# Management of Ischemic Penile Gangrene: Prompt Partial Penectomy and Other Treatment Options

I-Ni Chiang, MD,* Shang-Jen Chang, MD,† Yuh-Chen Kuo, MD,‡ Shih-Ping Liu, MD,* Hong-Jeng Yu, MD,* and Ju-Ton Hsieh, MD*

*National Taiwan University Hospital—Urology, Taipei, Taiwan; †Buddhist Tzu Chi General Hospital—Urology, Taipei Branch, Taipei, Taiwan; ‡Taipei City Hospital, Yangming Branch—Urology, Taipei, Taiwan

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**ABSTRACT**

***Introduction.*** Penile gangrene is a rare but troublesome problem with high mortality rates. The etiologies could be infectious, traumatic, or vasculogenic. The treatment algorithm is controversial because of limited case numbers.
***Aim.*** To describe our experiences in treating the patients with ischemic penile gangrene, to review the related literatures, and to try to summarize a practical algorithm for penile gangrene.
***Methods.*** We retrospectively reviewed the medical records of five patients with penile gangrene treated between 1996 and 2006. Data obtained include the patients' ages initial presentation, detailed histories, comorbidity, renal status, other vascular diseases, coagulation profile, treatment course, histology presentations, and prognosis were obtained.
***Main Outcome Measures.*** Comparison of the patients' ages, presentations, underlying diseases, the duration of conservative treatments, surgical options, resected penile length, and prognosis.
***Results.*** All of the five patients underwent partial penectomy. One patient underwent immediate surgery while the other four had delayed partial penectomy because of progressive distal penile gangrenous change. There was no postoperative wound infection noted in any of the five patients and all had survived after 1 year follow-up. Three of them could void independently with a neourethra meatus. Two of them kept suprapubic cystostomy as a result of bladder outlet obstruction caused by an enlarged prostate and bed-ridden status.
***Conclusions.*** Penile dry gangrene is an irreversible process. Early partial penectomy and correction of the underlying disease can prevent wound liquefaction, preserve more penile length, and improve quality of life. **Chiang I-N, Chang S-J, Kuo Y-C, Liu S-P, Yu H-J, and Hsieh J-T. Management of ischemic penile gangrene: Prompt partial penectomy and other treatment options. J Sex Med 2008;5:2725–2733.**

***Key Words.*** Penile Gangrene; Partial Penectomy; Penile Ischemia

## Introduction

Penile gangrene is a rare disease and is attributed to the rich collateral circulation and blood flow in the perineum and lower abdomen. It can, however, be a troublesome problem with high mortality [1]. Penile gangrene can be further divided into dry and wet gangrene. Dry gangrene is usually attributed to progressive veno-occlusive changes and ischemia. Major etiologies include diabetes mellitus, end-stage renal disease (ESRD), thrombotic phenomenon, and penile prosthesis implantation. Surgical interventions involving wide ligation of penile collateral circulation to the penis, operative embolism, venous infarction because of priapism, intracorporeal injection of pharmacotherapeutic agents, penile strangulation, and penile entrapment can also cause penile ischemia [1–3]. Emergent surgical intervention is not necessary and is equivocal in dry gangrene. In contrast, wet gangrene, which is infectious, requires prompt intervention because it may lead to progressive tissue destruction and sepsis [1].

## Aim

To describe our experiences in treating the patients with ischemic penile gangrene, review the related literatures and try to summarize a practical algorithm for penile gangrene.

## Methods

We retrospectively reviewed the medical records of five patients with penile gangrene treated between 1996 and 2006. Data obtained include the patients' age, initial presentations, detailed histories, comorbidity, renal status, other vascular diseases, coagulation profile, treatment course, histology presentations, and prognosis.

Case 1 was a 63-year-old male with type 2 diabetes mellitus, which had been controlled with oral hypoglycemic agents control irregularly for 11 years. He presented with erythematous, swollen penis for 1 month and a poor-healing glans ulcer. Empirical parenteral antibiotics with Cefazolin and Gentamicin were given initially. Angiography showed severe stenosis of the bilateral internal pudendal arteries and total occlusion of the bilateral penile arteries. Suprapubic cystostomy, debridement, and circumcision were performed, taking into consideration better wound observation and urine diversion to avoid infection and voiding difficulty. Poor wound healing and progressive penile gangrenous changes were noted after 57 days of conservative treatment with antibiotics and daily wound dressing. Penile color duplex ultrasound showed an absence of blood flow within distal 2.5 cm of the penis. Distal partial penectomy with 3 cm resected length was performed. Severe necrosis extending to the urethra was noted intraoperatively. Histology examination yielded penile ischemic necrosis. The 16 Fr urethra Foley catheter (Rusch, Duluth, GA, USA) was removed on the seventh postoperative day with satisfactory voiding status. Postoperative recovery was smooth with neither ischemic necrosis nor further infection.

Case 2 was a 64-year-old male with hypertension and chronic renal insufficiency for 5 years, who presented with penile gangrene for half a month, voiding difficulty, and decreased urine amount for 1 week. Dry gangrene of the distal penis and bilateral obstructive uropathy were diagnosed. The creatinine level was 9.1 mg/dL so emergency hemodialysis was done. Bilateral percutaneous nephrostomy and suprapubic cystostomy were performed for urine diversion. Antegrade pyelography yielded bilateral severe ureteral stricture. Right percutaneous nephrostomy was revised to a double-J ureteral catheter, but the left percutaneous nephrostomy was kept because of the narrow lumen of the left middle ureter. After 2 months of conservative treatment, slowly progressing penile gangrene was still observed. Angiography showed no corpus cavernosum filling. Thus, a distal partial penectomy with 6 cm resected length was done. Histology examination yielded hyalinization and ischemic necrosis of the penile tissue and purulent exudates. There was no postoperative wound infection. The suprapubic cystostomy was kept because of bladder outlet obstruction caused by an enlarged prostate.

Case 3 was a 75-year-old male with protein S deficiency and antiphospholipid syndrome who noted sudden onset of left inguinal pain and left scrotal swelling. Emergency surgery was performed under the impression of an incarcerated left inguinal hernia. No hernia sac was identified but accumulated bloody fluid was noted in the tunica vaginalis. Progressive ecchymosis over the glans and penile shaft was noted 2 days later, together with gangrenous change. Deep vein thrombosis of the left leg developed concurrently. Conservative treatments with empirical antibiotic, aspirin usage, and continuous heparin therapy were given initially. Circumcision, suprapubic cystostomy, and debridement were done. Partial penectomy with 4 cm resected length was performed 3 months later because of poor wound healing with pus formation and absence of blood flow under color duplex ultrasound. Histology examination yielded ischemic necrosis. The urethra catheter was removed on the seventh postoperative day. The postoperative course was smooth without infection or voiding difficulty.

Case 4 was a 60-year-old male with type 2 diabetes mellitus diagnosed for 5 years without regular control and progressive erectile dysfunction with no response to medication for 2 years. He noted gangrenous changes of the distal penile skin (Figure 1A) after receiving a penile prosthetic implant 3 days earlier. Initially, implant removal, suprapubic cystostomy, and debridement were performed. Color duplex ultrasound, intraoperatively, still showed patent penile dorsal vein. Aspirin 100 mg per day was given for 1 week but in vain. After another debridement and wet dressing for 2 weeks, an ultrasound scan showed an absence of distal penile blood flow. Partial penectomy with 4.5 cm resected length was done (Figures 1B and Figure 2). Histology examination showed extensive ischemic necrosis and marked intravascular thrombi. The urethra Foley catheter was removed on the 10th postoperative day without further complication.

Case 5 was a 75-year-old male with an old ischemic cerebrovascular accident and type 2 dia-