Case report

Penile Tourniquet syndrome by hair in children: case report

ABSTRACT

Aims:
This case report aims to explore the rare occurrence of penile tourniquet syndrome caused by hair in children and to emphasize the necessity of early diagnosis and one-stage surgical management. Additionally, it seeks to contribute valuable insights to the existing literature on this topic, particularly regarding treatment approaches and outcomes.

Presentation of Case:
An eleven-year-old circumcised boy was admitted to our department with progressive pain and urinary symptoms. Physical examination revealed hair coiling around the coronal sulcus, leading to complete transection of the urethra and corpora spongiosa. Despite this severe presentation, no other significant findings were noted. Surgical intervention involved debridement of necrotic tissue, careful removal of the hair coil under general anesthesia, and one-stage repair of the urethra using silicone Foley catheter guidance and PDS sutures. The post-operative course was uneventful, with satisfactory outcomes observed during follow-up.

Discussion:
Penile tourniquet syndrome by hair is a rare but potentially devastating condition, typically affecting circumcised boys in early childhood. Diagnosis can be challenging due to the thinness of the hair and the presence of edema. The severity of complications varies, ranging from superficial lesions to complete urethral transection and penile amputation. Early recognition and treatment are crucial to prevent adverse outcomes. Surgical management often involves hair removal and repair of urethral or corporal injuries. Different approaches have been proposed, including multi-stage repair or one-stage repair, depending on the severity of the condition and institutional practices. Postoperative complications may include urethro-cutaneous fistula or skin necrosis, highlighting the importance of careful postoperative monitoring.

Conclusion:
This case underscores the significance of penile tourniquet syndrome by hair in children and the effectiveness of one-stage surgical management, even in severe cases. It emphasizes the importance of early diagnosis and appropriate intervention to prevent long-term complications. Further studies and standardized treatment protocols are warranted to optimize outcomes in patients with this rare but potentially serious condition.

Keywords :tourniquet syndrome, Hair coil strangulation, child, penis, case report

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Strangulation of the penis by human hairs or penile tourniquet syndrome by hair is characterized by the wrapping of hairs around the penis at the coronal sulcus, with progressive strangulation that can lead to serious complications including necrosis of the glans [1]. This syndrome is not limited to the penis. It can affect various Appendages, including the uvula, fingers, toes, and even the clitoris and labia minora [1]. Circumcised boys aged 0 to 6 are most often exposed to this pathology [2].

As the hairs are extremely fine and lie in a groove of swollen oedematous tissue, diagnosis of this syndrome is not always easy, and the doctor must be alert and considerate when a boy presents with unexplained swelling of the penis.

Treatment consists in cutting or dissolving the coiling of the offending hair. In more than two-thirds of cases, the hair was removed early enough for the patient to recover without complications [3].

Here, we report the diagnosis and surgical treatment of an 11-year-old boy with penile Tourniquet syndrome

Case Presentation:

Patient information: An eleven-year-old circumcised boy was admitted to our department due to the progressive onset of pain and urinary disorders.

Clinical findings: Physical examination revealed that a tuft of hair had wrapped around the coronal sulcus (figure 1), causing complete transection of the corpora spongiosa and the urethra with incomplete transection of the corpora cavernosa (figure 2). Except for this specific issue, the remainder of the clinical examination showed no significant findings.

Therapeutic intervention: Necrotic tissue was debrided and the hair coil carefully removed under general anaesthesia. The cut margins and surfaces were epithelialized, showing the chronicity of the damage. We first refreshed the edges and surfaces of the epithelialized corpora cavernosa and spongiosa that had been sectioned.

Urethroplasty was performed using a (10 Fr) silicone Foley catheter as a guide, with separate 6/0 PDS sutures. This was followed by a tension-free anastomosis, connecting the glans penis and corpora cavernosa with separate 6/0 PDS stitches (figure 3). Then we carefully sutured the skin closer to the glans with separate 5/0 Vicryl sutures. The child received local antiseptic treatment until the inflammation subsided and the skin healed completely (figure 4).

Follow-up and outcomes: The post-operative course was straightforward, with removal of the urinary catheter on day 5 post-op, and the patient declared discharged on day 6. After two years and 10 months of follow-up, there were no complications and the aesthetic result was satisfactory.

Discussion:

The Penile tourniquet syndrome was initially described by Gauthier in 1755 [4]. This is a rare but serious syndrome characterized by a hair wrapping around the coronal sulcus [2]. The average age of the reported cases was 2.5 years; the youngest patient being 21 days old [3]. And circumcised boys are almost exclusively affected by this syndrome [5].

Symptoms and clinical signs manifest in the acute stage as acute pain and penile edema, followed by superficial penile lesions. As the hair is extremely thin, particularly in the case of local soft-tissue reaction and edema, it can go unrecognized and undiagnosed for a long time [8], progressing to urethral fistula and complete transection of the urethra, culminating in total penile amputation at an advanced stage.

Bhat et al. [7] graded these injuries as follows:
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.

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Grade III: Injury to skin and urethra but no urethral fistula. Loss of distal penile sensations.
Grade IV: Complete division of corpus spongiosum leading to urethral fistula and constriction of corpora cavernosa with loss of distal penile sensations.
Grade V: Gangrene, necrosis, or complete amputation of distal penis.

In our case, patient presented in the stage of complete transection of the urethra (grade IV).

Once the diagnosis is made in early cases the treatment is consists of the removal of the offending hair. Under general anesthesia and local wound care results in good healing. In more severe cases, corporal body or secondary urethral fistula needs repair .In a study by Harouchi et al, 38 cases of Hair Penile Tourniquet Syndrome were documented and classified into four grades of severity (I to IV) [8]. They proposed a multi-stage repair approach for the management of severe cases. El Bahnasawy and al reported delayed repair for cases with late presentation and established urethrocutaneous fistula [9]. On the other hand Badawy and al [2], opted for a one-step repair approach for all types of lesions, including severe cases. However, their procedure commenced with the dorsal dissection of the groove caused by the hair coil, followed by securing the raw surface of the glans to the corpora cavernosa to provide support for the glans. Subsequently, they proceeded with the ventral dissection of the urethra and glanular wings.

Kirtane and Samuel and al. performed a single-stage operation on 10 boys with penile hair strangulation [10]. The first three cases showed a persistent urethral fistula, after simple reinsertion of the severed urethra and glans penis. Which led them to modify their repair method and adopt Koff's urethral mobilization technique, which involves discarding the glanular urethra and using the fistula as a final meatus.

Postoperative complications include urethro-cutaneous fistula, chordee, urethral stricture, skin necrosis and gangrene of the shaft and glans [4].

In our case, we did one stage repair. The result of the operation was good with no complication.

Conclusions:

This rare case of complete urethral amputation is presented to call attention to human hair as a potential source of injury in children, which can lead to severe penile deformities ranging from edema and swelling to gangrene and penile amputation. And to demonstrate that penile complications resulting from this syndrome can be adequately repaired in a single stage.

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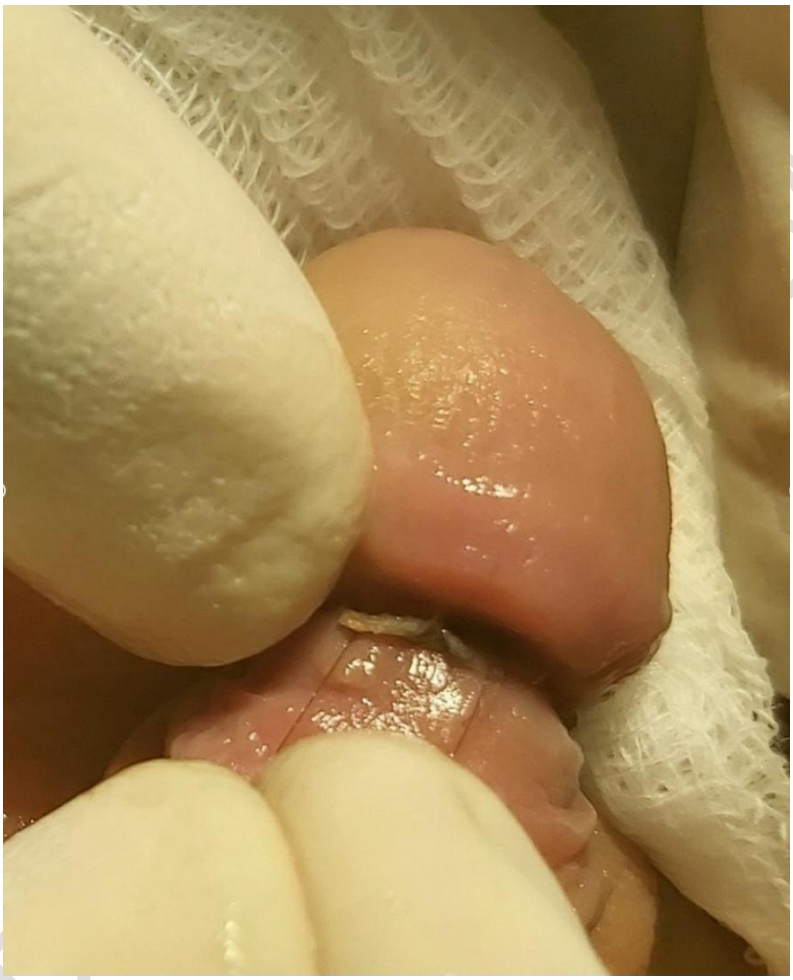

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Figure 1: Penile strangulation by the hair

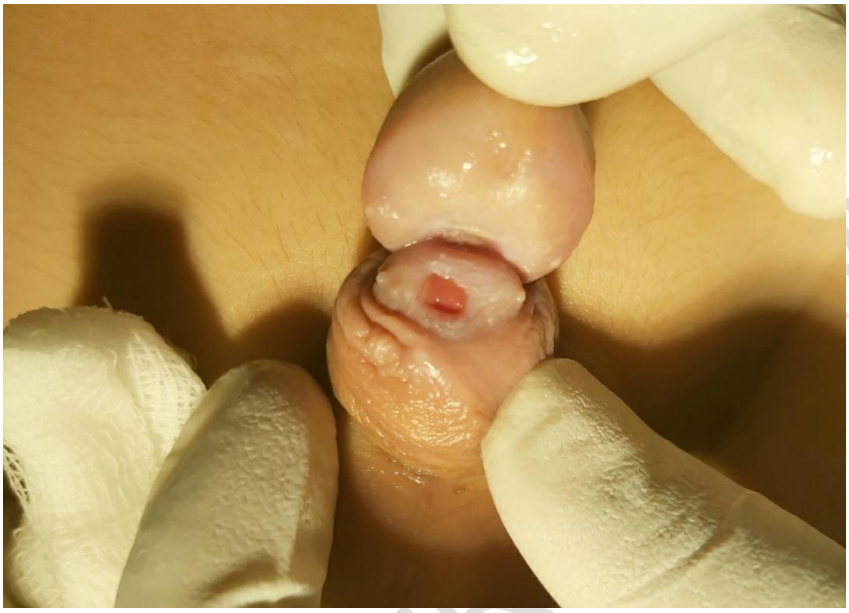

Figure 2: complete urethral transection

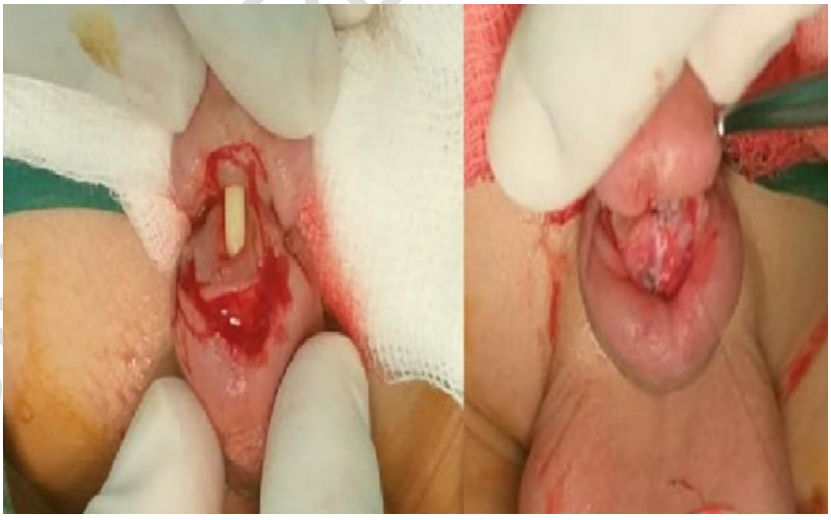

Figure 3: Refreshing and anastomosing the epithelialized transected edges and surfaces

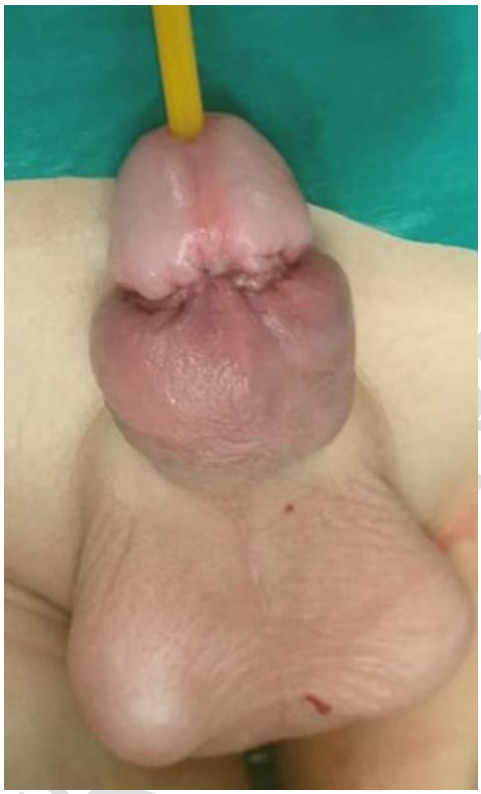

Figure 4: Final appearance of the penis after the repair.

Declarations:

-Consent to publication:

We have received written consent from the patient's legal guardian for the publication of this case report. A copy of this consent form is available upon request.

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