

Inflammation and Infection

Penile Preservation With Subcutaneous Transposition During Fournier's Gangrene



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ABSTRACT

A 50-year-old male with past medical history of diabetes mellitus presented with extensive Fournier's Gangrene. He had a wide-spread area of involvement and the wound vacuum placement involved the entirety of the phallus. We describe a surgical technique where the penis can be diverted from the site of the wound to allow for more secure wound vacuum placement and future reconstructive options.

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Introduction

Fournier's Gangrene is a lethal form of infective necrotizing fasciitis affecting the genital, perianal and perineal area.¹ The infection is known to rapidly progress to sepsis and death and is categorized as a urologic emergency.³

Immediate management should consist of resuscitation, initiation of broad spectrum antibiotics and aggressive surgical debridement.³ Excisional debridement should include wide margins and aggressive removal of tissue that is necrotic or of questionable viability.⁴ Negative pressure vacuum dressings have been used extensively in large surgical wounds after infection and debridement. "Wound VACs" increase tissue healing by removing fluid, increasing vascularization, and creating a favorable environment for cell replication and migration.^{1,2}

Long term management for extensive disease may include reconstructive surgery to achieve functional and aesthetic normalcy.⁵ In cases with extensive penile skin loss, there is promising work in using skin grafts with the assistance of wound VACs

and prostaglandin E1.⁵ This new technique allows time for complete graft take without causing erectile dysfunction due to prolonged erections.⁵ Here we describe an interesting case where the phallus was relocated out of a large debrided wound which allowed us to maintain viability during the healing process and in anticipation for future reconstructive purposes.

Case presentation

50-year-old male with history of hypertension and uncontrolled diabetes was found unresponsive in his home secondary to diabetic ketoacidosis. The patient was intubated in the field and brought to our institution. Upon arrival patient's vital signs included temperature to 100.8, heart rate of 43, blood pressure of 106/53, respirations of 18 (post intubation) and a finger stick glucose of 400. Laboratory values were notable for WBC of 22.06, lactic acid of 10.1, potassium of 7, BUN of 152 and creatinine of 7.17 (baseline of 0.8).

On physical exam, patient had necrosis with substantial crepitus of the scrotum and perineum and a necrotic foreskin. There was a 3 × 2 centimeter defect inferior to the scrotum which was freely draining fluid. The entire area had a foul-smelling odor and several maggots. The patient also presented with bilateral tibial

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ulcers which had maggot infestation. CT abdomen and pelvis with IV contrast showed open, packed wound in the right anterior perineum/inguinal region with packing extending along the spermatic cord. There is also a $10 \times 2 \times 9$ cm rim-enhancing abscess with intrinsic gas which did not communicate with the anterior perineum wound but abutted the rectum. Vancomycin and Zosyn were started and urology was immediately consulted for Fournier's gangrene.

The patient was taken to the operating room and underwent an initial debridement with several return trips over subsequent days by both urology and trauma services. Surgical treatments included insertion of a suprapubic cystostomy tube, circumcision of the necrotic foreskin, diverting colostomy, wide excision debridement and a de-gloving of the penile shaft. The Bucks fascia showed no signs of infection. Due to extensive thigh involvement, subcutaneous thigh pockets for the testicles were not a possibility. After several return trips for debridement and once signs of active infection had subsided, a negative pressure wound dressing was placed and changed every 2 to 3 days. During an operative debridement and wound VAC dressing change, there was concern about the penis preventing a proper wound VAC seal.

The patient was placed in dorsal lithotomy position and the wound VAC was removed (Fig. 1). A standard left orchiectomy was performed due to testicular necrosis. An uninvolved area was identified outside of the wound VAC field in the left suprapubic area. A subcutaneous tunnel was created leading from the suspensory ligament of the penis to the uninvolved area. The phallus was brought up through this tunnel (Fig. 2). Bucks fascia along the mid-phallus was secured to scarpa's fascia with 4 interrupted 2-0 Vicryl sutures and the sub-coronal tissue was sutured to the skin with 3-0 chromic sutures circumferentially. Care was made to ensure there was no twisting or tension on the phallus. The positioning was checked in the dorsal lithotomy position and with hip extension to ensure proper orientation. A wound VAC was successfully replaced per the general surgery team (Fig. 3).

Discussion

The tunneling technique described above provides two important benefits for the patient: first it prevents damage to the penis underlying a negative pressure dressing and second is the ability to reverse this procedure at a later date and restore the integrity of his native phallus. Due to the size of the affected

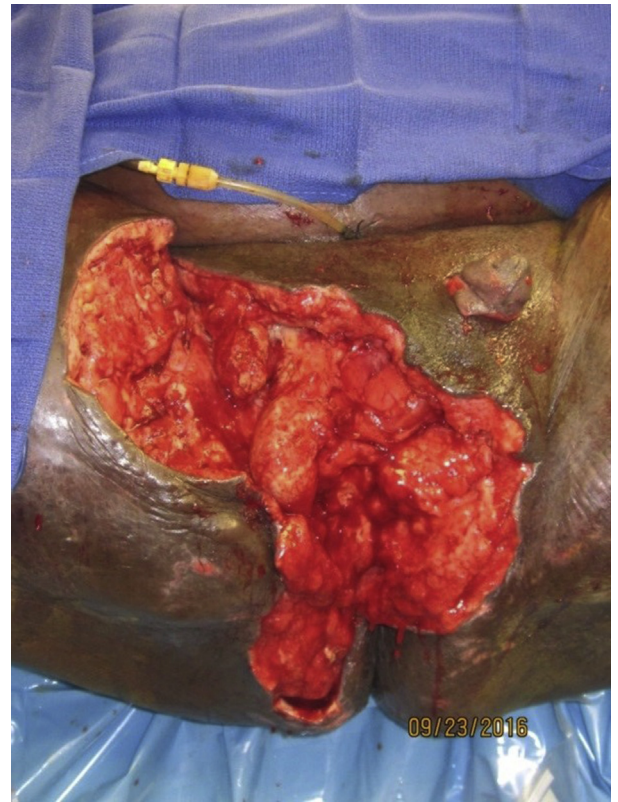


Figure 2. Penis immediately after intra-op transposition.

tissue area, the patient will need extensive skin grafts and possible flaps in the perineum. Ultimately, the phallus will be able to be replaced into its orthotopic location enhancing cosmesis and functionality. A skin graft can then be applied to the phallus as described by N. Iblher et al.⁵ While awaiting reconstruction, the patient has a functioning penis which can be used for urination while standing. Return of spontaneous erectile function is unclear at present.

The authors believe this technique should be applied in situations where the area of debridement is large and the penis would have to be incorporated into the wound VAC field.

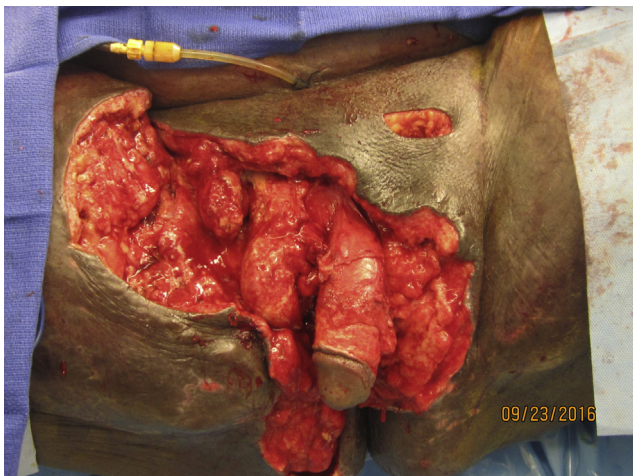


Figure 1. Perineum after several OR trips for surgical debridement.



Figure 3. Penis after transposition and wound VAC placement.

Conclusions

In situations where recurrent debridement and negative pressure wound dressings are beneficial in patients with Fournier's Gangrene or other perineal wounds, the penis can be tunneled away from the wound site and preserved. This case report presents a situation and technique where the penis can be diverted from the site of the wound and allow for future reconstructive options. This simple but novel procedure allows for better placement of the wound VAC, leading to better healing, and gives patients the option of a more complete functional and cosmetic recovery after resolution of their disease process.

Disclosure of potential conflicts of interest

None.

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