

Penile ring strangulation injury, what to do when the bolt cutters don't work: a case report

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Background: Penile constriction rings are most used for sexual pleasure and the management of sexual dysfunction. However, they pose a risk of injury and can be challenging to remove when strangulation occurs.

Case Description: We present a case of a patient with urinary retention and a strangulation injury from a

penile constriction ring present for 19 h before initial presentation. Multiple attempts to remove the penile ring were unsuccessful, and ultimately, operative management was required.

Conclusions: We describe an effective technique for the removal of a stainless-steel penile constriction ring using a Stryker 505 power revision drill with a metal cutting wheel, with good functional outcomes.

Key Words: case report, penile constriction ring, penile strangulation, trauma, ischemia

Introduction

Penile constriction rings are used for sexual pleasure for people and/or their partners. They may also be used for erectile dysfunction to help men maintain erections by constricting venous blood flow. Per the American Urological Association guidelines, men with erectile dysfunction should be informed about the treatment option of a vacuum erection device, along with its associated risks.¹ These devices typically rely on a constriction band at the base of the penis to maintain the erection. In all instances, penile constriction rings are designed to be used for short periods of time.

Penile strangulation with a penile constriction ring is a rare urologic emergency and patients often delay seeking medical care. Prior reports have described penile loss and death secondary to sepsis as possible outcomes. Bhat et al. developed a five-category grading system for penile injuries. Grade I injuries cause edema, grade II injuries include penile paresthesia, grade III injuries involve injury to the skin and

urethra, grade IV include urethral fistula, and grade V include gangrene, necrosis, or complete amputation.² The Silberstein classification system is an alternative, simpler classification system that distinguishes between high-grade, likely to require surgical intervention after the device has been removed, and low-grade. Often, metallic devices result in lower-grade injuries than non-metallic devices, which Silberstein et al. hypothesized may be due to the more elastic properties of the non-metallic items and their greater propensity to exert pressure on the penis. However, metallic devices can prove more challenging to remove and require more invasive interventions.³ This is consistent with another series of 27 cases where all three cases meeting the Silberstein high-grade criteria occurred with non-metallic constriction items.⁴ Previous reports have discussed the use of the string technique, penile aspiration, bolt cutters, and other non-electric and electric saw devices.⁴⁻⁷ In this report, we review our experience using the Stryker 505 power revision drill with a metal cutting wheel (Stryker Corporation, Portage, MI, USA) to remove a stainless-steel penile constriction ring, a tool that, to the best of our knowledge, has not previously been reported in the literature.

The Northwestern Institutional Review Board does not require ethical approval for reporting an individual case report that only documents the observations of a patient receiving medical care because

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there is no intent to test a hypothesis and no care was delivered with the intent for research. The patient provided consent for participation in this case report.

The patient received care within Northwestern Medicine, an 11-hospital system, that is affiliated with Feinberg School of Medicine.

This study was prepared according to the CARE case report guideline, and a CARE checklist was provided in the supplementary materials.⁸

Case Presentation

The patient initially presented to the emergency room at Northwestern Medicine Kishwaukee Hospital with a penile ring that had been in place for about 19 h. He reported that he had used the device many times over the last several years for erotic purposes. However, it typically remained in place on the distal penile shaft just proximal to the glans. This was the first time the device had ever migrated to the base of the penis. He had no concerns about his erectile function, and got strong erections at baseline without the use of any medications. He was sexually active but had not engaged in penetrative intercourse for over 10 years.

On presentation to the emergency room, there were multiple attempts made at manual removal of the stainless-steel device and aspiration of the penis. Bolt cutters were used without success. He underwent suprapubic catheter placement for acute urinary retention likely secondary to compression of the urethra and subsequently was transferred to Northwestern Memorial Hospital for escalation of care. On presentation, the patient's penis was engorged and edematous with evidence of significant vascular congestion and early ischemia (Figure 1).

There was purple skin discoloration along the ventral surface, skin sloughing, and the patient lacked sensation at the glans. Using the Bhat classification system, this was a grade III injury. Using the Silberstein classification system, it was a low-grade injury.^{2,3} The patient was taken to the operating room nearly 24 h after the device was placed on the penis. After general anesthesia was administered, removal with a bolt cutter was attempted. However, given the thickness of the stainless-steel ring the attempt was unsuccessful. Next, a thin malleable was placed between the penile ring and the skin. A Stryker 505 power revision drill with a metal cutting wheel was used to cut the stainless-steel ring at the 12 o'clock position and then the ring was rotated and again cut in a second location, 180 degrees from the first cut (Figure 2A and B). The thickness of the ring was



FIGURE 1. Penis with a stainless steel penile constriction ring in place on arrival at the tertiary care center

approximately 1 inch. It took about 45 min to complete both cuts and remove the ring. Continuous irrigation was used to keep the metal cool during the process. All surgical staff wore eye protection during the procedure.

On removal of the ring, the edema began to improve. The penis was wrapped with a compression dressing and the patient was discharged the next day with the suprapubic catheter still in place.

The patient had his suprapubic catheter removed one week later without any issues. At that time, the skin still appeared macerated at the base of the penis circumferentially. One month after removal, he had a persistent, healing partial-thickness wound at the 11 o'clock position. Four months after removal of the penile constriction ring, the patient reported good erectile function, the ability to void without issues, and resolution of the wound.

Discussion

Penile injuries secondary to penile constriction rings are rare, but serious conditions. They can lead to varying degrees of injury from penile edema to complete penile amputation and sepsis leading to death.⁹ When patients present with these injuries it can be challenging to remove these devices, especially when they are metallic. Instruments used in previous reports in the literature include orthopedic cutting pliers,

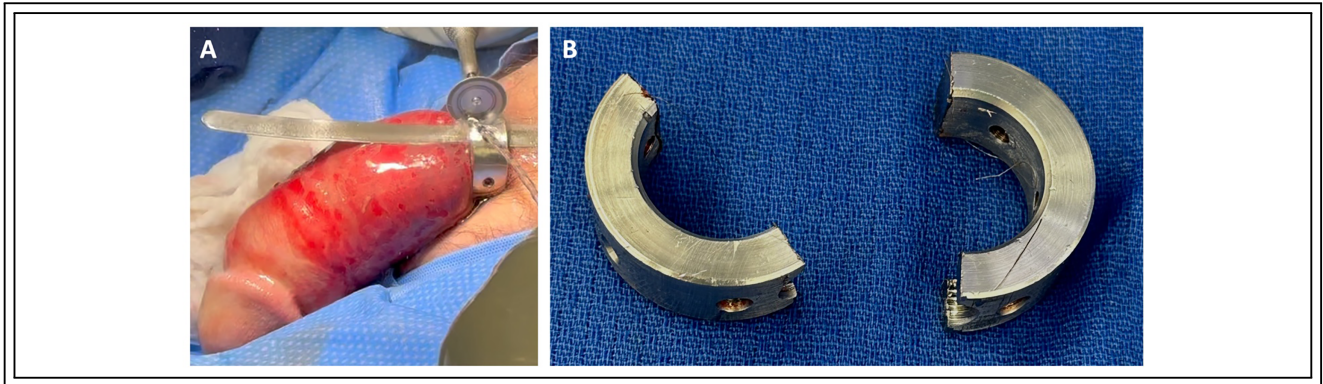


FIGURE 2. Operative removal of the stainless steel penile constriction ring. (A) Sawing through the stainless steel ring with a metal malleable protecting the skin and continuous irrigation to prevent excess heat. (B) The stainless steel ring was in 2 pieces after it was removed

electric saws, dental drills, and electric grinders.^{4,7,10} The accessibility of tools can play a big role in what removal techniques can be utilized. We describe a case where multiple attempts were made at aspiration and removal with bolt cutters before ultimately removing the stainless-steel constriction ring in the operating room using a Stryker 505 power revision drill with a metal cutting wheel, a tool often available at hospitals with orthopedic surgery on staff. This is a relatively rare clinical scenario and is limited in that it may not be applicable in every situation. However, this case report adds a novel, yet generally accessible approach to a very limited body of literature on penile constriction ring removal techniques. The patient had a favorable outcome with good erectile and voiding function four months after the injury.

In conclusion, this case demonstrates that in cases where bolt cutters are unable to cut through and be used to remove a stainless-steel penile constriction ring, a Stryker 505 power revision drill with a metal cutting wheel can be used along with a thin malleable for safe removal. Additionally, despite evidence of ischemia and penile constriction for 19 h before initial presentation, the patient had a return of good erectile function.

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None.

Author Contributions

Nicole Handa wrote the main manuscript text, interpreted the patient data, and prepared Figures 1 and 2. Matthew T. Hudnall provided content for the figures as well as critical review and revisions. Channa Amarasakera provided supervision, critical review and revisions, and project conceptualization. All authors reviewed the results and approved the final version of the manuscript.

Availability of Data and Materials

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study. The patient data is HIPAA-protected, so in accordance with the guidelines.

Ethics Approval

The Northwestern Medicine Institutional Review Board does not require ethical approval for reporting an individual case report that only documents the observations of a patient receiving medical care because there is no intent to test a hypothesis via a systematic data analysis.

Informed Consent

The patient provided consent for participation in this case report.

Conflicts of Interest

The authors declare no conflicts of interest to report regarding the present study.

Supplementary Materials

The supplementary material is available online at <https://www.techscience.com/doi/10.32604/cju.2025.070415/s1>.

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