

Case Report

Hair Tourniquet Syndrome of the Penis: A Case Report and Review of Literature

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Keywords

Glans amputation
Hair coil strangulation
Ischemic injury of penis
Hair thread tourniquet syndrome
Penile tourniquet syndrome

Abbreviations

HTSP - Hair tourniquet syndrome of the penis
HTTS - Hair, thread tourniquet syndrome

Abstract

Penile tourniquet syndrome caused by hair coil is often an underdiagnosed clinical entity with severe potential complications including urethro-cutaneous fistulas, necrosis of the glans and partial or complete amputation of the glans. The first reported case of this entity dates back to the early 16th century; yet surprisingly, the condition is under-recognized and is rarely mentioned in textbooks. In this report, the case of a circumcised 4-year-old boy who presented with hair tourniquet syndrome of the penis is described and a comprehensive review of the literature is discussed.

INTRODUCTION

In 1612, Guillimeau⁽¹⁾ first documented instances of strangulation of the glans penis due to hair strands. In his publication titled 'The Nursing of Children' he noted, "Hair, ribbon and string tied around the penis were utilized to prevent enuresis or nocturnal emission." In 1831, during the course of his clinical lecture at the St. George's Hospital, London Dr. Seymour mentioned a curious case of penile strangulation citing a report from the Rust's Magazine.⁽²⁾ It was alleged that a wet nurse who was dismissed from job revengefully wound a long hair five times around and tied it to the base of the penis of a 1-month-old Jewish boy. An anonymized practitioner was said to have expressed concern that if this hair-coil had remained for a slightly longer duration, gangrene of the glans would have

inevitably ensued.⁽²⁾ Since then, numerous case reports and series have emerged, including 10 from India. At least 6 systematic reviews⁽³⁻⁹⁾ have been published in the literature over the last 4 decades. This report describes a 4-year-old boy with partial amputation of the glans penis due to hair tourniquet syndrome and presents a comprehensive review of the relevant literature.

CASE REPORT

A 4-year-old circumcised boy presented with a penile wound and urination through the ventral surface of the penis. There was no history of fever. His parents reported that the symptoms began 3 weeks before. A general practitioner had prescribed oral and topical antibiotics, but without any relief. On physical examination the glans penis

was found to be hanging from the penile shaft on a small bridge of tissue (Fig. 1) raising the suspicion of hair tourniquet syndrome of the penis (HTSP). Surprisingly, the glans was viable. The hair coil was not visible, even under magnification. Exploration under general anesthesia revealed a sharp demarcation line with a tightly wound hair coil embedded in the coronal sulcus, resulting in near-complete transection of the urethra and corpora. (Fig. 2) He was catheterized with a 6 Fr catheter. The hair coil was cut dorsally, unwrapped and carefully removed. An end-to-end urethral anastomosis and reattachment of the severed glans to the corpora cavernosa were done (Fig. 3). Post-operatively, he developed a small urethral fistula, which is scheduled for elective repair 6 mo later.



Fig 1. Hair-tourniquet syndrome. The deeply embedded hair coil could not be readily seen

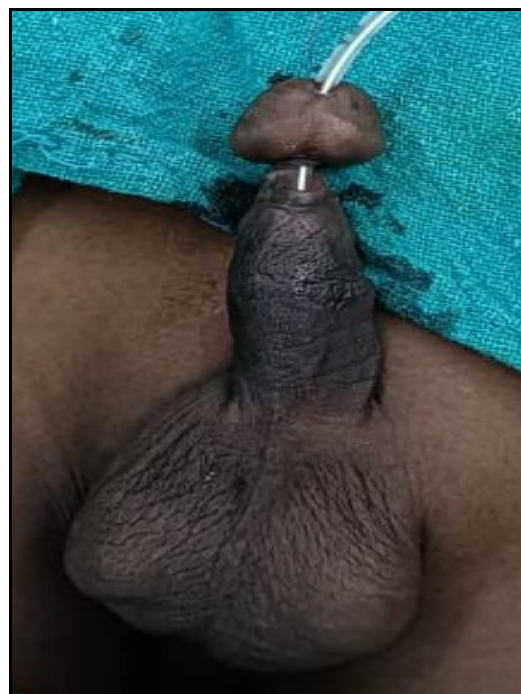


Fig 2. Partial amputation of the penis is intra-operatively evident after the removal of hair-coil.

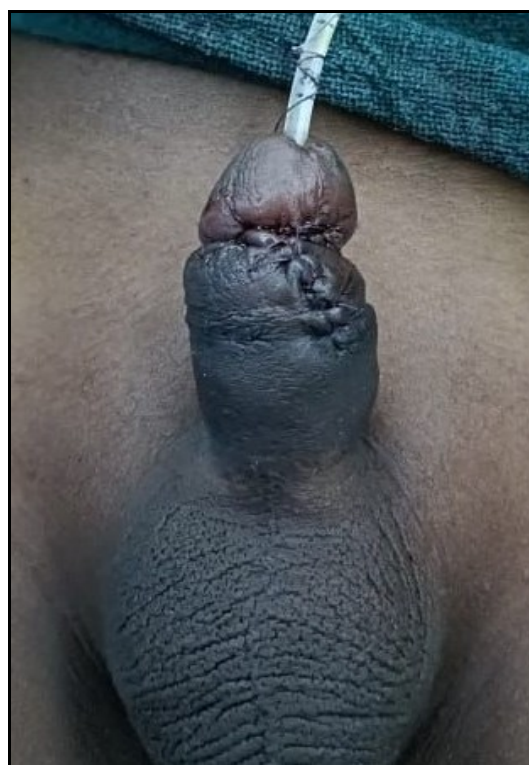


Fig 3. Penile appearance after surgical repair

DISCUSSION

In 1971, Sahn coined the term 'Penis tourniquet syndrome' for hair strangulation of the penis.⁽¹⁰⁾ In 1988, Barton introduced the term 'Hair, thread tourniquet syndrome' (HTTS) after reviewing 66 cases involving appendages such as fingers, toes, and external genitalia.⁽⁴⁾

HTTS is broad term that refers to a condition in which a strand of hair, thread or fiber encircles an appendage, leading to ischemic strangulation and even necrosis. In an extensive review and meta-analysis⁽⁶⁾ of 210 cases, the affected body parts include the penis (44%), toe (40%), finger (9%), and other sites (7%). In penile HTTS, hair was the offender in 91 out of the 93 cases and this is specifically called as HTSP. HTTS has also been reported to affect several other organs including the clitoris, vulva, mons pubis, tongue, uvula, neck, earlobe, umbilicus and nipple.⁽⁹⁾

HTSP is a rare condition, with approximately 200 cases been documented worldwide till date. It is a serious condition that is characterized by a hair strand encircling the coronal sulcus of the penis, leading to various complications such as glanular edema, necrosis, urethral fistula, urethral transection and partial or complete auto-amputation of the glans penis.^(6,9) Additionally, dorsal neurovascular injury has been reported, resulting in anesthesia of the glans penis.⁽¹¹⁾ About 90% of HTSP is found to occur in circumcised boys.⁽⁸⁾

HTSP may be accidental or intentional.^(2,7) While it may be a simple accident in many boys, Acimi identified several predisposing factors such as poor personal hygiene, a moist environment associated with nocturnal enuresis, presence of pubic hair in young children and a coronal sulcus that is not covered by the foreskin as it is in circumcised boy.⁽¹²⁾ Telogen effluvium, an excessive shedding of hair experienced by postpartum mothers due to hormonal changes, has also been implicated.⁽⁹⁾

Some authors believe that HTSP is a common form of child abuse, a cause overlooked for decades. It should be considered in cases where caregivers try to prevent enuresis.⁽⁵⁾ Haddad had compiled a lengthy list of motivations behind this form of child abuse, some of which are quite bizarre.⁽³⁾

The grading system representing the severity of HTSP developed by Bashir and El-Barbary⁽¹³⁾ has been widespread acceptance. (Table 1) Our index case, reported here, belongs to Grade III.

Table 1. Bashir-El Barbary Grading of HTSP

Grade	Description
I	Skin constriction without urethral injury (mild case)
II	Partial division of corpus spongiosum with urethral-cutaneous fistula
III	Complete division of the corpus spongiosum and constriction of the corpus cavernosum (partial amputation)
IV	Gangrene, necrosis, and complete amputation of the glans.

HTSP - Hair tourniquet syndrome of the penis

The treatment of HTSP primarily involves decompression of the strangulated tissues by completely releasing the constricting hair as soon as possible following the diagnosis. This can be done by either non-surgical or surgical methods, the choice being dictated by the depth, nature and visibility of the constricting hair. A depilatory cream with thioglycolate base is a highly effective and painless technique suitable for superficially located and visible band of hair.⁽¹⁴⁾ Surgical exploration under general anesthesia is the preferred method for deeply embedded constrictors or when edema is obscuring the visibility of hair strand. Genital reconstruction is indicated by the nature of the injury.⁽⁹⁾ Both one-stage and two-stage repairs of the glans and urethra have been described.^(6,11)

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