# Genital Hair Tourniquet Syndrome in Children – A systematic review

Vinod Raj [1], Pooja Tiwari [1], Maneesh Kumar Joleya [1], Ram Mohan Shukla [1]

[1] Department of Pediatric Surgery, MGM Medical College and Hospitals

***Address for Corresponder:** Dr Vinod Raj, Department of Pediatric Surgery, MGM Medical College and Hospitals (email: doc.vraj89@gmail.com)

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## Abstract

**Introduction:** Chapman first described a case report of female genital Hair Thread Tourniquet Syndrome in 1968 and since then multiple reports have been published. It was in 1988 the term Hair thread tourniquet syndrome (HTTS) has been described and published by Barton et.al where they described hair or thread that wrap around an appendage leading to ischemia and necrosis.

**Materials and Methods:** A pubmed search was done on 15th March 2026 with the word "hair tourniquet Syndrome"The articles were screened for relevance and the data was compiled on gender, age of occurrence, injury at presentation, duration of symptoms, material acting as tourniquet, surgical specialty involved in treatment, treatment option and their outcomes and complications.

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**Results:** The search hair tourniquet syndrome yielded 86 articles. A total of 36 articles were excluded among which 4 articles were foreign language, 1 article was irrelevant and rest were removed as they were involving digits and reported in adults. 50 publications were studied. 22 articles were on females and 28 on males. One systematic review included both male and female cases while one included only in females. incidentally discovered when operated on for diaphragmatic hernia in three cases.

**Conclusion:** Genital Hair Tourniquet syndrome can cause gruesome injuries. Earlier presentations had no or limited injuries. Delayed presentation had more instances of complete urethral transection and glans injuries.

## Keywords

- Hair tourniquet
- Systematic review
- Genital tourniquet

## Introduction

Chapman first described a case report of female genital Hair Thread Tourniquet Syndrome in 1968 [1] and since then multiple reports have been published. It was in 1988 the term Hair thread tourniquet syndrome (HTTS) has been described and published by Barton et.al [2] where they described hair or thread that wrap around an appendage leading to ischemia and necrosis. The appendage may be toes, genitals, fingers, neck, tongue and uvula[3]. Majority of the cases described in the literature are of those involving toes and digits whereas genital cases accounted for a small number [4].

The hair or the thread causes constriction and leads to lymphatic congestion. This further leads to venous and arterial congestion if the constricting agent is not removed. If this process allowed to progress, this leads to ischemia and necrosis. Amputation may occur as rare and extreme consequence [2]. The exact mechanism of strangulation is different, in cases of digits and toes, mostly the thread is from mitten or socks. In case of genital

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and oral cavity, its mostly by hair. Instances of voluntary application of thread or hair has also been described [5-6]. Management described is removal of offending fiber either manually or by application of depilatory agents in case of hair [4].

We report a systematic review of published literature on both male and female genital HTTS

## Materials and Methods

We performed a systematic search of literature indexed on PubMed on 15th March 2026 with the keyword "hair tourniquet Syndrome ". Both the authors screened the title and abstracts of the results. Articles whose full texts were unavailable in English were excluded from the study. Relevant articles were then screened and duplicates removed. The selected articles were then studying [4–52] and the data was compiled on gender, age of occurrence, injury at presentation, duration of symptoms, material acting as tourniquet, surgical specialty involved in treatment, treatment option and their outcomes and complications. The systematic review was then reported according to the PRISMA statement for Reporting Systematic Review and Meta-Anaylses.

## Result

The search hair tourniquet syndrome yielded 86 articles. A total of 36 articles were excluded among which 4 articles were foreign language, 1 article was irrelevant and rest were removed as they were involving digits and reported in adults. 50 publications were studied. 22 articles were on females and 28 on males. Among them were two systematic reviews, one reporting boys and girls, other one in girls only. They were not exclusively on genital HTTS. Total of 121 cases were reported in the 50 studies. 28 cases reported in girls and 93 in boys. Among the girls, all the offending fibres were hair strand except for one where a cotton fibre was reported [6]. The offending agent was hair in 107 cases out of 121 cases and it was thread in 13 cases reported in 3 studies [6, 13, 35]. In one report, the offending agent was not mentioned[10]. In a few reported cases, the tourniquet was tied deliberately as a method to stop nocturnal enuresis in boys[13].Among 93 boys, 69 were reported as circumcised [7, 9, 13, 14, 21, 24, 27, 28, 30–33, 35–37, 39, 42] and 3 as non-

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circumcised [12, 41, 50]. The status of circumcision was not mentioned in 20 cases. One was reported following hypospadias repair[26]. The most common age was infancy in boys. The most common site of injury in circumcised boys was coronal sulcus while in uncircumcised boys it varied. The most common injury was urethral transection. Other injuries reported were no injuries[53], lacerations[25], constricting bands[21], non-healing ulcers[13] to near total amputation of glans. Urethrocutaneous fistula was reported in 7 studies [8, 9, 11, 24, 26, 27, 35] and near total amputation of glans in 5[7, 20, 27, 37, 42]. Among the 28 girls, the most common age was near puberty. The most common site reported in girls was clitoris, the other sites included labia majora, Labia minora, mons pubis. One reported labioplasty for recurrent episodes of tourniquet[43] while one reported 3 recurrences within a week[16] and one had reported bilateral labial tourniquet with tissue loss[48]. One reported amputation of clitoris[5]. During the review, interestingly two cases of uvula strangulation and autoamputation was also found but were excluded from this study.

## Discussion

HTTS is a rare and serious disorder and very little knowledge exists about this condition regarding its aetiology, epidemiology or complications. All that is known about this condition is what is gathered from multiple isolated case reports and small case series. To the best of our knowledge this is the first systematic review that focused on pediatric genital HTTS in both boys and girls. There was one systematic review earlier which was on genital HTTS in only girls [54]. The aetiology suspected is different in both boys and girls. In case of boys, Strahlman [55] hypothesised post-partum telogen effluvium as the cause and source of HTTS which typically affects mothers up to 6-8 months post-partum. However, in girls, most of the offending hair was their own pubic hair [38]. Many other factors are suspected like masturbation, child abuse and poor hygiene [54].

The mechanism of injury, however, is same in both boys and girls. The fallen hair gets wrapped around the appendage (penis or clitoris). This leads to edema of the underlying skin and as time progresses, the hair becomes dry and this causes progressive injury to underlying tissues including urethra and corpora [56]. Most of

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the boys presented with pain, swelling and abnormal urinary stream. Among girls, the presenting complaints were redness, itching, vulval swelling, dysuria and abnormal gait.

While performing literature search, we did find two systematic reviews reported. One was systematic review on HTTS in girls only [54] and the another on genital hair tourniquet syndrome in both girls and boys [57]. This study reported 33 published articles among girls and 47 in boys. Their total number was 185 cases among 80 reports studies. However, they included more databases for published reports like Cochrane, Medline, Embase, PubMed, Scopus, Google Scholar and Web of science. They also included cases till 21 years while in our study we searched for reports on PubMed and age was restricted to 18 years.

There are two grading systems for classifying the hair tourniquet injury. They are namely Harouchi et. al system [58] and Bashir et.al system [59]. The former has 4 grades, grade I - superficial skin lesion only to grade IV - the loss of the glans and the latter described 4 grades, grade 0 - constriction of skin without urethral injury to grade III with gangrene, necrosis and complete amputation of the glans. However, both the systems refer to injuries of penis alone.

The management of genital HTTS should include awareness of condition, high index of suspicion, careful examination, removal of offending fibre and repair of any complications. Among boys, the offending thread was removed under anaesthesia in the operation theatre along with repair of urethra injury if any. This was mostly done by a urologist in most of the studies (not mentioned if Pediatric Urologist). While in females, it was the emergency physician who treated them by examination under sedation and removal of offending fibre. Depilating agents were also used in some cases as first line of management after confirmation that offending agent was hair [4]. The advantage was that no anaesthesia was required for this procedure and drawback was using chemicals close to mucous membrane. In about 2/3$^{rd}$ of their cases, they found success following which an algorithm was also mentioned where two attempts were suggested before going for surgical attempt to remove the hair [4]. Reconstructive surgeries were more often required in boys than in girls and single staged repair had good functional and cosmetic outcomes [35].

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## Conclusion

Genital HTTS is a rare condition described in literature. While most of the cases are accidental, they can be preventable with observant parents and by maintaining better local hygiene by trimming of pubic hair. Awareness of this condition among health care providers is very crucial to identify such cases immediately and prompt removal of offending fibre will lead to rapid resolution of symptoms and also prevent surgical repair to treat disastrous consequences. Surgical reconstruction whenever indicated had satisfactory results.

## Ethical Consideration

This study received institutional ethics committee clearance via letter dated 10th March 2026

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## Conflict of interests

There is no conflict of interest



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