

## Case Report

# SURGICAL OUTCOME FOR TREATING PENILE STRANGULATION BY HEAVY METALLIC RING

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### Abstract

Penile strangulation caused by foreign bodies mostly occurs in adolescents and adult male. A man may place metal object for erotic or autoerotic purposes, for masturbation or increasing penile erection, and due to psychological disturbances which lead to penile strangulation. Penile strangulation results in reduced blood flow distal to the injury, leading to edema, ischemia, and sometimes gangrene. These injuries are divided into five grades and their treatment options are divided into four groups. Here an innovative surgical technique, which can be adopted in Grade II and III injury has been described.

**Key words:** Penile injury, penile strangulation.

### Introduction:

Penile strangulation by metallic and nonmetallic objects has been reported throughout the world since 1755<sup>1</sup>. The human penis is composed of the paired dorsal corpora cavernosa and the ventral corpus spongiosum each of which is encased within a fibrous sheath, the tunica albuginea, and then all of which are enclosed within Buck's fascia, Colles' fascia, and the skin. The spongiosum contains the urethra and is contiguous with the glans distally.

The arterial supply to the penis is from the four terminal branches of the paired penile arteries, which are themselves branches of the internal pudendal arteries. The external iliac, obturator, vesical, and femoral

arteries provide accessory arterial supply to the penile artery in some cases. Venous outflow originates from postcavernous venules that coalesce to form emissary veins. These veins empty into the cavernous vein, the deep dorsal vein, and the superficial dorsal vein depending on their origin within the penis. Efferent innervation is from parasympathetic, sympathetic, and somatic sources. Somatosensory afferents course from the penis to central sites. The maintenance of penile flaccidity and the erectile response are controlled via intercommunicating supraspinal and spinal reflex pathways. During the flaccid state, antierecile neural input, primarily via sympathetic efferents, acts to limit blood flow to the penis to a quantity sufficient to meet physiologic needs but insufficient for erection<sup>2</sup>.

Here a case of penile strangulation by a heavy metallic ring and an innovative surgical technique for safe retrieval of the metallic ring with the preservation of penile vascularity and erectile function has been described.

### Case Report:

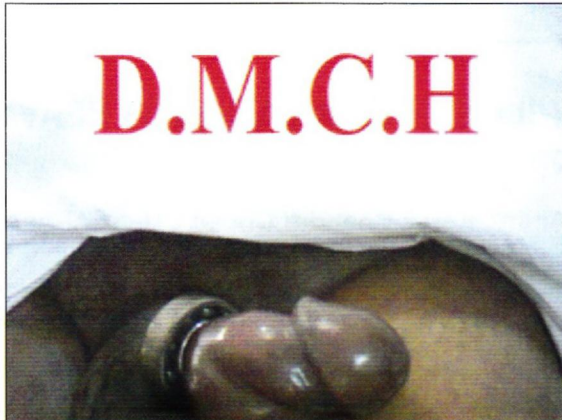
A 42-years old man presented to us with a heavy metallic ring placed at the root of the penis for

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attempting masturbation [Figure 1]. He said there was special euphoria when he was doing this. He thought it would be easily removed after penile erection but as time went by, his penis suffered severe edema which prevented its removal. The man came after 15 hours with gross penile edema and partially impaired penile sensation distal to the ring. We retrieved the constricting device with the following technique.



**Fig.-1:** Penile strangulation due to a heavy metallic ring at the root of the penis



**Figure 2a**



**Figure 2b**

**Figure 2a & 2b:** Final appearance of the penis after retrieval of the ring

**Technique:** Corporal aspiration and warm moist pack compression was applied. Incisions were made in the both Corpora cavernosum and with the help of lubricants; we slowly moved the metallic ring to the distal part of the penis. The strangulated skin by the metallic ring was slightly dark, warm moist pack compression was applied. The penis was properly bandaged with some pressure. A 16 Fr Foley catheter was placed. The weight of the metallic ring was 135.5g, and the outer and inner diameters were 5.1 cm and 2.1 cm, respectively (Figure 2b). Intravenous antibiotics were used pre- and postoperatively for three days. Perurethral catheter and penile bandage were removed after 72 hours and the patient could urinate without difficulty. The edema of the penile skin subsided gradually. Both corpora were repaired by 4.0 Vicryl at 10th POD. The patient had a smooth postoperative recovery. At 1 year follow-up, the penile Doppler study and uroflowmetry were normal.

#### **Discussion:**

Penile strangulation is an unusual clinical condition first time reported in 1755 by Gauthier<sup>1</sup>. Since then, approximately 60 cases have been reported in the world literature. Penile strangulation mostly occurs in adolescents and adult males under the desire of sexual curiosity. They often use foreign bodies to increase the penile rigidity and prolong the time of erection. Although they could acquire impermanence pleasure, the foreign bodies are often unable to be removed after congestive erection. Due to psychological shyness and lack of medical knowledge, they just tend to deal with them simply and crudely. Thus, foreign bodies usually cannot be removed and penis is often injured. Guilty, fearing of blame and humiliation prevent them from going to the hospital when they failed to remove the foreign bodies. Generally only when there are serious complications, they would like to seek medical help. They could also be sent to hospital by their families, but the best time point has often been missed then. There are many ways to remove the strangulated foreign bodies, such as aspiration method<sup>3,4</sup>.

Our patient was a 42-years old man with penile strangulation, due to heavy metal ring placed at the root of the penis of 15 hours duration. There was gross penile edema up to the root of the penis and an impaired penile sensation. Hence, it was categorized as a Grade II injury as per the gradation scheme<sup>3</sup>.

**Grade I:** Edema of distal penis. No evidence of skin ulceration or urethral injury.

**Grade II:** Injury to skin and constriction of corpus spongiosum but no evidence of urethral injury. Distal



penile edema with decreased penile sensation.

**Grade III:** Injury to skin and urethra but no urethral fistula. Loss of distal penile sensation.

**Grade IV:** Complete division of corpus spongiosum leading to urethral fistula and constriction of corpus cavernosa with loss of distal penile sensation.

**Grade V:** Gangrene, necrosis, or complete amputation of distal penis<sup>5</sup>.

Management of such a condition can be a challenge to the treating urologist. Treatment of urinary retention is a preliminary step. If the urethra is intact, a Foley catheter is recommended for Grades I and II, while suprapubic catheterization is recommended for Grades III-V trauma<sup>4</sup>.

There was no micturition disturbance in our patient. Treatment for penile strangulation can generally be divided into four groups<sup>6</sup>.

1. The string technique and its variants, with or without aspiration of blood from the glans;
2. Aspiration techniques;
3. Cutting devices; and
4. Surgery

The string technique (string cord, umbilical tape) with glans drainage has been successfully employed for Grades I-III injuries. Aspiration technique utilizes multiple punctures of the distal penis with 18-gauge needles into the subcutaneous tissue to drain lymph with subsequent decompression<sup>6</sup>.

Surgery is reserved for Grades IV and V injuries with wide tissue debridement and partial thickness cutaneous grafts<sup>7</sup>. When infected gangrene of the penis sets in, partial or total amputation of the penis is done. The surgical technique described in this case allowed for easy retrieval of the ring, and can be carried out for Grades II and III injuries when other options are of no use. Long-term followup with Micturating Cysto-Urethrogram (MCU) and Uroflowmetry is necessary. We followed up the case at 18 months with Doppler study and uroflowmetry.

Ivanovski<sup>8</sup> described two case reports; one patient was apparently a case of severe injury such as vascular insult and gangrene of the penis (grade V). The strangulating object was removed surgically under general anesthesia, and a total amputation of the penis was performed. A perineal urethrostomy was performed as definitive urinary diversion. Another patient had skin lymphedema due to obstructed venous drainage and a consequent enlargement of the penis without evidence of urethral injury. This patient had only grade

II injury and he improved after removal of the constricting agent.

#### Conclusion:

Penile strangulation is an unusual clinical condition and the consequences can be severe. Penile strangulation could lead to different degrees of vascular obstruction. Consequently, several clinical syndromes can occur, from mild nonsignificant vascular obstruction that resolves after decompression to gangrene of the penis accompanied with impaired renal function. The most common motive associated with foreign bodies on the penis is sexual or erotic in nature. The choice of method for removal depends upon type, size, strangulation time, trauma grade, and availability of the equipment. Prompt diagnosis and early treatment are essential to avoid the potential complications of ischemic necrosis and autoamputation.

#### References:

1. Gauthier M. Observation d'un étranglement des testicules et de la verge, occasionné par le passage d'un briquet. *J Med Chir Pharmacol (Paris)* 1755;3:358-60.
2. Bhat AL, Kumar A, Mathur SC, Gangwal KC. Penile strangulation. *Br J Urol* 1991;68:618-21.
3. Scopus JN, Kang TW, Heo T, Kwon DD, Park K and Ryu SB. The role of special cutting equipment and corporeal aspiration in the treatment of penile strangulation with a barbell retaining collar. *J Urol* 2004; 172(3):975-6.
4. Scopus M, Horstmann B, Mattsson C, Padevit M, Gloyer T, Hotz and H John. Penile strangulation treated with the modified string method. *Urology* 2004; 64(3):591-95.
5. Arias PJG, Diez GJM, Jaime UV, Diaz-Obregon AR, Gallastegui BJR. Penile incarceration by multiple metal rings. *Arch Esp Urol* 2002; 55: 852-5.
6. Detweiler MB. Penile incarceration with metal objects: A review of procedure choice based on penile trauma grade. *Scand J Urol Nephrol* 2001; 35:212-7.
7. Jain S, Gupta A, Singh T, Aggarwal N, Sharma S. Penile strangulation by a hard plastic bottle. *Indian J Surg.* 2004; 66: 173-5.
8. Ivanovski O, Stankov O, Kuzmanoski M, Saidi S, Banev S, Penile Strangulation: Two Case Reports and Review of the Literature *J Sex Med* 2007;4:1775-80.