

## Penile Strangulation and Gangrene: A Late Presentation of Impacted Metallic Ring

Barun Kumar<sup>1</sup>, Krishnendu Maiti<sup>2</sup>, Dilip Kumar Pal<sup>3\*</sup>

<sup>1</sup>Post Doctorate Trainee, Department of Urology, Institute of Post Graduate Medical Education and Research, Kolkata-700020 India

<sup>2</sup>Asst. Prof, Department of Urology Institute of Post Graduate Medical Education and Research, Kolkata-700020 India

<sup>3</sup>Professor and Head, Department of Urology, Institute of Post Graduate Medical Education and Research, Kolkata-700020 India

**\*Corresponding author**

*Dilip Kumar Pal*

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**Abstract:** Impacted penile ring with strangulation injury is a challenging urological emergency. Our case is a 63 year old male with impacted penile ring for 5 days with loss of blood flow distal to impaction, skin necrosis, urethral erosion, purulent changes and features of sepsis. Removal of penile ring was attempted but was not successful. Partial amputation of penis was done following which patient had good recovery in post-operative period. Impacted penile ring can cause severe strangulation injury. Timely removal of impacted ring with minimal injury to penis is the core of management. Partial amputation of penis is a life saving measure in case of gangrene of penis with sepsis.

**Keywords:** Penile ring, gangrene, amputation.

### INTRODUCTION

Use of metallic rings for masturbation and impaction of metallic ring leading to severe strangulation is not so uncommon among males. Though there are several methods for the removal of the ring but for the ill-fated grade 5 penile strangulations presenting with gangrene and necrosis of penis, amputation of penis might be a life-saving option.

### CASE REPORT

63 year old male presented to emergency department with impacted metallic ring near base of penis since 5 days.

Patient had altered sensorium on presentation and history was taken from patient's attendant. Acute urinary retention occurred 2 days later of impaction of metallic ring for which 16 Fr foleys catheter was placed at local health care center. Removal of metallic ring was attempted at the local health center but was unsuccessful. He was then referred to higher center but a delay of 3 days occurred before he arrived at our hospital. He had high grade fever for last 2 days.

On examination, penis was pale and grossly edematous, with gangrenous patches over skin. Metallic ring was seen near base of penis which had eroded through skin to involve urethra and both corpora. Frank pus was seen oozing from the eroded skin margins (fig-1). On palpation, penis distal to impaction was cold and there was loss of all sensations distal to site of impaction. A color Doppler examination of penis was done which revealed no flow distal to site of impaction. His total leucocyte count was 17000 with 80% neutrophilia.

Patient was started on broad spectrum IV antibiotics. Then he was taken to emergency operation theatre and removal of ring attempted. Initially string technique was tried but failed. Later bolt cutter was tried but the tissue was giving away with mechanical manipulation. Eventually, partial amputation of penis was done. Patient had resolution of fever on next day and was discharged on post-operative day 3 with a prescribed course of oral antibiotics. At the end of three month follow-up, patient is doing well.

### DISCUSSION

Metallic ring impaction and strangulation injuries of penis are rare and difficult problems to tackle at emergency. Different kinds of rings are used for purpose of masturbation which ranges from wedding rings to pipe and industrial bolts. Impaction occurs after erection occurs and removal becomes difficult due to distal edema. With progressive swelling, the compartment pressure increases exponentially. The raised compartment pressure will lead to decreased blood flow and that is where urgency is required in

relieving the obstruction. The severity of injury depends on the ring used, duration of impaction, infection and

failed attempts of removal. Bhat *et al.* [1] graded penile strangulation injuries into five grades.



Fig-1: Pre-operative image of impacted metal ring with grade V strangulation injury

Grade I	Involves Distal penis edema. No evidence of skin ulceration or urethral injury.
Grade II	Distal penile edema with decreased sensation. Injury to skin, constriction of corpus spongiosum. No urethral injury.
Grade III	Injury to skin and urethra, without urethral fistula. Loss of distal penile sensation.
Grade IV	Complete division of corpus spongiosum leading to urethral fistula and constriction of corpus cavernosum with loss of distal penile sensation.
Grade V	Gangrene, necrosis, or complete amputation of penis.

While injuries up to grade 2 recovers well after ring removal, more severe injuries have complicated outcomes. Skin necrosis [2], urethral fistula, lymphedema [3] and life threatening gangrene [4] of penis can occur. Most of the patients have some form of psychiatric disorders [5] and more often than not, the presentation is delayed.

Early and safe removal of the ring is the core of the management. It is a difficult task in emergency because each case poses a different challenge. Various methods have been described for the same. They include string [6] technique with or without aspiration from distal penis, cutting devices [7-10] including electric saws and bolt cutters, surgical degloving and lastly partial amputation. String technique is a useful method in early presentation and lacks the danger of thermal or mechanical trauma. However, it might not be successful if edema is severe and if ring has cut through the skin or corpora. Corporal aspiration with wide bore needle helps in reducing the edema temporarily improves blood flow and helps in removal of ring. Electric saws have been used but they have the danger of thermal injury to penis and shielding with simultaneous cooling is required. Industrial grade bolt cutters have been used. While they lack the risk of thermal injury, mechanical injuries do occur with them. Lastly in case of skin necrosis and gangrene, surgical degloving and partial amputation (4) might be required as life-saving measure.

Seemingly easy, impacted penile rings are challenging as urological emergency. More than one

tool can be required. Early removal with penile preservation should be the aim of treatment, though in neglected cases, partial amputation may be required.

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