

Traumatic Penile Injuries in Children: An Experience

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Abstract

Background: Penile injuries are not uncommon in children and may be underreported. The aim of this study was to evaluate our experience with penile trauma in children in a retrospectively evaluated series.

Materials and Methods: This was a retrospective study of children aged 15 years and below who were managed for traumatic penile injuries between January 2015 and December 2019 at the pediatric surgery unit of Enugu State University Teaching Hospital (ESUTH) Enugu, Nigeria. Both acute and chronic traumatic penile injuries were considered. Diagnosis of traumatic penile injury was made based on clinical and imaging findings.

Results: A total of 104 cases of traumatic penile injuries were seen during the study period. The mean age of the patients was 4 months. Urethrocutaneous fistula from male circumcision was the most common traumatic penile injury. Repair of urethrocutaneous fistula and recurrent urethrocutaneous fistula were the most performed surgical procedure and most post-operative complication respectively. Majority of the patients achieved good cosmetic and functional outcome.

Conclusion: Traumatic penile injuries in children occur infrequently but could be a significant cause of penile disfigurement and morbidity. Urethrocutaneous fistula and bleeding problems from male circumcision are the most common traumatic penile injuries. Traumatic penile injuries can be minimized by better training and good practice.

Keywords

Children; Circumcision; Penile injury; Urethrocutaneous; Fistula

Introduction

Penile injuries are not uncommon in children and are probably an underreported urological emergency [1]. Penile injuries are associated physical and emotional distress to the patients and their parents [2]. Different etiologies are involved in penile injuries and they range from minor to severe injuries and can have serious functional and psychological consequences [3]. Penile injuries in children can be due to a number of causes which may include road traffic accidents, iatrogenic injuries (circumcision), animal bites, electrocution, zipper injuries and strangulation by objects [4]. Based on the mechanism of injury, traumatic penile injuries can be classified into accidental or self-inflicted injury. Based on the anatomic site, it can be classified into penis versus penis plus scrotum or perineum [5]. Accidental penile injuries include circumcision injuries and animal bites while self-inflicted injuries are seen in psychiatric patients who may insert foreign bodies in or around the penis [6]. Penile injury in a child can be a cause of anguish for both the patient and the caregivers [7]. Most series on pediatric penile injury were based on small number of patients and due to the rarity of pediatric penile injury; there is no universal therapeutic strategy for their management [8]. The principle of management in penile trauma is to reconstruct a penis of good conformation and to restore function [5]. Management of penile injuries can be urgent, emergent or deferred to a later date. The aim of this study was to evaluate our experience with penile trauma in children in a retrospectively evaluated series.

Materials and Methods

This was a retrospective study of children aged 15 years and below who were managed for traumatic penile injuries between January 2015 and December 2019 at the pediatric surgery unit of Enugu State University Teaching Hospital (ESUTH) Enugu, Nigeria. Both acute and chronic traumatic penile injuries were considered. Patients who have had surgery for traumatic penile injuries at a peripheral hospital before referral to ESUTH for reoperation were included in the study. Children with associated injuries to other parts of the external genitalia were excluded. Patients who are older than 15 years of age were also excluded from the study. ESUTH is a tertiary hospital located in Enugu, South East Nigeria. The hospital serves the whole of Enugu State, which according to the 2016 estimates of the National Population Commission and Nigerian National Bureau of Statistics, has a population of about 4 million people and a population density of 616.0/km². The hospital also receives referrals from its neighboring states. Information was extracted from the case notes, operation notes, and operation register and admission-discharge records. The information extracted included the age of the patient, presenting symptoms, duration of symptoms before presentation, time interval between presentation and intervention, clinical diagnosis, operative procedure performed, complications of treatment, duration of hospital stay and outcome of treatment. Diagnosis of traumatic penile injury was made based on clinical and imaging findings. The follow-up period was 12 months. Ethical approval was obtained from the ethics and research committee of ESUTH. Informed consent was not obtained from the patients' caregivers because of the retrospective nature of the study and the identities of the patients were not revealed. Statistical Package for Social Science (SPSS) version 21 (manufactured by IBM Corporation Chicago Illinois) was used for data entry and analysis. Data were expressed as percentages, mean, median and range.

Results

Patients demographics

A total of 104 cases of traumatic penile injuries were seen during the study period. All the patients were males. Details of the patients' demographics are depicted in (Table 1).

Parameter	Value
Mean age of the patients	4 months (1 week -6 years)
Mean interval between penile injury and presentation	3 days (1-180)
Median interval between presentation and intervention	10 days (1-200)
Duration of hospital stay	7 days (2-14)

Table 1: Patients' characteristics.

Presenting symptoms and clinical diagnosis of the patients

The presentations of the children with penile injuries vary from acute to chronic presentation. (Table 2) shows the presentation of the patients.

Presentation	Diagnosis	Number of patients (%)
Leaking urine from the under surface	UCF	37 (35.6)
Excessive bleeding following circumcision	Bleeding disorders	33 (31.6)
Severed part of the penis	Penile/glans amputation	24 (23.1)
Rubber band around the penis	Penile strangulation	6 (5.8)
Insertion of FB into the urethral meatus	FB insertion	2 (1.9)
Burn wounds to the penis	Diathermy injuries	1 (1)
Damaged penile part	Partial penile amputation	1 (1)

UCF=Urethrocutaneous fistula; FB=Foreign body

Table 2: Clinical presentations (n=104).

Operative procedure performed

The operative procedure depended on the nature of the penile trauma. Urethrocutaneous fistula was repaired by urethroplasty, hemorrhage needed application of pressure with or without ligation of bleeding vessels and penile amputation was repaired meatoplasty and glanuloplasty. Injuries caused by foreign bodies entailed removal of the foreign body and appropriate repair.

Complications of treatment

Following repair of the urethrocutaneous fistula, 15 (14.4%) patients had recurrence, narrowed (stricture) urethra was observed in 5 (4.8%) patients and surgical site infection occurred in 4 (3.8%) children.

Treatment Outcome

Eighty-two (78.8%) patients achieved good cosmetic and functional outcome. However, 19 (18.3%) patients required repeat surgeries to achieve acceptable results. Two (1.9%) patients expired; one patient each due to anesthetic accident and overwhelming sepsis. One (1%) signed out against medical advice.

Discussion

Penile injuries are urological emergencies that require immediate attention [9]. Penile injuries in children are not uncommon and have different etiology from those of adults. Penile injuries from circumcision predominate. Penile fractures and penetration injuries are rare in children [7, 8]. The incidence of penile injuries may be under-reported because many parents do not seek medical help for their children due to psychological reasons [10]. Historically, amputated penis can be salvaged by replantation. The first macroscopic penile replantation was reported by Ehrlich in 1929 [11]. In 1877, first microscopic penile replantation was reported [12].

In the present study, the mean age of the patients was 4 months. This finding is in contrast to the findings of Saiad et al [13]. The difference in the mean age of the patients may be explained by the age group of the patients recruited and the nature of the penile injury. For example, foreign body insertion is more likely to be seen in older children. There was delayed presentation of the patients to the hospital in the current study. This is evident on the mean interval between the injury and presentation to the hospital. The delayed presentation may be the reason there was no penile reimplantation performed in the current series because the amputated penis were nonviable. The nature of the injury may determine the time of presentation. For instance, children with bleeding from circumcision are more likely to present earlier than children with urethrocutaneous fistula. The time interval between presentation and treatment vary widely. Bleeding required immediate intervention whereas in urethrocutaneous fistula, time was required for scar tissue maturation before repair of the urethrocutaneous fistula was carried out. The duration of hospitalization of the patients is related to the nature, severity of the injury and the post-operative course.

Urethrocutaneous fistula was the most common traumatic penile injury in the current series. Other series also reported urethrocutaneous fistula as a frequent traumatic penile injury [8,13]. However, Oranusiet al reported genital mutilation as the most common penile injury [1]. The age range of the patients recruited into a particular study may determine the predominant penile injury. For instance, a study involving neonates will most likely report complications of circumcision as the most common penile injuries whereas older children will have other forms of penile injuries. Urethrocutaneous fistula is a common complication following circumcision especially when the circumcision is performed by poorly trained personnel [14]. Bleeding following circumcision usually result from the frenular artery or from the cut skin edges [15]. One study from United States of America reported bleeding as one of the most common complications of circumcision [15]. Control of bleeding following circumcision may be by pressure application, use of local hemostatic agents or ligation of the bleeding vessel without causing injury to the urethra. Patients with persistent bleeding need hematologic work up for coagulopathies.

Penile/glans amputation is a rare penile injury. Amputation can be a complication of circumcision or can be self-inflicted in patients with psychiatric disorders [16]. Sow et al reported a case of accidental penile amputation following an attempt at circumcision [17]. Foreign body can be inserted or placed around the penis. In the present study, we had cases of some children who inserted rubber bands around their penis while playing with rubber bands. The penises were viable but edematous and discolored. Penile strangulation is a disease which causes circulatory failure in the distal part of the penis by the penis strangulated by foreign objects [18]. Sasaki et al reported a case of gangrene of the penis due to strangulation by a rubber band [19]. Foreign body insertion into the penis by children is a very rare incident. Muraveji and Sherzad documented a case of self-inserted foreign body in an adolescent boy [20]. It is believed that psychiatric and mental defects are responsible for these abnormal behaviors. Use of electrocautery (diathermy) during circumcision/penile surgery can result in diathermy burns. And in extreme of cases, electrocautery can result to glans necrosis [21].

The predominant operative procedure performed was dependent on the most common penile injuries. For instance, repair/urethroplasty for urethrocutaneous fistula was the most performed procedure in the present study. However, one study from Nnewi, southeastern Nigeria reported penile refashioning as the most common procedure in patients with penile injury [1]. Recurrent urethrocutaneous fistula was the most common post-operative complication in the index study. The high number of urethrocutaneous fistulae repaired and poor vascularity of the tissues from scarring may explain the high complication rate.

Overall, the outcome of treatment is good. Cosmetic outcome was assessed by the appearance of the penis following repair. The cosmetic outcome assessed the following parameters: Shape of the glans penis, state of penile skin, position of the meatus and shape of the meatus. The functional outcome was evaluated by assessing the urinary stream.

Conclusion

Traumatic penile injuries in children may be infrequently but could be a significant cause of penile disfigurement and morbidity. Urethrocutaneous fistula and bleeding problems from malcircumcision are the most common traumatic penile injuries. Penile injuries from self-mutilation may be common in children with mental challenges. Traumatic penile injuries resulting from circumcision can be minimized by better training and good practice.

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