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From Trauma to Reconstruction: Insights from Penile Amputation Case Series.

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ABSTRACT

Background: Traumatic penile amputation is a rare but severe urological emergency caused by self-mutilation, accidents, circumcision, or assault. Recent advancements in microvascular techniques have improved the success rate of penile reimplantation, reducing the need for penectomy and minimizing postoperative complications. This study presents a case series on penile amputation management and reviews the latest literature to explore optimal treatment strategies.

Case Presentation: This series includes two cases of pediatric penile trauma. Case 1 involved an 8-year-old with penile strangulation by hair, leading to necrosis and a urethrocutaneous fistula. The patient underwent debridement and reconstruction, with a favorable postoperative outcome. Case 2 described a 10-year-old with AAST Grade V penile amputation during cautery circumcision. The injury was managed through reimplantation and anastomotic urethroplasty, resulting in functional recovery.

Conclusion: Penile amputation significantly impacts both physical and psychological health. This series highlights the importance of microvascular anastomosis as the preferred replantation method for preserving erectile and voiding function. Advanced reconstructive techniques and interdisciplinary care, including mental health support, are essential for improving outcomes in complex cases..

Keywords: *Penile amputation; microvascular anastomosis; penile reconstruction; pediatric trauma; urology..*

INTRODUCTION

Traumatic penile amputation is an uncommon surgical emergency. Because the penis is very mobile, shielded by the thighs and buttocks, and covered in loose skin, penile injuries are relatively rare.1 Self-mutilation, accidents, circumcision, assault, and animal assaults are the primary causes of penile amputation.2

For the treatment of such injuries, microvascular methods have replaced the previously inevitable penectomy with re-implantation.3 Microsurgery has a decreased likelihood of postoperative problems. But as of this now, there isn't an agreement on how to restore penile amputation.4,5 In this research, we reported case series of penile amputation and the management of each cases. We also reviewed the recent literature on the penile amputation.

CASE PRESENTATION

Case 1

An 8-year-old boy was brought to the emergency department presented with a swollen and painful penis for 3 months before entering the hospital. The patient is known to have been circumcised one year ago. At presentation, a lock of hair was visible strangling the patient's penis in the subcoronal region (Figure 1). This strangulation causes necrotic penile tissue and cyanosis. Vital glans penis. Laboratory examination results showed results within normal limits. The patient's chest x-ray showed bilateral pleural effusions. The patient was diagnosed with a urethrocutaneous fistula in the subcoronal region and a history of penile strangulation.

The patient underwent necrotomy debridement and penile reconstruction. Intraoperative findings showed the presence of necrotic tissue in the subcoronal part of the penis at the base of the urethral tissue (Figure 2). The entrapment on the penis was removed, necrotomy debridement, and percutaneous cystostomy. Excision of fibrotic and necrotic tissue around the

strangulation area is carried out followed by penile reconstruction.

Postoperative findings showed the wound was healing well (Figure 3). The patient was also consulted to the psychiatric department regarding the patient's habit of tying the penis with strands of hair and thread.

Case 2

A 10-year-old male patient came with complaints of a cut genital tip 2 hours before entering the hospital. Blood and urine come out of the cut area. The patient was known to be undergoing circumcision with cautery by paramedics. Vital signs and physical examination were normal. Examination of the pubic area revealed a total amputum on the glans penis with active bleeding. Laboratory examination showed a slight increase in leukocyte levels. The patient was diagnosed with AAST grade V iatrogenic penile trauma with a history of circumcision.

The patient underwent necrotomy debridement and anastomotic urethroplasty (**Figure 4**). The wound is closed systematically from the corpus cavernosum of the penis to the skin. Penile reimplantation is performed by a plastic surgeon. Necrotic debridement was carried out until bleeding was found. Skeletonization of the dorsal artery of the penis was carried out and then anastomosed from the dorsal artery of the penis with prolene 10.0. the corpus cavernosum is connected with vicryl 6.0, the tunica dartos and the skin is sutured layer by layer (**Figure 5**).

Department cases overview

In addition to the two cases detailed in this report, the Urology Department also managed eight other cases of penile amputation over the past year, reflecting the diversity and complexity of penile trauma cases (**Table 1**). These cases highlight the wide age range of patients and the varying causes of penile amputation, from self-inflicted injuries and iatrogenic complications to underlying psychiatric and anatomical issues.

Table 1. Penile Amputation Cases in Urologic Department

Case Number	Age	History	Operation action
1	2 months old	Traumatic penile amputation ec iatrogenic post circumcision	Cecil-clup procedure
2	9 years old	Penile amputation injury after composited graft POD 0	Necrotomy debridement + microsurgery urethra anastomosis
3	44 years old	Delayed untreated schizophrenia	Necrotomy debridement + defect closure
4	9 years old	LUTS ec meatal stenosis in post partial penile amputation ec traumatic circumcision iatrogenic patients	Meatotomy meatoplasty
5	8 years old	Traumatic penile amputation iatrogenic ec circumcision + confirmed case Covid-19 mild case	Penile reconstruction
6	6 years old	Traumatic penile AAST grade V ec circumcision	Percutaneous cystostomy + Necrotomy debridement + Penile reimplantation preparation
7	70 years old	Traumatic partial amputation ec Penile strangulation + LUTS ec suspected BPH TAUS volume 38 cc + Alzheimer + Behavior and Psychological Symptom of Dementia	Partial penectomy

8	2 years old	Penile necrosis in post circumcision patients + History of circumcision	Necrotomy debridement + Cecil-clup procedure stage 1

DISCUSSION

Penile amputation is a rare urological emergency. It is uncommon due to the location and movement of the testicles.[6] Penile amputation may be self-inflicted, unintentional, or iatrogenic—for example, from excessive electrocautery used during circumcision.[2] The majority of documented instances of self-mutilation are caused by underlying mental illness or severe substance-induced psychosis.[7,8] In this case series, the most common causes of penile amputation are self-inflicted and iatrogenic during circumcision. The functional and psychological well-being of the patient is significantly impacted by the condition of penile amputation. Penile amputation cases involve damage to the urethra that interferes with the urination process.[9]

Emergency resuscitation and stabilisation with sufficient fluid resuscitation and blood transfusions are the first line of therapy for penile amputation. A Penrose drain wound around the penile stump can help limit bleeding, and if there isn't a stump, a pressure dressing might work just fine. Broad-spectrum antibiotics should be used to treat potentially infected wounds and saltwater should be liberally used as an irrigation.[6,10]

According to the American Association for the Surgery of Trauma (AAST), penectomy is associated with Grade V penile injuries.[11] The mechanism of trauma, amputation site, length of trauma, distal stump availability, and surgical skill all affect the final care of penile amputation. Replantation is the major treatment, and the goals are to maintain erectile and voiding functions as well as penile length, regardless of the method used. The degree of amputation, the kind and degree of damage (incision vs crush injury), the duration of ischaemia, and the microsurgeon's skill are all factors that affect the success of penile replantation.[5,12]

The recommended technique for penile replantation is microvascular anastomosis.[13] However, at the risk of a higher failure rate and epidermal necrosis, macrovascular or corporal reattachment procedures may be used in the absence of this knowledge. When the stump is insufficient, there are a number of methods for reconstructing the penis. These methods mostly entail the microvascular transfer of myocutaneous flaps, including the extended pedicle island groin flap, latissimus dorsi flap, fibular flap, and radial forearm flap. The reimplantation process carried out at the center is microvascular anastomosis as recommended. Erectile function has been demonstrated to recover as a consequence of corpora repair using both microsurgical and nonmicrosurgical approaches.[14] However, the assessment of the erectile function was difficult. This was one of the limitation of this study along with the lack of long term follow up.

CONCLUSION

Penile amputation, though rare, profoundly impacts patients' functional and psychological well-being. This case series highlights self-inflicted and iatrogenic circumcision-related injuries as the primary causes. Microvascular anastomosis remains the gold standard for replantation, aiming to preserve erectile and voiding functions. However, advanced reconstructive techniques are essential for complex cases. Interdisciplinary approaches addressing underlying mental health and long-term rehabilitation can enhance patient outcomes.

Figure Legends

Figure 1. Physical Finding of The Penile (Case 1)

Figure 2. Intraoperative Finding of Penile Strangulation (Case 1)

Figure 3. Post Operative Finding After Penile Reconstruction (Case 1)

Figure 4. Intraoperative Finding of Penile Amputation (Case 2)

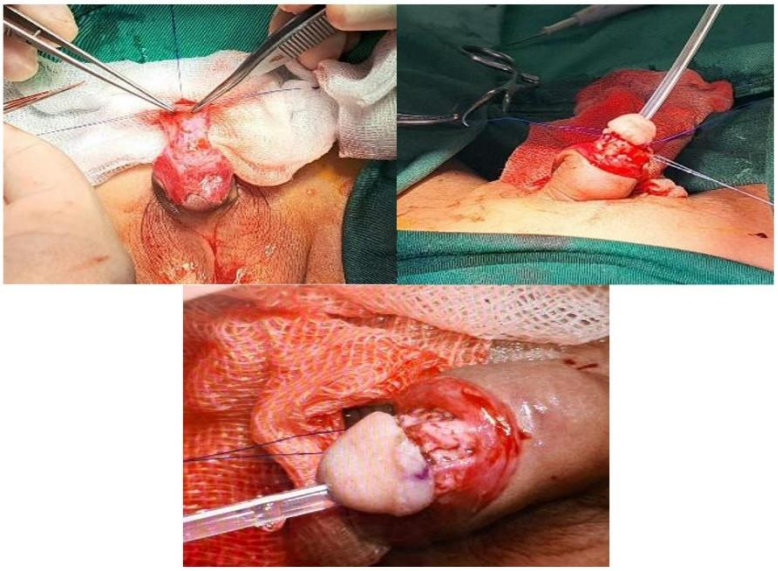

Figure 5. Post Operative Finding after Penile Reimplantation (Case 2)

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