Penile hair coil strangulation in a 9-year-old patient: Surgical management and review of the literature

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ABSTRACT

Introduction: Strangulation of the penis is a rare situation that requires urgent treatment for penile decompression. The complications could range from simple edema to severe ones such as urethrocutaneous fistula, complete urethral transection, penile gangrene and penile amputation. This work has been reported in line with the SCARE criteria.

Case presentation: A 9-year-old patient was presented to the emergency service. During examination of the genitals, the glans was hanging to the penis by a very slim pedicle, its coloration was normal and the urethra was almost cut at the sulcus coronarius. The cause of strangulation was multiple hair coils. We performed single stage reparation which consists of refreshing the edges of the urethra and glans, followed by anastomosing the two cut urethral ends, reinforcement by interposing a well vascularized dartos layer was also performed. At the six months follow-up, the penis had a good cosmetic outcome and the glans sensation was present.

Discussion: The penile tourniquet syndrome is one of the major causes of pediatric penile trauma. Ritual circumcision is basically the main cause of the series followed by penile strangulation. Surgical reparation can be performed in one or two stages. It should be performed by a surgeon experienced in hypospadias repair by following the same principles of dissection and applying a second layer coverage for the urethroplasty.

Conclusion: Hair-coil penile strangulation is an uncommon condition. The repair can be realized in one or two stages but it must be performed by a surgeon experienced in hypospadias surgery. Early surgical repair is required to achieve successful results.

1. Introduction

Strangulation of the penis is a rare situation that requires urgent treatment for penile decompression. Entrapment may be acute by metallic objects for example or progressive by hair coil penile strangulation also called penile tourniquet syndrome. This syndrome is usually caused by a hair coil wrapped around the sulcus coronarius of the penis. The complications range from simple edema to severe ones such as urethrocutaneous fistula, complete urethral transection, penile gangrene and penile amputation [1]. It is often observed in circumcised boys in developing countries. The highest number of cases was reported in Morocco and was about 38 cases [2] whereas the second highest number was reported by Badawy H et al. [3].

The tourniquet syndrome can affect many other parts of the body including uvula, fingers, toes, and even clitoris and labia minora. In a meta-analysis comprising 210 cases of hair tourniquet syndrome, 44.2% involved the penis, 40.2% the toes, 8.6% the fingers and 6.8% represented other sites [4].

2. Case presentation

A 9-year-old Tunisian and Muslim patient was presented to the emergency service. The father said that his son had abnormal glans. On examination the patient presented unequal lower limbs which caused a limp while walking, he also presented a growth delay; he was only 112-cm tall.

During the genitals examination, it was noted that the patient was circumcised and the glans was hanging to the penis by a very slim pedicle, its coloration was normal and the urethra was almost cut at the sulcus coronarius. The cause of strangulation was multiple hair coils (Fig. 1).

The patient’s parents have a low socio-economic and cultural level.

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They mentioned having no idea about when the symptoms started. The patient did not want to tell the truth at the beginning then he revealed that his mother used hair coils around his penis after each shower. However, the mother denied the facts.

At the operation room we removed the constrictive hair responsible for strangulation.

We started by refreshing the edges of the glans, the corpora caversosa were intact (Fig. 2). The distal part of the urethra were permeable, an 8Fr Foley catheter was inserted through the urethra of the amputated part and the proximal urethral stump, then we dissected the proximal and the distal parts of the urethra to make a clear exposure (Fig. 3). This was followed by an end-to-end anastomosis of the urethra using 6/0 absorbable Vicryl suture. Reinforcement by interposing a well vascularized dartos layer was also performed. The fascial layer and the skin were sutured with interrupted 5/0 Vicryl sutures (Fig. 4). A dressing was placed around the glans to immobilize the penis. Prophylactic low molecular weight heparins, intravenous gentamicin and cefotaxime were given to the patient for 7 days.

Three days later, a thin eschar was formed around the meatus of the glans, which required debridement and was peeled off 2 weeks later, leaving appropriate glans tissue.

The catheter was removed 2 weeks later.

After 6 months of following up, we noticed that the penis had a good cosmetic outcome, the glans sensation was present, and early morning erection was maintained. The urine stream was normal. A small fistula of the urethra has been noted after six months and has been easily repaired by simple closure using the dartos from the surrounding tissues (Fig. 5).

3. Discussion

Penile tourniquet syndrome is one of the most important causes of pediatric penile trauma. Ritual circumcision is the most important cause in most of the series followed by penile strangulation called also tourniquet syndrome [3]. The hair coil strangulation is the most common cause with 79% of incidences. The rings and bands are used in adults to improve erection in most of the cases and frequently described in the occident, while strangulation by hair is more common in children of mothers with postpartum excessive hair loss (telogen effluvium) [5]. The human hair is caught at the ridge of the coronal sulcus. Afterward, this hair starts to dry up with gradual tightening because of the dryness over the coronal sulcus, causing gradual chronic ischemia which causes a little discomfort to the child. Initially the hair-tie causes edema and glandular deterioration followed by superficial penile injuries, urethral fistula, and even complete urethral transaction as in our case [5,6].

In our case the patient is relatively aged and it is hard to believe that the trauma is purely accidental and not deliberately caused [7]. The role of the mother is highly suspected, hair coils may be used to avoid enuresis or for ritual reasons in some oriental regions. In our case the mother denied that she deliberately caused the penile strangulation. The etiology of this syndrome could be by accident or deliberately caused by the mother, no studies showed the association of the low socio cultural level and this condition but the parents’ low-schooling, poor hygiene care seems to be correlated with a delayed diagnosis [6].

We performed single stage reparation which consists of refreshing the edges of the urethra and glans, followed by anastomosis of the two cut urethral ends after good dissection of the urethra, reinforcement by interposing a well vascularized dartos layer was also performed. Harouchi et al. [2] reported 38 cases of penile hair strangulation syndrome and classified the degree of injury from grade I to grade IV, in most of cases, they were able to do a single-stage repair, except for the severe ones with a glans hanging to the penis by a very slim pedicle, in those cases the glans was re anastomosed to the corpus first and the...
Fig. 2. Removal of the constrictive hair coils responsible for strangulation and refreshing the edges of the glans.
Fig. 3. The proximal and the distal parts of the urethra are dissected after putting a urethral catheter. End-to-end anastomoses were performed later.
urethroplasty performed at a later stage. Badawy et al. [3] reported 4 complications in 25 patients (16%), with one stage repair procedure, 2 little structures and 2 fistulas successfully repaired with no recurrence. Abouzeid et al. [7] adopted the technique of delayed repair in all grades of urethral injury with successful urethroplasty in all cases with no complications.

For El-Bahnasawy et al. [6] a one-stage repair was successfully performed in four cases, while in the others the glans was re-attached in first the step and the urethra was repaired after a delay.

In non severe forms single-stage repair can be easily performed. However, in the case of severe forms the delayed repair may be favored to allow tissues to recover from the pressure ischemic effects after releasing the constricting hair coil [8].

The operations should be performed by surgeons experienced in hypospadias repair, following the same principles of dissection and applying a second layer coverage for the urethroplasty.

4. Conclusion

Hair-coil penile strangulation is an uncommon condition. Unawareness of such condition can lead to progression to serious complications. Parents must be aware about this problem and must seek medical care in the presence of any penile abnormalities. The repair can be performed in one or two stages but it must be achieved by a surgeon with experience in hypospadias surgery. The results are often satisfactory.

Consent

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Author’s contributions

Bouassida K and Ben Ahmed K performed the surgical reparation. Ben Othmen M took care of the patient once hospitalized. Jaidane M supervised and reviewed the manuscript. All authors discussed the results and contributed to the final manuscript.

Declaration of competing interest

The authors declare no competing interests.
Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.amsu.2020.10.020.

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Fig. 5. Penile aspect after 6 months of following up.