



Trauma and reconstruction

## The GEM ring cutter: An effective, simple treatment of penile strangulation caused by metal rings



Li Sian Low\*, Michael Holmes

Urology Department, Waikato District Health Board, Hamilton, New Zealand

### ARTICLE INFO

#### Keywords:

Emergency department  
Penile strangulation  
Penile constricting devices  
Ring cutter

### Introduction

The use of penile constricting devices is usually associated with the intention of improving or maintaining longer erections prior to intercourse. Various methods for removal of offending agents in cases of penile strangulation have been described. As far as we know, we report on the first case in the medical literature, in which the GEM ring cutter system is used to treat a case of penile strangulation from a metal ring without the need for general anaesthesia. The GEM ring cutter system works at a low speed and with low torque, in contrast to other high-speed and high torque products. The abrasive discs act by removing one layer of material after another, until a full-thickness cut is made. A metal sleeve comes together with the system, to protect the delicate skin around the treatment area. These features make the system relatively easy to use and safe for the patient.

### Case presentation

#### History and presentation

A 57-year-old Caucasian male presented to the Emergency Department, complaining of penile pain and swelling. He gave a history of placing a stainless-steel cock ring onto the base of his penis prior to sexual activity. This occurred at least 12 hours prior to presentation to hospital. He had previously used the ring without problems, but on this

occasion claimed to have forgotten to remove it following intercourse. Upon waking up in the morning, he had tried removing it in the shower with soap and water, but without success. He managed to pass urine without issues prior to arriving in hospital. The patient had no medical co-morbidities. A rapid assessment was conducted by an Emergency physician and the patient was referred directly to the Urology Department. The patient was embarrassed rather than distressed. On examination, a 1cm-wide, 1mm thick stainless-steel ring was trapped at the base of the penis. The penile shaft was severely engorged with superficial necrosis, cyanosis and paraphimosis distal to the constricting device (Fig. 1).

#### Treatment and follow up

After considering multiple options, the decision was made to cut the ring using the GEM ring cutter (Mooney Ring Cutting System TM) which was available in the Emergency Department. The patient consented for treatment, and a penile block was performed with 1% plain lignocaine. The ring was first cut at the 10 o'clock position and was successfully cut through within 3 minutes. A ring spreader was used to attempt spread to the ring at the defect but was unsuccessful. The ring was therefore cut at a second location, this time at the 2 o'clock position. The ring was then successfully removed off the penis (Fig. 2) Throughout the procedure, a metal finger sleeve was used as to protect the penile skin from the abrasive discs. The patient was comfortable

\* Corresponding author. Urology Department, Private Box 3200, Waikato Hospital, Hamilton, New Zealand.  
E-mail address: [lisian.low@waikatodhb.health.nz](mailto:lisian.low@waikatodhb.health.nz) (L.S. Low).



Fig. 1. The penile shaft is grossly oedematous with areas of superficial necrosis and paraphimosis, distal to the offending metal ring.

throughout the procedure. The paraphimosis was reduced and even though the patient was advised to stay in hospital for observations, he decided to self-discharge. He returned for a review in 2 days, in which there was marked improvement of the swelling and pain (Fig. 3). On day 10, he described no issues with having erections or pain, and was formally discharged.

**Discussion**

Penile constricting devices are typically used to enhance sexual experience, mainly by maintenance of erections. Sustained soft tissue swelling of the penis from constriction may lead to blockage of venous return, and eventually arterial supply. Gangrene or penile amputation may occur in severe cases, and in one case, was fatal.<sup>1</sup> Swift recognition and diagnosis is crucial in most circumstances of penile strangulation to prevent serious complications. Penile strangulation is uncommon presentation and a urological emergency created by a constricting device placed round the base of the penis and left there. A literature review revealed reported cases of penile strangulation from rubber bands, metal rings and drinking water plastic bottle neck.<sup>2</sup> Depending on the material of the constricting agent, management can be challenging. Methods that have been described include string techniques,<sup>3</sup> orthopaedic pin cutter<sup>4</sup> and dental drills.<sup>5</sup> However; complications can arise from sequelae of treatment such as thermal burns and iatrogenic injury.<sup>5</sup>

**Conclusion**

We believe that this is the first report in which the GEM ring cutter system has been described to remove a constricting metal ring from the penis. The device was easy to use, rapidly achieved removal of the offending agent and did so without iatrogenic injury to the penis. A protective finger sleeve and a pair of abrasive discs, diamond and carbide come with the device. The appropriate disc is chosen depending on the type of metal. During the entire procedure, no thermal sparks were created, and the heat generated from grinding was minimal, in fact, no irrigation was needed. The protective finger sleeve was robust enough to ensue no underlying membranous injury.

We recommend that Emergency Department physicians be trained to use this device, so that rapid treatment can be effectively carried to reduce complication rates in these unusual presentations.

**Funding**

This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.



Fig. 2. The offending metal ring is shown on the left following successful removal. The GEM ring cutter system is shown on the right along with the finger sleeve protector and abrasive discs.



Fig. 3. Marked improvement evident on Day 2.

#### Acknowledgement

We would like to thank Mr Mike Mooney for his assistance of the description of the GEM ring cutter system.

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