

# Abnormal Behaviour of Introducing Ring in Penis and its Fatal Consequences: A Case Series

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## ABSTRACT

This case series is about four incidences where the patients had introduced rings around the penis. The duration of the presentation ranged from 8-96 hours. All patients had different degrees of injury and clinical presentation and were managed accordingly. Help of one metallic electrical cutter and two non hospital staff were required while removing those rings and same method was used in all cases. At the time of discharge, one patient was found to have degloved penile skin, others showed sloughed-out skin at the base of the penis. Late presenters had lower Erection Hard Score (EHS) but all had normal voiding of urine at the time of discharge. One patient was known to have schizophrenia. Other patients had no history of mental disorders and psychiatric evaluation was also done during hospital stay. Penile strangulation needs urgent medical attention and the removal of the rings as early as possible. Duration of strangulation and type of object plays a vital role in determining the grade of injury and complications.

**Keywords:** Foreign body, Metallic ring, Penile constriction, Penile strangulation

## INTRODUCTION

Penile strangulation using metallic rings is an uncommon urological emergency, which needs urgent intervention since it may affect vascular supply or even result in penile necrosis [1]. Sometimes it is also associated with scrotal entrapment causing testicular devascularisation. The objects introduced are generally metallic, non metallic ring structures. Rings are generally introduced with a false belief to prolong the ejaculation time and it may cause prolonged tumescence of penis [2]. However, in children, it is usually accidental with typical objects such as rubber bands, thread, or hair. Non metallic or thin objects can be cut-off easily, but penile entrapment with heavy metal objects is difficult to remove as often an electrical cutter is necessary to cut the object in the background of extreme penile oedema often leading to skin necrosis with infection, even gangrene [3-6].

## CASE SERIES

### Case 1

A 58-year-old male came to the Emergency Department with the strangulation of penis by a metallic ring since four days. On examination the shaft of penis, which was distal to the ring, was oedematous, congested and purulent pus was coming through penile skin [Table/Fig-1]. A hand-held electrical metal cutter was used to cut the ring, and a wire plier was also used as an accessory. The distal part of strangulation was viable with decreased sensation and there was dribbling of urine. Cellulitis of penis and scrotum took place even after removal of the ring.

After two weeks of injectable antibiotics and regular dressing, skin above the constriction hardened, a line of demarcation appeared and cellulitis resolved. Debridement of the necrotic hard skin was done after catheterisation [Table/Fig-2]. There was mild stricture in penile urethra. The patient was discharged on day 40 after the incident and there was normal voiding function. He was referred to higher centre for plastic surgery. The patient was to have schizophrenia, diagnosed two years ago by a Psychiatrist. He was on tab olanzapine but he took it irregularly. Psychiatric consultants of this hospital advised him to continue same treatment. Erection Hard Score (EHS) was one.



**[Table/Fig-1]:** Strangulated penis with metallic ring at base (case 1).  
**[Table/Fig-2]:** After debridement of necrotic skin from shaft and base of penis (case 1). (Images from left to right)

### Case 2

A 35-year-old male came to the Emergency with penile and scrotal entrapment with 15×26×7 mm deep grooved ball bearing for three days. Shaft of penis along with scrotum was severely painful, oedematous and swollen and he was unable to void [Table/Fig-3]. There were blisters on the skin with blackening and venous engorgement with diminished central blood flow of both testes. It was removed with a metallic cutter under general anaesthesia [Table/Fig-4]. Continuous cold saline irrigation and peripheral skin protection with a guard was done during removal of the rings.

He had no psychotic disease according to psychiatric consultants of the hospital. Opinion was taken during hospital stay. Follow-up, done after one month, showed normal voiding with painful erection. His both testis were shrunken in size and atrophied. Semen analysis during the hospital stay showed oligospermia. Doppler study of testis showed partial atrophy and diminished vascularity.

One year follow-up showed erectile dysfunction and small testicular size [Table/Fig-5]. EHS was one.

### Case 3

A 45-year-old male attended the Surgery Emergency Room with the hard congested penis with complains of retention of urine. On examination, it was found that three metallic rings were worn at the base of penile shaft. The rings were put on about eight hours ago. The shaft of the penis was mildly oedematous and congested



[Table/Fig-3]: Congestion and oedema of penis and scrotum after entrapment with bearing (case 2).

[Table/Fig-4]: Removal of ring using hand held electric metal cutter (case 2).

[Table/Fig-5]: Scarring at base of penis and scrotum with testicular atrophy after one year of removal of bearing from base of both penis and scrotum (case 2). (Images from left to right)

[Table/Fig-6]. It was dark in colour with hard consistency and there was a decreased sensation. There was tenderness near the base of the penis. The glans and distal penis were viable but there was a well-demarcated line of bottle constriction. There was no history of any kind of mental disorder. He was checked up by psychiatric consultants during his hospital stay at Out Patient Department (OPD).

Under general anaesthesia rings were removed by the same method used in the previous case [Table/Fig-7]. Post ring removal a 16 Fr Foley's catheter was inserted. There was no apparent urethral injury. The patient was followed-up one month later and he was found to have normal voiding function and erection. There was a scarring present on the skin at the base of the penis. EHS was three.



[Table/Fig-6]: Hard and congested penis with three rings constricting at base (case 3).

[Table/Fig-7]: Rings after removal from base of penis (case 3). (Images from left to right)

#### Case 4

A 26-year-old male came to Surgery Emergency Department with penile strangulation with two metallic bearings of 1 cm diameter and 40 mm thickness at the base of the penis. The glans and shaft of the penis were oedematous and mildly congested [Table/Fig-8]. It was put on by him one day ago. There was a well-demarcated line of bottle constriction. It was treated in the same manner. Penile sensation was preserved but there was difficulty in voiding. There was partial skin necrosis, and debridement of the area was done. The prognosis of this patient was better; granulation tissue appeared quickly and the wound was healthy. On follow-up after 30 days, he was found to be normal in every aspect. EHS was four.



[Table/Fig-8]: Two metallic bearings constricting at base of penis with well-demarcated line of bottle constriction (case 4).

## DISCUSSION

Incarceration of genital organs due to the introduction of ring is a rare clinical scenario, which poses little diagnostic difficulty. However, the objective is to find the best method for the removal of the metal and to evaluate the amount of damage caused. It has been reported worldwide mostly among middle-aged and elderly men [7].

This is an emergency situation with various consequences. The blood supply to the glans is by the arterial anastomotic meshwork supplied by the dorsal artery of penis (major) and the bulbourethral artery (minor) ensuring a rich vascular supply [8]. This may lead to mild to severe vascular and mechanical injuries. Several complications can occur due to strangulation: urinary retention, urethral fistulas, priapism, distal hypoesthesia, skin ulceration, and necrosis, which can evolve towards gangrene or amputation of the penis even sepsis, though it mainly depends on the duration and severity of the constriction [9-12].

This practice is generally performed by persons with bizarre and dangerous sexual behaviours or disinhibition or to prolong sexual intercourse, which is a mere false belief. It may occur in some people with acute symptoms of schizophrenia or other psychosis [10]. In one of the index case, the patient was diagnosed as schizophrenic but in other three cases, there were no diagnosed cases of mental disorder.

For managing these cases the main focus was on decompression and restoration of penile circulation. Different methods are applied throughout history. Depending on the nature, width and diameter and severity of constriction different methods can be applied. Non metallic fine objects can be cut with long scissors or can be slipped using lubricant. The aspiration of corpora cavernosa facilitates this process [13]. A string method has also been in literature. In this method, a string or a similar object is rolled tightly from tip to the base of penis, thus, pushing back the congested blood. Then the foreign body (ring) is slipped over the string [14-16].

For hard objects which cannot be separated by the previous methods, a sharp heavy metal cutting device may be needed. Bone cutter, k-wire cutter, dental micromotor [1,17,18], orthopaedic oscillating saw have proven to be useful in cases. Metallic ring, bearings may be difficult to remove. Industrial machinery with the involvement of non hospital staff may be required [17,19]. As in these cases, help was taken from two electric saw operators from a metallic grill factory. Bhat AL et al., introduced a grading system for penile injury due to strangulation [Table/Fig-9] [10].

During the procedure of removing the metallic objects with an electrical metal cutter saw, huge amount of heat is produced. To prevent thermal injury continuous cold saline water irrigation was used [1,7]. A metallic strong but flat object like a tongue depressor and Deaver's retractor was used as a guard between the metallic object and penile skin because an electric metal cutter should be

Grades	Features
Grade 1	Oedema of the distal penis, no evidence of skin ulceration or urethral injury.
Grade 2	Injury to the penile skin, constriction of corpus spongiosum without any urethral injury. Distal penile oedema with decreased sensation.
Grade 3	Injury to skin and urethra but no urethral fistula. Loss of distal penile sensation.
Grade 4	Complete division of corpus spongiosum leading to urethral fistula and constriction of corpus cavernosa with loss of distal penile sensation.
Grade 5	Gangrene, necrosis or complete amputation of the distal penis. Based on this classification we had three of grade 2 injury and one grade 3 injury.

[Table/Fig-9]: Grading of penile injury due to strangulation by Bhat AL et al., [10].

Patient number	Age and marital status	Motive	Applied to	Applied by	Object used (no)	Urinary retention	Duration	Management	Remarks	EHS
1	58, widower	Delusional thought	Base of penis	Self	Metallic ring (1)	-	4 days	Electrical metal cutter	Local cellulitis	1
2	35, married	Sexual gratification	Penis with whole scrotum	Self	Metallic bearing (1)	Yes	3 days	Electrical metal cutter	Testicular atrophy, painful erection, oligospermia	1
3	45, married	Sexual gratification	Base of penis	Self	Metallic bearing (3)	Yes	8 hrs	Electrical metal cutter	-	3
4	26, unmarried	Sexual gratification	Base of penis	Self	Metallic bearing (2)	-	1 day	Electrical metal cutter	-	4

[Table/Fig-10]: Features of the (resented cases).

\*EHS: Erection hard score

used with extreme caution. It takes little time to finish the procedure. A 16 Fr foleys catheter was introduced after ring removal.

Dressing debridement, plastic surgery consultation, psychiatric consultation and judicious use of antibiotics for both aerobic and anaerobic organism are essential for the treatment of this condition. Testicular vascularity may be jeopardised if the presentation is late and EHS [7] is affected where presentation is delayed. The overall findings of the index cases have been tabulated in [Table/Fig-10].

## CONCLUSION(S)

Penile strangulation requires prompt removal of the constricting device and it can be challenging in the case of a metallic thick object. Delayed presentation is the most important cause of complications often fatal. The management depends upon the type and size of the constricting device, duration after incarceration, degree of injury, and availability of instrument and varies accordingly. The aim of the management should be rapid decompression. In these cases, there was no urethral injury or fistula noted, even though there was a variable degree of erectile dysfunction.

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