bodies exquisitely tender to palpation. There was also crepitus along the mid-shaft of penis. A small amount of pus was leaking from the right base of the corpora, however there was no notable perineal induration or involvement. Laboratory analysis was significant for a leukocytosis to 13.4 k/u. Computerized tomography (CT) of the pelvis including the penoscrotal area demonstrated gas within the bilateral corporal bodies and foreskin concerning for severe necrotizing infection involving the penis and bilateral corporal spaces (Fig. 1).

Given the presenting findings, the patient was consented for surgical exploration, penile tissue surgical debridement and drainage of corporal abscesses. Intraoperatively, the tissue was thoroughly irrigated. After debridement of the necrotic tissue, two ¼-inch drains were placed bilaterally within the corpora. During the hospital course, the patient underwent further penile debridement, extensive degloving of the penile skin, and wound vacuum placement over three subsequent surgeries. Intraoperative cultures initially revealed rare *Staphylococcus epidermidis*, few *Finogdolia magna*, and few *Cutibacterium avidum*. The patient was discharged post-operative day three on appropriate oral antibiotics as

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per infectious disease (ID) recommendation, home health nursing for Foley catheter management and dressing changes, and a scheduled outpatient appointment two weeks later.

On the follow up visit 2 weeks later, the physical examination revealed gangrenous changes of the glans penis extending to mid penile shaft (Fig. 2). Decision was made at this point to readmit, and the patient was consented for and underwent a flexible cystoscopy, penile and scrotal exploration, excisional debridement of distal corporal tissues and distal urethral, partial penectomy and distal urethrectomy to preserve the remaining healthy tissue of the corpora and urethra for possible future genitalia reconstruction. Intraoperative cultures revealed poly-microbial predominance with *Candida albicans* and *Staphylococcus epidermidis*. On post-operative day one, he was discharged with a Foley in place and plan for follow up in the clinic. The patient will undergo perineal urethrostomy and genitalia reconstruction.

3. Discussion

Severe penile and corporal necrotizing infection is an extremely rare condition with only few cases secondary to ischemic priapism reported in the current literature. While the etiology is often multifactorial, diabetes mellitus, obesity, sexually transmitted diseases, HIV, advanced age, and poor hygiene are most commonly cited as risk factors.⁷ Furthermore, due to its anatomical approximate to peri-urethral and/or rectal infections, penile infection could often result as a sequela to local trauma, urinary tract infections, or iatrogenic causes. Penile tissue cultures most commonly reveal poly-microbial growth including but not limited to *Escherichia coli*, *Streptococcus*, *Staphylococcus*, *Enterococcus*, and/or *Bacteroides*.^{8,9} Alarming clinical exam findings may include a rigid, tender corporal body and presence of purulent or foul-smelling discharge. Emergent surgical management is often required with extensive debridement and maximal drainage to avoid progressive tissue necrosis and preserve erectile function.

While there is no standard approach in management, extensive surgical debridement, and maximal drainage remains widely acceptable

followed by broad spectrum systemic antibiotic therapy. Culture of tissue, urine, blood, or discharge to identify causal organisms is helpful in narrowing antibiotic regimen afterwards as guided by ID recommendations.

There have been only three reported cases of penile corporal body necrotizing and abscesses formation secondary to penile shunt procedures for ischemic priapism.⁴⁻⁶ It has been hypothesized that the prolonged ischemia leads to an overall increased risk for infection during priapism drainage procedures.⁵ All cases exhibited chief complaints of priapism for greater than two days and consistent management with surgical draining and antibiotic therapy. Only in one other case partial penectomy was determined the best therapeutic option.⁴

Our patient presented with clinical symptoms of concerning for local infection, and the presence of gaseous findings within the corporal bodies on CT was used to diagnose necrotizing nature of the underlying severe infection. Poly-microbial and specifically notable for the presence yeast growth underpins the severity of infection and urgent need for board antimicrobial and antifungals treatment to cover both gram-positive and fungal organisms. An operative decision was made to pursue partial penectomy, distal corporotomy and distal urethrectomy to level of mid-penile shaft were based on the worsening progression of the severe penile necrotizing and glandular gangrene.

4. Conclusion

Our case illustrates a serious and rare complication of ischemic priapism managed with corporal shunting leading to a subsequent poly-microbial corporal body abscesses, necrotizing and gangrenous sequelae involving the glans penis up to mid penile shaft. Early surgical exploration for surgical tissue debridement and occasionally penectomy, with broad spectrum antibiotic and antifungal therapy as indicated is necessary to prevent significant morbidity and widespread of necrotizing tissue infection.

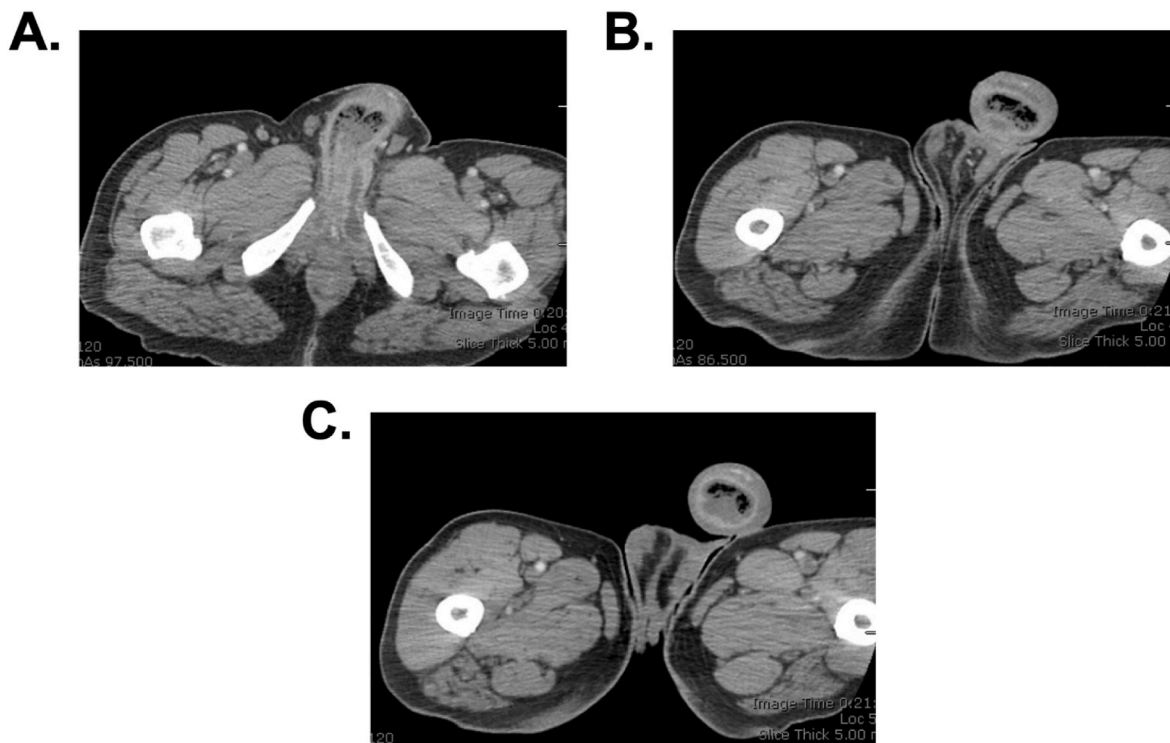


Fig. 1. Diffuse gaseous finding within the corporal bodies bilaterally extending from the base of the penis (1A) progressively to the tip of the penis (1C), most consistent with diagnosis of severe necrotizing infection of the penis involving the corporal bodies.

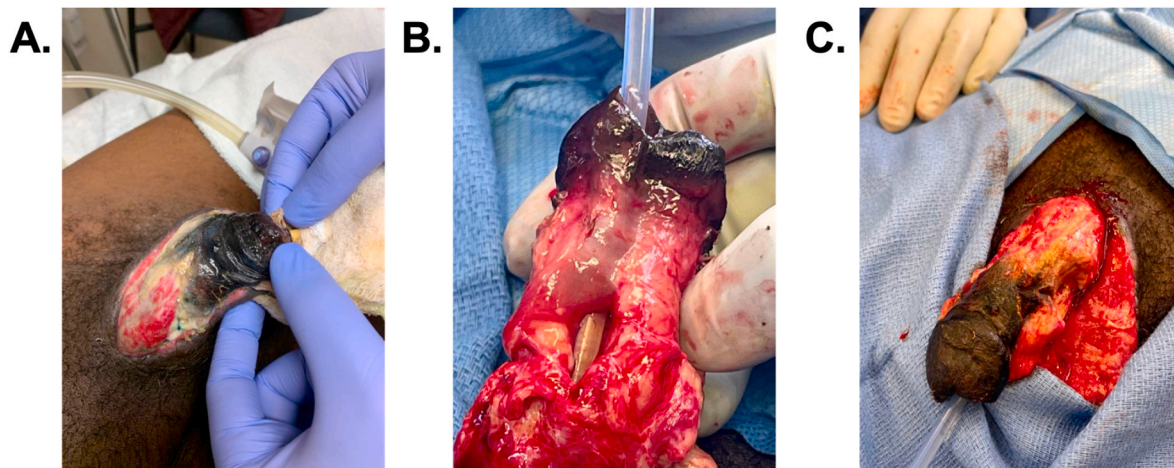


Fig. 2. Two-week follow-up with Foley catheter in place and persistence of necrotic and gangrenous tissue surrounding the glans penis and part of corporal bodies (3A). Closer examination of the ventral (1B) and dorsal (1C) sides of the penis.

Conflict of interest disclosure

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CRediT authorship contribution statement

David Fenton: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Kristina Gam:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Omer Raheem:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review &

editing.

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