# Diagnosis and Treatment of Penile Injuries at Tertiary Care Centre in Lalitpur, Nepal

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Injuries of the penis are uncommon but represent urological emergencies and most of the penile injuries require immediate urological treatment. The most important objective during its management is preserving genital functions and cosmesis, while minimizing long-term sequelae. The current study aimed to assess patients with penile injuries seeking treatment at the tertiary care center in Lalitpur, Nepal. An analytical cross-sectional study using a purposive sampling technique was conducted among patients who had penile injuries and were seeking treatment in the department of Urology of B&B Hospital, Lalitpur, Nepal. The interview was conducted using a self-constructed structured questionnaire. The total number of patients who visited with penile injuries was 33, and among them, only penile injuries without urethral injuries were included in this study. Among the 33 cases, around half were in grade I of the AAST grade of penile injuries and followed by grade II. The different causes of penile injuries were trauma, penile fracture, infection, burn, and bite. Among these, trauma was found to be the most common cause. The different methods of management of penile injuries were conservative management, immediate surgical exploration and repair, primary suturing, foley catheterization, foley catheterization and split thickness skin graft, and split thickness skin graft. Most of the study population didn't have pain interfere with normal work after the injury.

**Keywords:** diagnosis, management, penile injury.

Penis is a sensitive organ, and a minor injury or discomfort may lead the patient to seek emergency evaluation. Penile injury (PI) if left untreated, can cause ischemia and necrosis of the penis: ischemic priapism, paraphimosis, and entrapment injury and so it should be considered an emergency until proven otherwise.[1] Trauma to the penis is not common because of the location and mobility of the penis and scrotum. However, trauma may be associated with significant morbidities.[2,3] The different causes of penile injury are iatrogenic injury, motor vehicle accidents, child abuse, animal bites, gunshot wounds, and self-mutilation.[4]

The anatomy of penis consists of three cylindrical structures of erectile tissue: two dorsal corpora cavernosa and the ventral corpus spongiosum containing the penile urethra. A tough, nondistensible fibrous capsule, the tunica albuginea, invests the corpora cavernosa, with a much thinner layer covering the corpus spongiosum. The arterial supply to the penis is by internal pudenal artery, which divides into dorsal penile artery (supplying the glans penis), cavernosal artery (supplying the corpora cavernosa) and bulbar artery (supplying the bulb and the corpus spongiosum).[5]

In a penile injury, the patient may have trauma associated with urethral rupture or without urethral rupture. Albuginea rupture is associated with urethral injury in around 15% of cases.[6] In penile injury, penile skin, erectile tissues, and the urethra can all be affected, and its severity can range from minor injuries to severe cases, and also cause complete emasculation. The complete history and clinical examination are sufficient to make the diagnosis in most cases; however, further imaging tests may be required in suspected penile fractures or urethral injuries.[7] Different factors may affect treatment outcomes. Thus, it is important to individualize treatment using standard techniques that target time-sensitive repairs and salvage viable tissues as much as possible, seeking to maintain the penis typical anatomical, cosmetic, and functional characteristics.[8]

Depending on the etiology of penile injury, the severity, and the consultation delay, the management can be urgent or deferred later.[9] The proper assessment, early management, and timely referral to a urologist are critical in minimizing morbidity from these injuries. Likewise, in most cases, aggressive diagnosis is more important than aggressive treatment.[10]

The aim of our study is to assess patients with penile injuries seeking treatment from the tertiary care centre, Lalitpur, Nepal.

## Materials & Methods

This is an analytical cross-sectional study using a non-probability purposive sampling technique. The study was conducted among all the patients who had penile injuries and were seeking treatment in the department of Urology of B&B hospital, Lalitpur, Nepal.

Penile injuries with urethral injuries were excluded from the study. The study participants included patients of all age groups. Patients who were not willing or not in a position to give information due to any reason were excluded. The study period was one year from July 2021 to June 2022. The total number of eligible patients was 33. Grading of injury was done using the American Association for the Surgery of Trauma (AAST)-Organ Injury Scale of penile injury. Ethical approval was obtained from the Institutional Review Committee (IRC) of B&B Hospital. Study participants were informed about the purpose of the study, and consent was obtained. The interview was conducted using a self-constructed structured questionnaire. The collected data were entered in a Microsoft Excel sheet, and statistical analysis was carried out using SPSS 16. Frequencies and percentages of AASR grading, mode of injuries, management of the cases, erectile dysfunction, and the interference of pain were measured. Significant PI was defined as an injury that involved disruption and/or extensive damage of skin, tunica, urethra, or loss of part of penile tissue that may compromise penile structure and function. All the patients were assessed before surgery (physical examination, erectile function tests, color Doppler ultrasonography, uroflowmetry, urethrography, MRI) to obtain an exact diagnosis where possible. The site, type, and extent of injury were precisely identified during surgery in most patients.

**Results**

A total of 33 patients visited for the treatment during the study period.

| Grade | Frequency (n) | Percentage (%) |
|---|---|---|
| Grade I | 16 | 48.5 |
| Grade II | 14 | 42.4 |
| Grade III | 2 | 6.1 |
| Grade IV | 1 | 3.0 |
| Total | 33 | 100 |

*Table 1: American Association for the Surgery of Trauma (AAST) grade of penile injuries*

As shown in **Table 1**, around half of the study population was in grade I of the AAST grade of penile injuries, and only 1 patient was in grade IV.

| Injuries | Frequency (n) | Percentage (%) |
|---|---|---|
| Bite | 1 | 3.0 |
| Burn | 4 | 12.1 |
| Infection | 5 | 15.2 |
| Penile fracture | 5 | 15.2 |
| Trauma | 18 | 54.5 |
| Total | 33 | 100 |

*Table 2: Modes of penile injuries*

**Table 2** shows different causes of penile injuries. Trauma 18 (54.5%) was the most common cause, followed by penile fracture, infection, burn, and bite (Table 2). The

clinical pictures of the penile injuries are shown in **Figures 1, 2, and 3**. **Figure 1** illustrates a blunt penile injury with secondary infection of the penile shaft in a 32-year-old. It was managed with serial debridement, with a rotation flap done after 1 week. **Figure 2** shows the penile fracture with "eggplant" deformity in a 29-year-old. The subcoronal penile laceration following RTA was seen 21-year-old, managed with primary closure shown in **Figure 3**.

| Management methods | Frequency (n) | Percentage (%) |
|---|---|---|
| Conservative | 20 | 60.6 |
| Foley catheterization | 1 | 3.0 |
| Foley catheterization and split thickness skin graft | 1 | 3.0 |
| Immediate surgical exploration and repair | 5 | 15.2 |
| Primary suturing | 5 | 15.2 |
| Split-thickness skin graft | 1 | 3.0 |
| Total | 33 | 100 |

*Table 3: Management of cases*

As shown in **Table 3**, most of the cases 20, 60.6%) underwent conservative management, followed by immediate surgical exploration and repair, primary suturing, foley catheterization, foley catheterization and split thickness skin graft, and split thickness skin graft.

| Erectile dysfunction | Frequency (n) | Percentage (%) |
|---|---|---|
| Yes | 2 | 6.1 |
| No | 31 | 93.9 |
| Total | 33 | 100 |

*Table 4: Erectile dysfunction post penile injury*

**Table 4** shows, 2 (6.1%) of the study population had erectile dysfunction after the injury, whereas 31 (93.9%) didn't have erectile dysfunction.

| Pain interferes | Frequency | Percentage |
|---|---|---|
| Not at all | 25 | 75.8 |
| A little bit | 7 | 21.2 |
| Extremely | 1 | 3.0 |
| Total | 33 | 100 |

*Table 5: Pain interferes with doing normal work in the past 1 month among the study population*

As shown in **Table 5**, most of the study population didn't have pain interfere with normal work after the injury, whereas 1(3%) had extreme pain interfere.

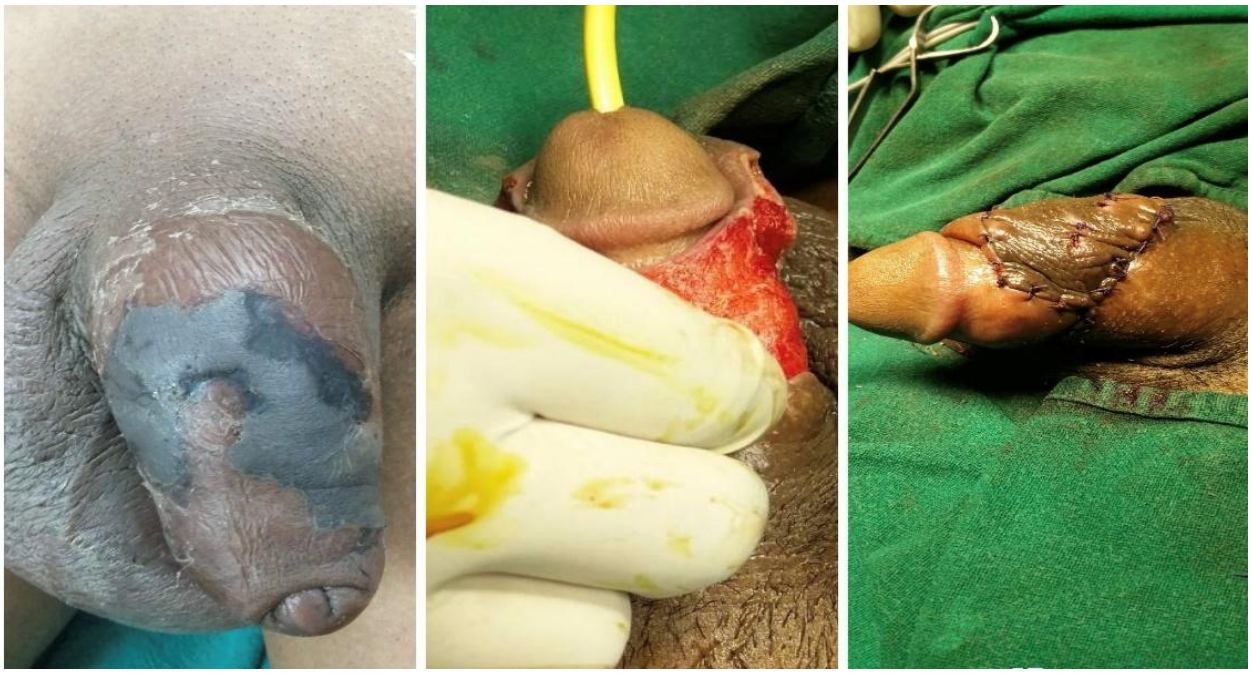

*Figure 1: Blunt penile injury with secondary infection of penile shaft in 32-year-old. Serial debridement was done. After 1-week rotational flap was done.*

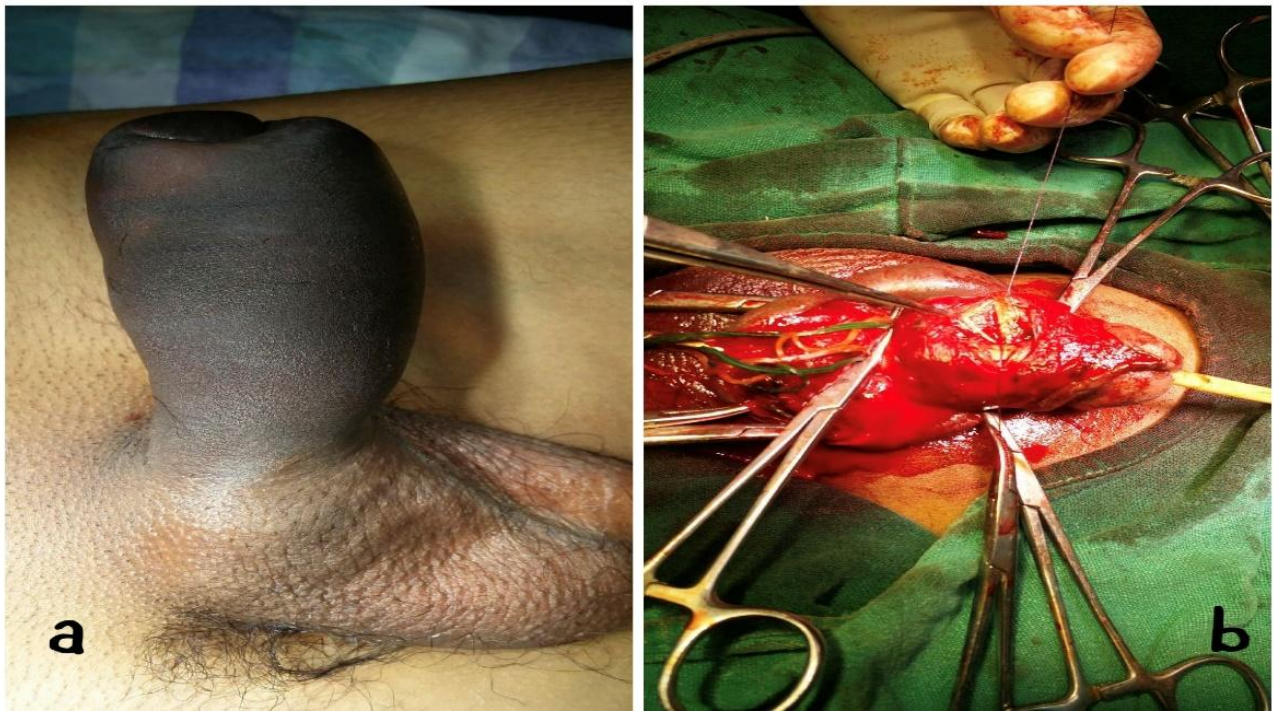


*Figure 2: Penile fracture with "eggplant" deformity in 29-year-old*

*Figure 3: Subcoronal penile laceration following RTA in 21-year-old. Primary closure was done*

## Discussion

The study conducted by Panella et al, showed that among 20 men visiting the emergency department with penile injury, 16 cases were related to sexual intercourse, 3 cases to masturbation, and 1 case due to injury caused by the partner.[11] Similarly in other study conducted by Oranusi CK et al, showed that among 23 cases of penile injures 3 (13%) were of post circumcision, 6 (26.1%) genital mutilation (self-inflicted injury/attacks by assailants), 4 (17.4%) accident, 8 (34.8%) penile fracture, and 2 (8.6%) gunshot injury.[7] In this study, among 33 patients, the different reasons for the penile injuries were trauma, 18 (54.5%), penile fracture, 5 (15.2%), infection, 5 (15.2%), burn, 4 (12.1%), and bite, 1 (3%). In the study conducted by Mohr AM et al, the AAST of 52 penile injuries showed maximum (18 patients) were in grade IV and none in grade V.[12] Similar study conducted by Persec Z et al, showed 14 (54.5%) patients were of AAST grade I, 6 (27.4%) AAST grade II, and 2 (9.1%) AAST grade III. Whereas in this study, 16 (48.5%) penile injuries, which is the maximum, were in grade I, and none of the cases were in grade V.[13]

In a study conducted by Reddy SVK et al for the penile fracture, they conducted immediate repair, delayed repair, and conservative management. For the penile amputation, they conducted re-implantation of the penile stump with a microsurgical technique, refashioning of the stump, and for the penile soft tissue injuries, they did primary suturing of degloving injury, wound exploration, and suturing of dog bite and foreskin removal by cutting the sliding piece of a zipper.[13] In the present study, the different management conducted for penile injuries were conservative, immediate surgical exploration and repair, primary suturing, foley catheterization, foley catheterization and split thickness skin graft and split thickness skin graft.

In the present study, 2 (6.1%) of the study population had erectile dysfunction after the injury, whereas 31(93.9%) didn't have erectile dysfunction, and most of the study population didn't have pain interfering with normal work after the injury.

In the study conducted by Persec Z et al, showed that among 22 patients with penile injures in time of 3 months, mild to moderate erectile dysfunction was found in

five (22.7%), mild erectile dysfunction in six (27.3%), and no erectile dysfunction in 11 (50%) patients. At 12 months, mild erectile dysfunction was found in one (4.5%) patient, whereas all other patients (95.5%) were free from erectile dysfunction. At 12-month follow-up, IIEF-5 showed a statistically significantly higher mean value (3.286) when compared with the mean IIEF-5 at 3-month follow-up (P <0.001), confirming significant improvement of erectile function at 12 months of the injury.[13] In conclusion, the study showed that most of the penile injuries were of grade I of the AAST grade of penile injuries and followed by grade II. It showed that the most common cause of penile injuries was trauma, and other causes were penile fracture, infection, burn, and bite. The study showed that the different methods of management of the penile injuries were conservative management, immediate surgical exploration and repair, primary suturing, foley catheterization, foley catheterization and split thickness skin graft and split thickness skin graft.

**Conflict of interest**: None

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