Andrology and fertility

Use of diamond disc cutter in a case of penile strangulation with metal hex nut

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ABSTRACT

Penile strangulation by penile constriction devices present uncommonly but require urgent intervention to minimize risk of penile injuries. Non-invasive methods can be attempted and have been proven successful in previous case reports. Surgical intervention with use of cutting tools should be considered if non-invasive means fail. We present a case of penile strangulation by a metal hex nut with successful removal using a Stryker diamond disc cutter. Despite residual scarring with retracted prepuce, the patient could void well and had normal erection on follow up at 1 month and 6 months.

Introduction

Penile rings are used to improve or maintain erection.1 A penile ring is usually worn at the base of the penis, aiming to restrict blood flow away from the penis for a stronger erection or one that lasts longer. However with prolonged application, reduced venous and lymphatic drainage may result in oedema, swelling and pain of the penis. Subsequent removal may be difficult, and the vicious cycle will continue with further compromise of arterial flow, resulting in ischemia with tissue necrosis.

Case presentation

A 34 year old male presented to the Accident and Emergency Department on 7th April 2018 with penile swelling after sexual intercourse. He had applied a metal hex nut over the root of his penis two days ago for sexual pleasure but was unable to remove it afterwards. There was increase in penile swelling and pain. He was able to void without difficulty.

On examination there was a thick metal nut at the root of the penis (Fig. 1). The prepuce and glans were severely oedematous. The penis was engorged with venous congestion. A circumferential 4 cm long superficial skin abrasion was seen around the pressure area by the metal nut, with adjacent patches of necrotic skin. The patient was febrile at 38°C.

Attempts to remove the nut using 1% xylocaine jelly, with intramuscular tramadol and light sedation with intravenous midazolam failed. The patient could not tolerate the pain and agreed to procedure under general anaesthesia.

After general anaesthesia, penile block was administered with penile detumescence noted afterwards. The prepuce skin oedema was relieved with Dundee technique, by creating 20 puncture holes in the oedematous prepuce using a 26-gauge needle. Blood was aspirated from the corpus cavernosum with a 19-gauge butterfly needle. The penile skin was still oedematous, and the metal nut could not be removed.

Stryker diamond disc cutter was used to cut open the metal nut (Fig. 2). Paraffin gauze was packed between the nut and skin prior to cutting of the ring for protection. Superficial skin lacerations of around 1 and 2 cm long were accidentally created at the suprapubic area during cutting. The metal nut was successfully removed. The operation lasted 94 minutes.

Patient was hospitalized for 5 days in view of fever, and discharged with 2-week course of oral antibiotics according to blood culture result. On discharge, the penile tip was well perfused with intact sensation, but a patch of ischemic skin at the site of previous strangulation remained.

On 1 month follow up, patient reports normal voiding, and both erection and morning erections were normal. He had not yet engaged in sexual activity. On examination, there were scars over the prepuce at the site of previous strangulation. The prepuce was retracted due to scarring and the glans was normal (Fig. 3).

On 6 months follow up, patient reports normal voiding and erection. He reported recovery of normal sexual activity.

International Index of Erectile Function (IIEF-5) Questionnaire scores were 21 before injury from recall, 3 and 25 on 1 month and 6 months follow up respectively.
Discussion

Penile constriction devices can present as urological emergencies if not removed promptly. Patients tend to try their own methods for removal, and present late due to embarrassment. Penile strangulation caused by these devices have mainly been reported in case reports and multiple methods of extraction have been suggested.1–3 Review of literature by Silberstein J et al. (2008)3 showed that the rate of high grade penile injuries (urethral fistulae, penile gangrene, pressure necrosis) was higher with patients who presented 72 hours after placement of the constriction device. Although non-metallic devices present with more severe injuries, the removal of metallic devices require more invasive methods. Extraction methods such as use of string, penile aspiration, non-electric and electric cutting tools, and surgical degloving of penis have been suggested. The use of anaesthesia depends on grade of injury, ease of removal, patient cooperation and need for urinary diversion.

In our patient, the metal nut could not be removed despite manipulation under local anaesthesia, relieving prepuce skin oedema with Dundee technique and aspiration of blood from corpus cavernosum for decompression; thus, the diamond disc cutter was used.

Stryker diamond disc cutter is usually used for cutting of implants by orthopaedic surgeons. There has also been reported use of diamond-tipped drills in removing penile constriction devices in literature.4,5 Although electric cutting tools have an associated risk of injury to the penis and surrounding structures, they provide better efficiency and success in the removal of penile constriction devices where time is of the essence. We placed a barrier between the metal nut and skin to minimize the risk of injury to the penis.

Conclusion

Penile strangulation by constriction devices is a urological emergency. If safer non-invasive methods fail, prompt surgical intervention is indicated. Electric metal cutting devices can be used with precautions taken to minimize injury to surroundings.

With timely removal of constriction devices, high grade penile injuries can be prevented. Longer period of follow may be needed for accurate assessment of sexual function recovery.
Consent

Informed consent was obtained from the patient for use of his clinical information and clinical photos.

Declarations interest

The authors report no conflict of interests.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.01.002.

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