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Trauma and Reconstruction

Penile Erosion in a Paraplegic Man With Indwelling Urinary Catheter and Scrotal Edema

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ABSTRACT

The chronic use of urinary indwelling catheters is a common practice in the setting of long-term patient care and is associated with numerous complications. More awareness about urogenital trauma from urinary catheterization is needed, as it is as common as symptomatic urinary tract infections. There are a number of preventable measures that can be taken to decrease the risk of mechanical trauma to the urethra and glans penis caused by chronic catheterization. We present a case of a 27-year old paraplegic male needing a chronic indwelling catheter that acquired ventral penile erosion while being cared for in the ICU setting.

Introduction

The use of indwelling catheterization for bladder drainage is necessary for patients with spinal cord injury due to the altered inclination of voiding. Indications for catheter use greater than 14 days are urinary retention that cannot be treated with any other alternative medical therapy, urinary retention unmanageable with intermittent catheterization, contamination of stage 3–4 pressure ulcers due to urine loss despite appropriate wound care, and any impairment or terminal illness that impairs positioning or causes painful urination. Coated latex, hydrophilic-coated latex, or silicone catheters are preferred in long-term use with hydrophilic-coated latex having shown to decrease adherence of bacteria to the catheter.

Significant complications of urinary catheterization include catheter toxicity and hypersensitivity, symptomatic bacterial infections, mechanical trauma, and anaphylaxis. The risk of infection with bacteremia after 7 days is 10%–40% and after 14 days it is certain the patient will develop a bladder infection resistant to antibiotics.[1] Studies have shown that indwelling urinary catheters are often unnoticed as a cause of pressure ulcers. A variety of ulcers ranging from partial to full thickness wounds involving from portions of the glans penis to complete cleavage of the glans or penile shaft.[2] Mechanical genitourinary trauma due to urinary catheterization is as common as symptomatic urinary tract infections and ways to prevent its occurrence should receive more attention.[3]

Case report

A 27-year old African American male sustained a gunshot wound to the upper T spine resulting in paraplegia also underwent bilateral femur removal due to osteomyelitis. Patient was readmitted to the ICU with sepsis, severe acidosis, sacral decubitus ulcer grade 4, and respiratory failure. Merrem (meropenem), Zyvox (linezolid), and Flagyl (metronidazole) were the antibiotics administered to treat the patient's sepsis infection and Levophed (norepinephrine) was given for hypotension. He underwent a tracheostomy, PEG placement, bronchoscopy, and left thoracentesis for a large pleural effusion. The patient become edematous due to third spacing and suspected adrenal insufficiency for which Decadron (dexamethasone) was given. Due to the patient's condition a Foley catheter was placed on his arrival. Once weekly the wound care team assessed the decubitus ulcer, and the nursing staff replaced his wound dressings daily. Secondary to the scrotal edema, signs of the penile erosion were not noticed by staff until admit day 46. A urology consult was placed for ventral penile shaft erosion due to the Foley catheter. Replacing the Foley with a suprapubic catheter was recommended, but the patient's power of attorney refused any further procedures (see Fig. 1).

Discussion

Our patient had a persistent indwelling urinary catheter that created an erosion. Urethral erosion is a long-term complication of indwelling catheter use that can be prevented by educating those privileged to take care of spinal cord injury patients. The risk is

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Figure 1. Full thickness ulcer on the ventral penis.

increased in patients with spinal cord injuries and worsened due to decreased sensation. A number of practices may have prevented this complication, one of which included replacement of the catheter. Awareness of catheter tubing placement on the inner thigh and allowing it free mobility can prevent it from cutting through the skin and urethra. Free mobility of the catheter tubing can be achieved by securing the bag leg drainage tube to the thigh with a strap, allowing free movement and avoiding any tension or pull on the catheter and penis.[4] Also, a size 12–14 French with a 10 mL balloon is the choice for chronic use of indwelling catheters due to decreased irritation of the mucosa, residual urine volume in the bladder, and risk of urethral erosion. Once urethral erosion was established, the best option for recovery would have been removal of the indwelling catheter and subsequent placement of a suprapubic catheter. In this circumstance, the family declined the procedures.

The CDC recommends against routine replacement of indwelling urinary catheters, instead only replacing them for "clinical indications such as infection, obstruction, or when the closed system is compromised." In this instance, third spacing into the patient's scrotum prevented realization that removal of his Foley catheter was indicated, despite routine wound care and nursing attention. The marked edema of the scrotum could have contributed both to increased tension and pressure along catheter, ultimately leading to the erosion. In addition to the understanding and awareness of this complication by the multidisciplinary team, clean intermittent self catheterization is advised over condom catheter drainage and long term indwelling catheterization.[5] Clean intermittent catheterization should be considered in patients with vesico-urinary dysfunction due to spinal cord injuries, which consists of inserting a lubricated catheter into the bladder via the urethra at pre-determined daily intervals and removing it after urinary voiding.

Conclusion

Urethral injury secondary to chronic indwelling urinary catheter is a preventable complication, requiring special vigilance in the setting of edema. We encourage all members of the care team to be cognizant of pathology which edema may hide.

Conflict of interest

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