Penile hair tourniquet to base of penis resulting in circumferential separation of shaft skin without vascular compromise: An unusual case report

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ABSTRACT

Hair tourniquet syndrome occurs when a strand of hair or thread becomes wrapped around an appendage, causing injury which can progress to ischemia, necrosis or autoamputation.

A 2 year old uncircumcised male presented with 1 day of erythema to base of penis followed by a bleeding wound of 5 hours duration. On examination, there was circumferential separation of shaft skin at the base of the penis. Examination of diaper revealed a coiled strand of maternal hair. Debridement and primary repair were done, with an uneventful recovery. This represents an unusual presentation, as both the site and pattern of injury were atypical.

Section headings

Pediatrics, General Urology, Trauma and reconstruction, Oddities.

1. Introduction

Hair tourniquet syndrome is rare. The offending agent (typically hair or thread) exerts injury through direct cutting effect or causing vascular compromise; first with lymphatic and venous congestion, progressing to arterial occlusion, subsequent ischemia, necrosis or auto-amputation.

A meta-analysis review of 210 cases of hair-thread tourniquet syndrome found that 44.2% involved the penis, 40.4% the toes and 15.4% represented other sites, including the fingers, vaginal labium, ear lobe, and nipple. Diagnostic difficulty can ensue as human hair is very thin and easily overlooked. Re-epithelialization may occur which obstructs the offending hair or thread. A high index of suspicion and prompt treatment are indicated to prevent serious sequelae.

2. Case presentation

A previously well 2 year old male presented with fussiness and “whiteness” to base of penis for 5 hours, followed by erythema and blood in diaper 3 hours prior. He had no prior genito-urinary complaints, other symptoms or history of trauma. He was supervised by his mother all day. Examination revealed a fussy but well and active toddler. On examination of the uncircumcised genitalia, the penile skin and dartos fascia were found to be circumferentially detached from scrotal skin with a 2cm fascio-cutaneous gap and no distal vascular compromise. The base of the penis and adjacent scrotum were oedematous, boggy and tender. There was no discharge, crepitus or active bleeding and the visible tissue appeared healthy with no breach of the deep fascia (Figs. 1 and 2). He passed urine easily.

The diagnosis was not initially evident, however retrieval of a diaper changed prior to examination revealed a long strand of maternal hair. Under anaesthesia, after catheterization, the above findings along with a deep gap in the dartos and large clots ventrally and dorsally were confirmed. Minimal debridement was necessary, and copious irrigation with primary closure of the dartos then skin was performed.

He passed urine on post op day 1 upon removal of catheter and was allowed home with daily sitz soaks and topical antibiotics. He had an adequate cosmetic outcome (Fig. 3).

3. Discussion

Penile hair tourniquet is a rare entity, occurring almost exclusively in circumcised boys due to exposure of the coronal sulcus. This case...
highlights the wide variation in clinical presentations and the diagnostic confusion that can ensue.

The highest risk group for hair tourniquet is infants less than 4 months old (90% of mothers experience telogen effluvium) but can occur in any age group. Intentional cases of child abuse have been reported; in certain cultures, penile tourniquet is used as a means to control nocturnal enuresis. The differential diagnosis is broad, including trauma, non-accidental injury, insect bites and infections.

A high index of suspicion is necessary as human hair is thin and easily overlooked, obscuring edema may be present, and re-epithelialization may occur with a resultant obscuring skin bridge. Okeke reported a case of a 9 year old with penile hair tourniquet for 3 years presenting with a granulating ring scar and urethral stricture resulting in voiding difficulty. An intact hair tourniquet was found embedded deep within his penile tissue.

Prompt treatment is necessary to diminish complication risk, which may require general anaesthesia with magnification. Treatment consists of removal of the offending agent and repair of any injury. Usually the offending agent can be unwrapped or cut, using a blunt probe if significant edema is present. Incisional technique may be necessary; at 3, 9 or 12 o’clock positions for digits, and 4 or 8 o’clock positions for the penis (avoidance of neurovascular bundles). Depilatory creams can also be used, except on mucosal surfaces or with extensive skin breakdown. These cause disruption of the keratin bonds of hair, causing hair breakage.

Repair of injury is determined by the extent of injury, which can be classified into 4 grades, ranging from superficial to amputation of glans. Injuries superficial to Buck’s fascia are usually amenable to irrigation, debridement and primary repair, such as this case. Closure of the tunica albuginea is warranted if breached, and cavernosal injury can be repaired with buried absorbable sutures. Urethroplasty is performed for urethral injury; penile tourniquet typically results in a short segment of injury, and thus substitution urethroplasty is rarely indicated (exceptions exist). In cases of partial or complete glans amputation, a staged repair may be necessary. Badaway et al. reported good outcomes with single stage repair even in extensive cases. No case reports of proximal penile amputation secondary to hair tourniquet were found, as most occur at the coronal sulcus. Theoretically it can occur and may have occurred in our case under different circumstances. The penis has a relatively long cold ischemia time, with successful re-implant up to 16 hrs later. Expeditious re-implantation is paramount and microsurgical re-implant is ideal. If microsurgical repair is not available within a reasonable time frame, macroscopic repair can be done. This is associated with increased incidence of complications, particularly skin loss and urethrocutaneous fistula.

Complications of penile hair tourniquet are many, and include
bleeding, infection, neurovascular injury, gangrene, and autoamputation.

In conclusion, hair tourniquet syndrome, although uncommon, can have a widely variable clinical presentation, both in location and severity. If not treated promptly, it can result in a multitude of complications which can have significant adverse physical, emotional and psychological effects. It is necessary that clinicians, including emergency department physicians, be aware of this entity and know how to recognize and treat it.

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Consent

Consent was obtained from the patient’s mother prior to submission of case report.

Submission declaration

This is an original article and has not been published or submitted elsewhere.

Declarations of interest

None.

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