International Surgery Journal
Sarker AK et al. Int Surg J. 2021 May;8(5):1413-1417
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20211803

Original Research Article

Management of penile emergencies- one year observation

Ashok Kumar Sarker[1]*, Tarafdar Habibullah Babu[1], Abul Bashar Shahriar Ahmed[2]

[1]Department of Surgery, [2]Department of Urology, Enam Medical College and Hospital, Savar, Dhaka, Bangladesh

Received: 31 October 2020
Revised: 20 February 2021
Accepted: 22 February 2021

***Correspondence:**
Dr. Ashok Kumar Sarker,
E-mail: publications971@gmail.com

ABSTRACT

Background: Penis is a very sensitive organ and even minor injury or discomfort may cause a patient to seek emergency evaluation. Penile emergencies and their management often rely on the results of imaging examinations. But most of the time the traumatic emergencies require urgent exploration to ensure a fair outcome. Objective was to present different types of penile emergencies and to determine the overall outcome of their managements.
Methods: It was an observational study conducted at surgery department of Enam Medical College and Hospital, for one year. All patients with penile emergencies were included by selective sampling technique. The main outcome variables were type of penile emergencies, etiology of trauma, grading of trauma, types of surgical intervention, postoperative erectile function. Data processing and analysis were done using SPSS v (23). Statistical significance was determined by Students t test for quantitative data.
Results: Total 33 patients admitted with emergencies. 18 (54.5%) belonged to traumatic category, 10 (30%) belonged to infective and one patient (3%) belonged to vascular (ischemic priapism) and others consist of 4 (12%). 40% of trauma was of grade III variety. Seven were victim of sharp cut injury. One who presented with ischemic priapism after 3 days underwent emergency distal shunt procedure with an acceptable functional penis post operatively. Timing of surgical intervention was compared with erectile function on the basis of International Index of Erectile Function (IIEF). A p value <0.05 was considered to be significant.
Conclusions: Penile emergencies require prompt, accurate diagnosis. Early surgical intervention can save the organ.

Keywords: International index of erectile function, Penile injuries, Priapism

INTRODUCTION

The human penis is an external male intromittent organ that additionally serves as the urinal duct. The main parts are the root (radix); the body (corpus); and the epithelium of the penis including the shaft skin and the foreskin (prepuce) covering the glans penis. The penile shaft is composed of 3 erectile columns, the 2 corpora cavernosa and the corpus spongiosum, as well as the columns' enveloping fascial layers, nerves, lymphatics, and blood vessels, all covered by skin (see the following images). The 2 suspensory ligaments, composed of primarily elastic fibers, support the penis at its base (Figure 1).

As organ of central importance to both urologic and reproductive systems, penile emergency have the potential to lead to significant morbidity for the patients. Although there is generally considered to be a defined set of pathologies affecting the penis in the acute setting, recognition and prompt diagnosis of these conditions often can be challenging for clinicians. Emergency practitioners must be most concerned with the entities that, if left untreated, can result in ischemia and necrosis of the penis. Any penile trauma should be considered an emergency until proven otherwise. The flaccid, pendulous penis is very capable of absorbing significant amounts of kinetic energy. However, the fixed portion of the genitalia and the erect penis are different situations. The penile and urethral anatomies lie in close relationship

to the pubic rami and are vulnerable to blunt trauma. The incidence of penile injuries is underreported because many patients do not seek medical attention due to ethical and psychological reasons.[1] The erect penis is more prone to injury because pressures within the rigid penis rise exponentially with bending.[2] The 2007 National Inpatient Sample (NIS) reported that a total of 1,043 men were admitted for treatment of a penile fracture.[3] Penile fracture is an uncommon urological trauma; there were 1331 cases reported between 1935 and 2001. It is defined as a rupture of the tunica albuginea due to trauma or abrupt lateral bending of the penis in an erect state. Forceful sexual intercourse is the most common cause of penile fractures; masturbation is also a reported cause. Other rare lesions could occur during a nocturnal erection and due to a partial rollover.[4] Penile amputation is also uncommon in the general population and more common in patients with psychiatric problems. This amputation involves the complete or partial transaction of the penis. In complete transaction both corpora cavernosa and the urethra are involved. Most male genitalia injuries in civilians are due to foreign bodies which are self-inserted through the urethra because of psychiatric illness, sexual curiosity or sexual practice while intoxicated.[5] According to the American Association for the surgery of Trauma. Organ injury scale of penile injury, grade I- cutaneous laceration/contusion, grade II- Buck's fascia (cavernosum) laceration without tissue loss, grade III- cutaneous avulsion/laceration through glans/meatus/ cavernosal or urethral defect<2 cm, grade IV- partial penectomy/cavernosal or urethral defect≥2 cm, grade V- total penectomy. Penile soft tissue injury can result through multiple mechanisms, including burns, human bites to the penis, animal bites and degloving injuries that involve machinery.[6] The corpora, by definition, are not involved. In children, the most common soft tissue injury is zipper injury in uncircumcised young boys who zip up their pants too quickly and entrap their foreskin in the zipper.[7,8] Priapism is a pathological and often painful prolonged penile erection, unassociated with or persisting beyond sexual stimulation. It is classified as one of two types of low-flow (ischemic) or high-flow (arterial or non-ischemic). Low- and high-flow priapism differs in clinical and biochemical resulting in rigidity, whereas high-flow priapism usually manifests as a painless prolonged erection after an incomplete trauma. On Doppler ultrasound, low-flow priapism may show high resistance to or even the absence of flow in the cavernosal arteries. In such cases, the goal of therapy is to reverse the ischemic insult quickly, and the first-line options are administration of phenylephrine and direct corporal aspiration. In high-flow priapism, Doppler may show high blood flow with a pattern of low resistance in the cavernosal arteries, pseudoaneurysm, or an arteriocavernosal fistula.[9-11] Penile infections can be divided into superficial and deep infections. Superficial infections are the most common and are restricted to the glans and prepuce (balanitis and balanoposthitis, respectively). Such infections are often related to poor personal hygiene or are sexually transmitted; they are managed clinically, and imaging evaluation is unnecessary.[12] A deep penile infection, also known as Fournier's gangrene, constitutes a urological emergency, typically presenting as rapidly progressing, life-threatening necrotizing fasciitis of the perineal, perianal, and genital regions, including the penis.

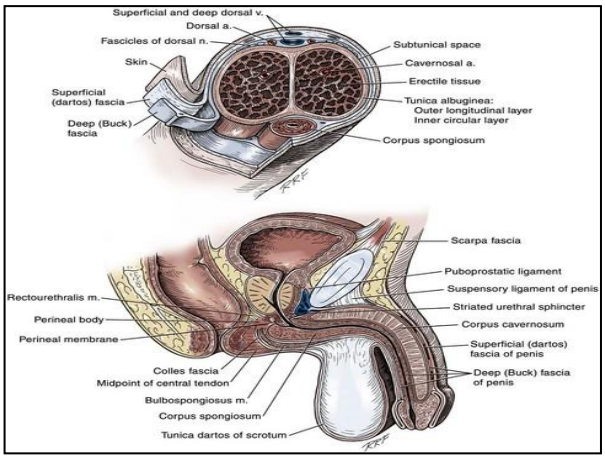

Figure 1: Sectional view of penile anatomy.

METHODS

The study was conducted at Enam Medical College Hospital, Savar, and Dhaka over a period of one year between April 2018 and April 2019. The study Population of this study was all male patients with penile emergency. It was a prospective observational study. Cases of isolated acute scrotal or inguino-scrotal problems were excluded from the study. The variables were age distribution, type of penile emergencies, etiology of penile trauma, grading of penile trauma, type of surgical intervention, timing of surgical intervention, delayed postoperative outcome (erectile function). Follow up was done at 3 months postoperatively to assess the degree of erectile dysfunction by International Index of Erectile Function (5-point version) (IIEF-5). A score of 20 or higher indicates a normal degree of erectile functioning. Low score (10 or less) indicates moderate to severe ED. Data collection method was structured interview with the sample unit by filling up the structured form which was done by the investigator (with informed consent from each sample). The results were presented in tables and figure after being edited and analyzed by SPSS software version 23. Timing of all surgical intervention (independent variable) was compared with postoperative erectile function (outcome variable) on the basis of International Index of Erectile Function (IIEF). Statistical significance was determined by Students t test. A p value<0.05 was considered to be statistically significant.

Inclusion criteria

The sampling technique was purposive sampling. The patients presenting with emergency penile conditions

(traumatic and non-traumatic) were included in this study.

Exclusion criteria

It was a prospective observational study. Cases of isolated acute scrotal or inguino-scrotal problems were excluded from the study.

RESULTS

There were a total of 33 patients with penile emergencies during the period under review. All were male patients. The peak incidence occurred within age group 25-40 (60.60%) (Table 1).

Table 1: Distribution of age group (n=33).

Age group (years)	N=33	Percentage
10 years to 25 years	6	18.18
26 years to 40 years	20	60.60
41 years to 55 years	4	12.12
56 years to 70 years	3	9.09
Total	33	100

Table 2: Type of penile emergencies.

Type of penile emergencies	N=33	Percentage
Trauma	18	54.54
Sharp cut	7	
Fracture penis	5	
Degloving penis	2	
Lacerated	2	
Zipper entrapment	2	
Infected	10	30.30
Balanitis	2	
Fournier's gangrene	8	
Vascular (priapism)	1	3.03
Others	4	12.12
Phimosis	2	
Paraphimosis	2	
Total	33	100.00

There were a total of 18 patients (54.54%) patients admitted with different varieties of penile trauma. Among them seven (21.21%) were with sharp cut, five presented with fracture penis (15.15%), two persons presented with degloved penis while working with paddy chopping machine, two presented with lacerated penile wound following RTA, two (6.06%) children presented with preputial entrapment within the zipper of their pants (Table 2). Among the infective category there were ten patients (30.30%). Four presented with preputial problem i.e. phimosis and paraphimosis. One vascular emergency was observed as delayed priapism presented three days after the onset and was of ischemic variety confirmed by Doppler ultrasound. Most of the patients underwent surgical intervention (31 out of 33). Only two patients presented with severe balanitis were managed conservatively. Among 31, nineteen patients were intervened >6 hours from the event due to delay in their presentation and admission to this hospital (Table 3).

Table 3: Type and timing of surgical intervention (n=31).

Type of intervention	Timing of intervention	
	<6 hours	>6 hours
Repair of fracture penis	2	3
Repair of cut and lacerations	5	4
Covering of degloved penis	0	2
Circumcision	2	4
Distal shunt(Al-Ghorab)	0	1
Debridement	3	5
Total	12	19

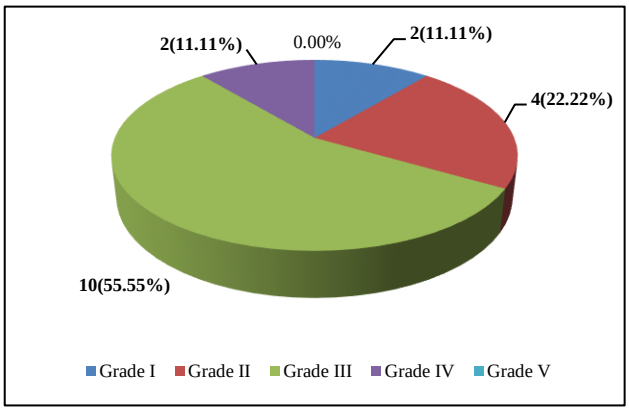

Figure 2: Grading of penile trauma (n=18).

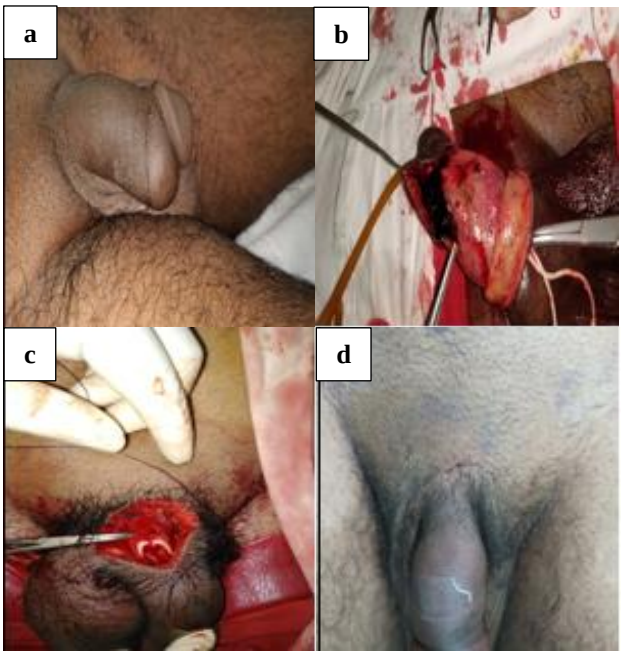

Figure 3: (a) Patient with fracture penis; (b) accumulated clot under bucks fascia; (c) patient with penile cut; (d) after repair of the injury.

All the cut injuries, lacerations and fractures were repaired under anesthesia according to the layer involved (Figure 3 a-d). The degloved penis, which was partial, was initially buried within the scrotum followed by trans-scrotal urethral catheterization and was advised for penile reconstruction after eight weeks (Figure 4).

Figure 4: Degloving penis and subsequent scrotal interposition and catheterization.

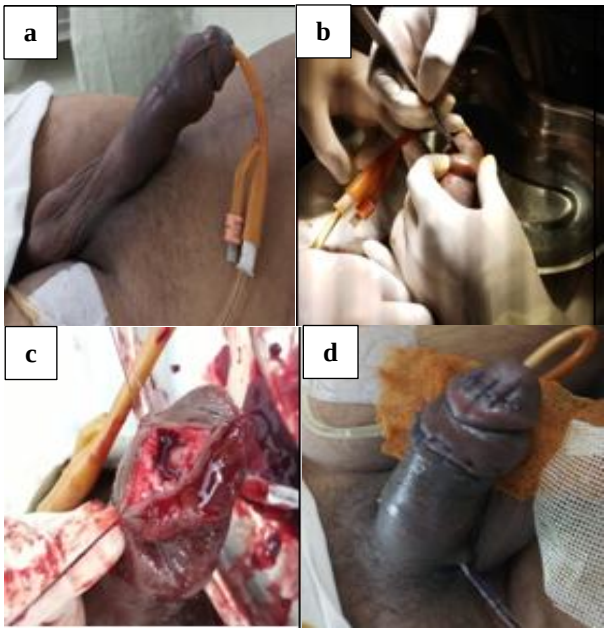

Figure 5: (a) Priapism; (b) sub coronal incision; (c) distal shunt procedure; (d) after resolution of the condition.

The patients presenting with phimosis, paraphimosis, preputial zipper entrapment were managed by emergency circumcision. Debridement was done in Fournier's gangrene. Distal shunt (Al-Ghorab) procedure was done in the patient of delayed priapism (Figure 5 a-d). The patients undergoing surgical interventions were followed up routinely and after resolution of the surgical wound when they return back to the sexual activity were evaluated by a questionnaire of International Index of Erectile Function (after three months). Six patients those who underwent emergency circumcision could not be included under this evaluation. It was observed that among the 25 patients, fourteen had IIEF<10, of which 12 patients were intervened after six fours from the initial event. This result was also statistically significant p value=0.036 which helped to reach a conclusion that early surgical intervention has a better outcome (Table 4).

Table 4: Comparison between timing of intervention and erectile function (n=25) International Index of Erectile Function (IIEF).

Timing	<10	>20	Total	P value
<6 hours	2	8	10	0.041
>6 hours	12	3	15	0.036
Total	14	11	25	

DISCUSSION

Sporadic reports of penile injury give the impression that it is rare; however, it is likely under-reported or hidden due to social embarrassment. The aim of our study was to depict different patterns of penile emergencies and to show their management along with the postoperative regain of erectile function. Penile injuries are confirmed by their clinical presentation. The typical history and associated physical examination findings exclude the need for other diagnostic evaluations. A marked thinning of the tunica albuginea, when combined with abnormal bending, leads to excessive intracaverno- sal pressure and often a transverse laceration of the proximal shaft.[13] The first documented report of penile fracture is credited to the Arab physician, Abu al-Qasim al-Zahrawi in Cordoba, more than 1,000 years ago.[14] The protocol for managing penile fracture has evolved from a conservative approach to the current predominant approach that involves immediate surgical exploration.[14,15] However, long term outcomes of conservative management demonstrated significant complication rates, such as curved or painful erections, erectile dysfunction, arteriovenous fistula formation, and infection and plaque formation. All the patients in this series underwent immediate surgical repair to avoid the potential complications of conservative management with an acceptable functional result. The patients who presented with penile cut in this study, all of those were made by the opposite partner as a part of their expression of anger. Studies of social attitudes show violence is perceived as more or less serious depending on the gender of victim and perpetrator.[16] According to the journalist Martin Daubney "there remains a theory that men under report their experiences (of violence by women against men) due to a culture of masculine expectations". In our study we also found the affected persons were reluctant to narrate the exact mechanism of their injury and for the same reason being late to get hospitalized for further management. There was a statistical difference between the outcome of erectile function after treatment and the duration of priapism before intervention. This relationship between erectile function has been documented elsewhere. According to Van Der Horst, the overall rate of erectile dysfunction can be as high as 59%.[17] El-Bahnasawy and colleagues reported only 43% of their patients had erection after prolonged duration of

priapism.[18] In our study the patient of priapism presented after 72 hours. He also suffered from erectile dysfunction through which got improved with medication. The most common iatrogenic cause of erectile dysfunction was radical pelvic surgery. Generally, the damage that occurs during these procedures is primarily neurogenic in nature (cavernous nerve injury) but accessory pudendal artery injury can also contribute.[19] In this study most of the surgical procedures were done for the purpose of reversion of the damage occurred either due to trauma or fracture in an emergency setting. The possibility of nerve damage thus can be explained either due to the disease process or due to the surgery. But the dysfunction faced by the patients was reversible with medicine.

Limitations

There are some limitations of this study. This study was a single center study and an observational type. Sample size was small. But the results can be used for a multi centered based larger randomized control study in the future.

CONCLUSION

Because of fear and embarrassment are commonly associated; the patient's presentation to the health care professionals is sometimes significantly delayed. But intervention was very prompt and as early as possible, which was associated with shorter duration of hospital stay, higher levels of patient satisfaction, and improved outcomes including an acceptable range of erectile dysfunction.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Eke N. Fracture of penis. Br J Surg. 2002;89(5):555-65
2. Penson DF, Seftel AD, Krane RJ, Frohrib D, Goldstein I. The hemodynamic pathophysiology of impotence following blunt trauma to the erect penis. J Urol. 1992;148(4):1171-80.
3. Aaronson DS, Shindel AW. U.S. national statistics on penile fracture. J Sex Med. 2010;7(9):3226.
4. Reddy SVK, Shaik AB, Sreenivas K. Penile injuries: a 10-year experience. Can Urol Assoc J. 2014;8(9-10):E626-31.
5. Moon SJ, Kim DH, Chung JH, Jo JK, Son YW, Choi HY, et al. Unusual foreign bodies in the urinary bladder and urethra due to autoerotism. Int Neurourol J. 2010;14:186-9.
6. Perovic SV, Djinovic RP, Bumbasirevic MZ, Santucci RA, Djordjevic ML, Kourbatov D. Severe penile injuries: a problem of severity and reconstruction. BJU Int. 2009;104:676-87.
7. Wyatt JP, Scobie WG. The management of penile zip entrapment in children. Injury. 1994;25(1):59-60.
8. Nolan JF, Stillwell TJ, Sands JP Jr. Acute management of the zipper-entrapped penis. J Emerg Med. 1990;8(3):305-7.
9. Sadeghi-Nejad H, Dogra V, Seftel AD, Mohamed MA. Priapism. Radiol Clin North Am. 2004;42(2):427-43.
10. Tay YK, Spernat D, Rzetelski-West K, Appu S, Love C. Acute management of priapism in men. BJU Int. 2012;109(Suppl 3):15-21
11. Fernandes MAV, Souza LRMF, Cartafina LP. Ultrasound evaluation of the penis. Radiol Bras. 2018;51(4):257-61.
12. Edwards SK, Bunker CB, Ziller F, van der Meijden WI. 2013 European guideline for the management of balanoposthitis. Int J STD AIDS. 2014;25(9):615-26.
13. Bilsch M, Kromonn-Andersen B, Schou J, Sjøntoft E. The elasticity and the tensile strength of the tunica albuginea of the corpora cavernosa. J Urol. 1990;143(3):642-5.
14. Agarwal MM, Singh SK, Sharma DK, Ranjan P, Kumar S, Chandramohan V, et al. Fracture of the penis: a radiological or clinical diagnosis? A case series and literature review. Can J Urol. 2009;16(2):4568-75.
15. Zargooshi J. Penile fracture in Kermanshah, Iran: report of 172 cases. J Urol. 2000;164(2):364-6.
16. Feather NT. Domestic violence, gender, and perceptions of justice. Sex roles. 1996;35(7-8):507-19.
17. Van der Horst C, Stuebinger H, Seif C, Melchior D, Martenez-Portillo FJ, Juenemann KP. Priapism-etiology, pathophysiology and management. Int Braz J Urol. 2003;29(5):301-400.
18. El-Bahnasawy MS, Dawood A, Farouk A. Low-flow priapism: risk factors for erectile dysfunction. BJU Int. 2002;89(3):285-90.
19. Tal R, Valenzuela R, Aviv N, Parker M, Waters WB, Flanigan RC, et al. Persistent erectile dysfunction following radical prostatectomy: the association between nerve-sparing status and the prevalence and chronology of venous leak. J Sex Med. 2009;6(10):2813-9.

Cite this article as: Sarker AK, Babu TH, Ahmed ABS. Management of penile emergencies- one year observation. Int Surg J 2021;8:1413-7.