SAS Journal of Surgery
Abbreviated Key Title: SAS J Surg
ISSN 2454-5104
Journal homepage: https://www.saspublishers.com

OPEN ACCESS

Surgery

Prospective Analysis of Surgical Outcomes in Penile Fracture Management: Experience in a District Hospital

Dr. Goutom Kumar Ghosh[1*], Dr. Md Sherajul Islam[2], Dr. AKM Shamsul Haque[3], Dr. Kh Mehedy Ibnay Mostofa[4], Dr. A S M Kutub Uddin Awal[5], Dr Md Golam Sharoar[6], Dr Md Majedul Islam[7]

[1]Associate Professor & Head, Department of Surgery, Pabna Medical College Hospital, Pabna, Bangladesh
[2]Assistant Professor, Department of Surgery, Pabna Medical College Hospital, Pabna, Bangladesh
[3]Assistant Professor, Department of Surgery, Pabna Medical College Hospital, Pabna, Bangladesh
[4]Lecturer, Department of Community Medicine, Pabna Medical College Hospital, Pabna, Bangladesh
[5]Junior Consultant, Department of Surgery, 250 Bedded General Hospital, Pabna, Bangladesh
[6]Junior Consultant, Department of Surgery, 250 Bedded General Hospital, Pabna, Bangladesh
[7]Assistant Registrar, 250 Bedded General Hospital, Pabna, Bangladesh

DOI: https://doi.org/10.36347/sasjs.2025.v11i03.013 | **Received:** 11.01.2025 | **Accepted:** 16.02.2025 | **Published:** 10.03.2025

***Corresponding author:** Dr. Goutom Kumar Ghosh
Associate Professor & Head, Department of Surgery, Pabna Medical College Hospital, Pabna, Bangladesh

Abstract **Original Research Article**

Background: Penile fracture is a rare but significant urological emergency characterized by the rupture of the tunica albuginea of the corpus cavernosum, commonly occurring during sexual intercourse or forced manipulation of an erect penis. Prompt surgical intervention is critical to optimize outcomes and minimize complications such as erectile dysfunction and penile deformity. ***Aim of the study:*** To evaluate the clinical presentation, surgical outcomes, and postoperative complications in penile fracture management. ***Methods:*** This prospective observational study included 50 patients with penile fractures treated surgically within 24 hours of presentation between January 2015 and December 2019 in the Department of Surgery at 250 Bedded General hospital (temporary sheltering as Pabna Medical College Hospital), Pabna, Bangladesh. Patients underwent penile exploration, hematoma evacuation, and repair of the tunica albuginea, with urethral repair performed when required. Clinical, demographic, and surgical data were collected, and complications were assessed over six months of follow-up. Statistical analysis was performed using SPSS v26, with p-values ≤0.05 considered significant. ***Result:*** The mean age of the patients was 38.41±4.96 years, with 64% aged 31-45 years. Most injuries (84%) were related to sexual activity, and 76% of fractures occurred on the right side. Clinical presentations included penile crackling (100%), hematoma (92%), and penile curvature (60%). Surgical repairs were performed using coronal (80%) or selective incisions (20%), with an average operative time of 68.37±9.69 minutes. Postoperative complications were observed in 30% of patients, categorized as aesthetic (40%), functional (33.33%), or both (26.67%). Erectile dysfunction affected 60% of patients with functional complications. Shorter durations of sexual abstinence (<1 month) were significantly associated with higher complication rates ($p<0.05$). ***Conclusion:*** Timely surgical management of penile fractures yields favorable functional and aesthetic outcomes. However, complications such as erectile dysfunction and penile curvature remain significant, especially in patients with delayed postoperative abstinence. Early intervention and structured postoperative follow-up are essential for optimal recovery.

Keywords: Penile Fracture, Tunica Albuginea Rupture, Erectile Dysfunction.

INTRODUCTION

Penile fracture is an uncommon but significant urological emergency that involves the traumatic rupture of the tunica albuginea of the corpus cavernosum. This injury typically occurs during an erection when the penile shaft undergoes abrupt bending or rotational forces, leading to structural compromise [1,2]. While most cases involve unilateral rupture, there are instances where both corpora cavernosa or even the urethra may be injured [3]. Patients often report an audible "pop" or "snap," followed by sudden pain, detumescence, and swelling, making the diagnosis largely clinical in most scenarios [4]. Most of the cases arise during vigorous sexual intercourse when the erect penis strikes the female pelvis, leading to rupture. By contrast, non-sexual causes like the "Taghaandan" maneuver account for a larger proportion of cases [5]. Additional causes include masturbation, accidental trauma during sleep, and, in rare cases, injuries caused by external forces such as animal kicks [6,7]. Penile fractures are characterized clinically

by ecchymosis, swelling, and the classic "eggplant deformity," which refers to the purple discoloration and curvature of the penis towards the side opposite the rupture [1]. When Buck's fascia remains intact, the hematoma is confined to the penis; otherwise, it may extend to surrounding areas, including the scrotum and perineum. If the urethra is involved, patients may experience urethral bleeding, difficulty urinating, or urinary retention [8]. The diagnostic process is primarily clinical, relying on a detailed history and physical examination [9]. Imaging modalities such as ultrasound, cavernosography, and magnetic resonance imaging (MRI) are reserved for equivocal cases or when urethral injury is suspected [4,10,11]. Retrograde urethrography (RUG) or cystoscopy may also be utilized to assess urethral involvement, with cystoscopy often preferred due to a lower false-positive rate [12]. Surgical intervention remains the gold standard for managing penile fractures, with prompt repair associated with superior outcomes compared to conservative management [13]. Surgical repair typically involves penile exploration, evacuation of hematoma, and suturing of the tunica albuginea and, if necessary, the urethra [1]. Early repair is often recommended to minimize complications such as erectile dysfunction, delayed repairs have also demonstrated favorable outcomes in certain cases [14]. Numerous studies have highlighted the benefits of early surgical repair in reducing complications like erectile dysfunction, penile curvature, and tunical scarring [13]. For instance, a retrospective study showed that 88.6% of patients managed surgically achieved satisfactory erectile function, compared to 66.7% of those treated conservatively [15]. However, other reports suggest that delayed repair may allow for better preoperative planning and does not necessarily lead to higher complication rates, particularly in the absence of urethral injuries [13]. Variations in surgical techniques, follow-up protocols, and the timing of intervention further complicate the ability to generalize outcomes [16].

Therefore, our study aimed to assess the condition of the penis following a fracture of the cavernous body, focusing on evaluating functional and structural outcomes to provide insights into the long-term impact of this injury.

METHODOLOGY AND MATERIALS

This comprehensive prospective observational study was meticulously conducted in the Department of Surgery, 250 Bedded General Hospital, Pabna (Temporarily runs as Pabna Medical College Hospital), located in Pabna City, Bangladesh. Spanning five years, from January 2015 to December 2019, the research systematically explored fractures of the cavernous bodies of the penis. Employing a purposive sampling approach, the study included 50 patients admitted through emergency services or the outpatient department, forming a well-defined and representative study cohort. Participants were selected based on rigorously established inclusion and exclusion criteria, ensuring the clinical relevance and reliability of the findings.

- **Inclusion Criteria:**

Patients aged 18 years or older who experienced a fracture of the cavernous bodies were included in the study.

- **Exclusion Criteria:**

The study excluded individuals with albuginea rupture resulting from self-harm and those with specific medical histories, including prior cavernous body fractures, pre-existing erectile dysfunction, or congenital or acquired penile curvature.

Surgical Approach

All patients underwent surgical intervention within 24 hours of hospital admission, performed under spinal anesthesia. Depending on the clinical presentation, a selective or coronal approach was chosen for the surgical procedure. The suturing of the tunica albuginea and the urethra, when necessary, was executed using braided, rapidly absorbable threads (3/0 or 4/0 polyglactin, Vicryl). Postoperative management included the administration of antibiotics, analgesics, and anti-inflammatory medications. Postoperative follow-up evaluations were scheduled on the 7th and 15th days (to remove the bladder catheter in cases of associated urethral rupture) and in the 1st, third, and sixth months aimed to monitor recovery and address any complications.

Data Collection

Data were systematically gathered using a structured and validated questionnaire. Key variables collected included demographic details such as age and marital status, as well as the mechanisms of occurrence, which were categorized as forced maneuver on an erect penis, shock on an erect penis, and coitus misstep. Clinical presentations, including cracking sensations, penile pain, hematoma, penile curvature, and urethrorrhagia, were documented. Ultrasound findings and surgical outcomes were also recorded. Treatment evolution was assessed by tracking the duration of postoperative abstinence, measured in months. Complications were categorized into two groups: aesthetic complications, including repair scars and persistent penile curvature; and functional complications, such as discomfort during sexual intercourse and erectile dysfunction. Erectile dysfunction was evaluated using the International Index of Erectile Function-5 (IIEF-5). Operative details, including operative time and length of hospital stay, were meticulously documented. Ethical approval was obtained from the institution's ethics committee, and informed consent was secured from all participants.

Statistical Analysis

Statistical analyses were performed using SPSS software (version 26). Continuous variables were

expressed as mean±standard deviation (SD), while categorical variables were presented as frequencies and percentages. For comparing quantitative variables, an unpaired t-test was applied, and categorical variables were analyzed using the chi-square test. A p-value of ≤0.05 was considered statistically significant.

RESULT

A total of 50 participants were included in the study, with a mean age of 38.41±4.96 years. The majority of participants (64%) were aged between 31 and 45 years. Most participants were married (72%). A significant proportion (84%) sought consultation within 24 hours of the incident, and 16% consulted after 24 hours. Regarding the orientation of fractures, 76% were on the right side, and 24% were on the left side (Table 1). Clinical presentations included crackling and detumescence in all 50 patients (100%), hematoma in 92%, tumefaction in 80%, penis curvature in 60%, pain in 52%, and urethrorrhagia in 4% of participants (Table 2). Figure 1 showed hematoma locations, with 73.91% in the entire penis, 17.39% in the proximal region, and 8.70% in the distal region. Figure 2 illustrated the injury mechanism, with 64% from coital missteps, 28% from forced maneuvers on an erect penis, and 8% from shock to an erect penis. Figure 3 displayed surgical incisions, with 80% requiring a coronal incision and 20% a selective incision. Fracture lengths were categorized as follows: 48% had fractures between 1-2 cm, 32% had fractures shorter than 1 cm, and 20% had fractures longer than 2 cm. The mean intervention duration was 68.37±9.69 minutes, and the average length of hospital stay was 33.81±2.72 hours. Complications were observed in 30% of patients during the postoperative period (Table 3). Figure 4 classified complications, with 40% aesthetic, 33.33% functional, and 26.67% both aesthetic and functional. Table 4 showed that among the 11 patients with complications, 83.33% had penis curvature and 66.67% had scars for aesthetic complications. Erectile dysfunction affected 60% and discomfort during intercourse affected 80% of those with functional complications. Sexual abstinence duration and fracture length were significant factors influencing complications. Those with less than one month of abstinence had the highest proportion of complications, with 50% of aesthetic, 60% of functional, and 50% of both complication types (Table 5). The distribution of patients based on the duration of sexual abstinence and IIEF-5 scores showed a significant relationship ($p<0.05$). Among patients with less than one month of sexual abstinence, 33.33% had an IIEF-5 score between 5 and 10, while no patients scored higher. In the 1-2 months abstinence group, 33.33% had IIEF-5 scores between 11 and 15, with no patients scoring higher. For those with more than two months of sexual abstinence, 33.33% had an IIEF-5 score between 16 and 20, with no patients scoring lower (Table 6).

Table 1: Demographic profile of study participants (N=50)

Variables	Frequency (n)	Percentage (%)
Age (years)		
18-30	10	20.00
31-45	32	64.00
46-60	6	12.00
>60	2	4.00
Mean±SD	38.41±4.96	
Marital status		
Married	36	72.00
Single	14	28.00
Consultation time		
<24 hours	42	84.00
>24 hours	8	16.00
Orientation of fracture		
Right	38	76.00
Left	12	24.00

Table 2: Patient distribution based on clinical presentations (N=50)

Variables	Frequency (n)	Percentage (%)
Crackling and detumescence	50	100.00
Hematoma	46	92.00
Tumefaction	40	80.00
Penis curvature	30	60.00
Pain	26	52.00
Urethrorrhagia	2	4.00

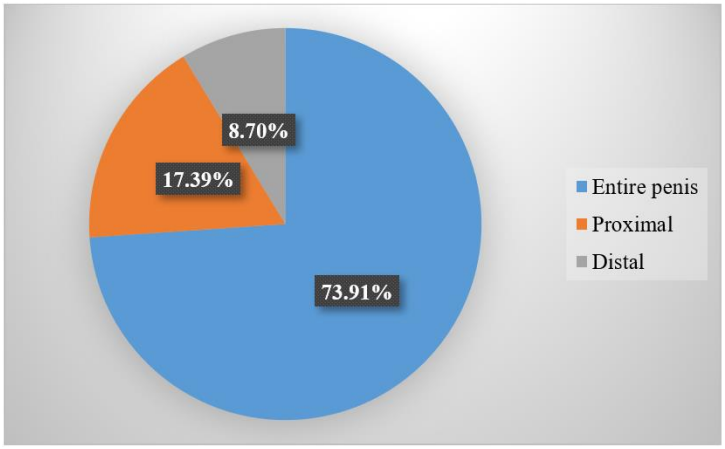

Figure 1: Patient distribution based on hematoma location (N=46)

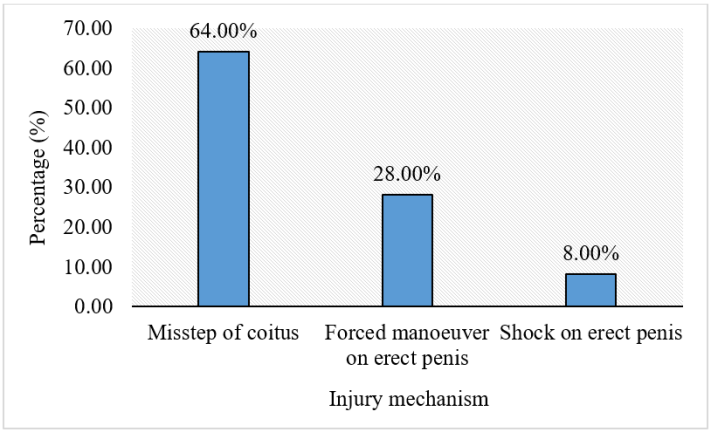

Figure 2: Patient distribution based on the mechanism of injury (N=50)

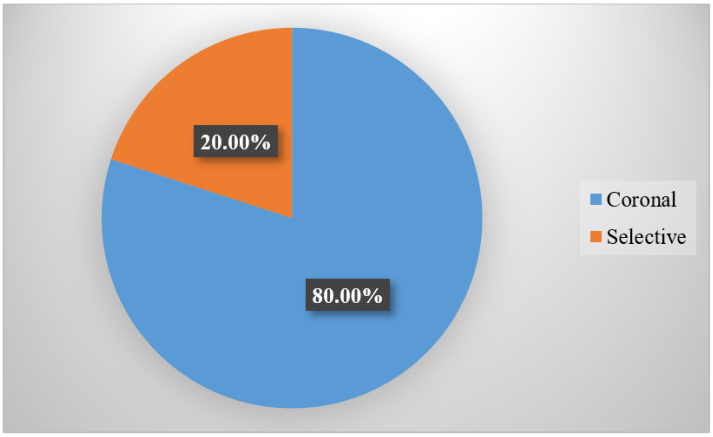

Figure 3: Patient distribution based on the type of surgical incision required (N=50)

Table 3: Patient distribution based on fracture length and postoperative outcomes (N=50)

Variables	Frequency (n)	Percentage (%)
	Mean±SD	
Length of fracture		
<1 cm	16	32.00
1-2 cm	24	48.00
>2 cm	10	20.00
Intervention duration (minutes)	68.37±9.69	
Length of hospital stay (hours)	33.81±2.72	
Complications	15	30.00

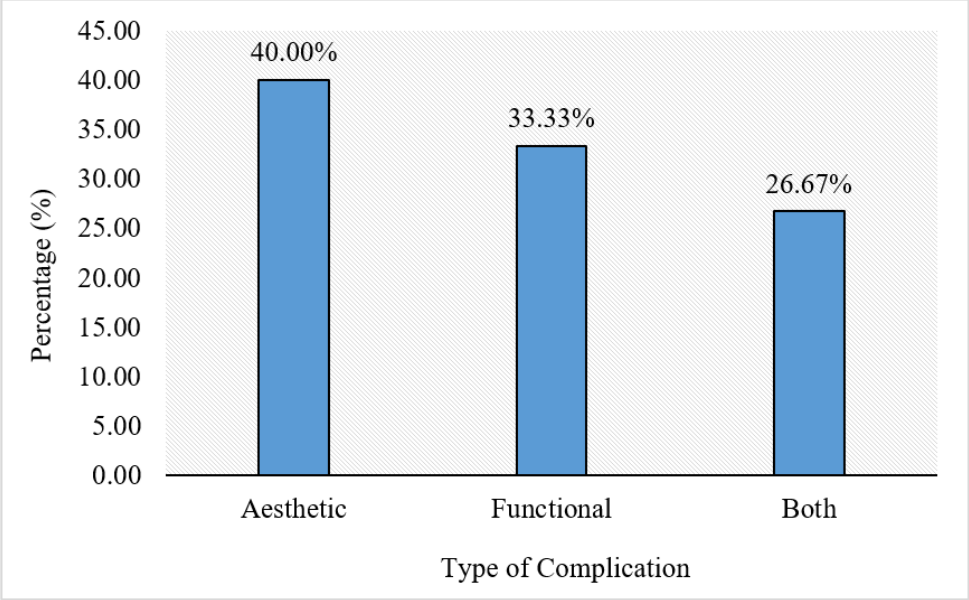

Figure 4: Classification of patients based on the type of complications encountered (N=15)

Table 4: Categorization of patients based on complications (N=11)

Complication type	Frequency (n)	Percentage (%)
Aesthetic (n=6)		
Penis curvature	5	83.33
Scar	4	66.67
Functional (n=5)		
Erectile dysfunction	3	60.00
Discomfort during intercourse	4	80.00

Table 5: Distribution of patients based on sexual abstinence, fracture length, and related complications (N=15)

Complications	Aesthetic (n=6)	Functional (n=5)	Both (n=4)	P-value
	n(%)			
Duration of sexual abstinence				
<1 month	3 (50.00)	3 (60.00)	2 (50.00)	<0.05
1-2 months	1 (16.67)	1 (20.00)	1 (20.00)	
>2 months	2 (33.33)	1 (20.00)	1 (20.00)	
Length of fracture				
<1 cm	1 (16.67)	0 (0.00)	1 (25.00)	<0.05
1-2 cm	2 (33.33)	1 (20.00)	1 (25.00)	
>2 cm	3 (50.00)	4 (80.00)	2 (50.00)	

Table 6: Distribution of patients based on duration of sexual abstinence and IIEF-5 scores (N=3)

Duration of sexual abstinence	IIEF-5: 5-10	IIEF-5: 11-15	IIEF-5: 16-20	P-value
	n (%)			
<1 month	1 (33.33)	0 (0.00)	0 (0.00)	<0.05
1-2 months	0 (0.00)	1 (33.33)	0 (0.00)	
>2 months	0 (0.00)	0 (0.00)	1 (33.33)	

IIEF-5: International Index of Erectile Function-5.

DISCUSSION

The penis possesses natural defenses due to its mobility; however, during erection, it becomes particularly susceptible to injury. This vulnerability arises from significant increases in intracavernous pressure, which can exceed the tensile strength of the tunica albuginea under sudden, acute stress. The tunica albuginea, which measures approximately 2 mm in thickness in the flaccid state, thins to 0.25-0.5 mm during erection [17]. Penile fracture represents a dramatic and acute outcome of blunt trauma to an erect penis [18]. Several studies have reported a high incidence of cavernous body fractures linked to forced maneuvers of an erect penis [7,19]. In our study, a substantial proportion of cases were attributed to coitus missteps, a trend likely driven by the relatively young age of the

study population (mean age: 38.41±4.96 years) and a high prevalence of married individuals, indicating active sexual lives. Additionally, some patients reported attempting to alleviate an unwanted erection by forcefully bending the penis, a practice perceived as harmless until a fracture occurs. De Rose *et al*. (1983) suggested that repetitive bending of the erect penis to achieve detumescence under inappropriate conditions may progressively weaken the structural integrity of the tunica albuginea, predisposing it to injury [21]. A thorough medical history and physical examination are essential for accurate diagnosis. Patients often report a characteristic "cracking" sound, followed by immediate pain, rapid detumescence, swelling, and penile deformity [21,22]. In our series, surgical repair consistently revealed a tear in the tunica albuginea upon hematoma evacuation, even in cases where ultrasonography failed to detect the injury. The location of the tear was typically aligned with the direction of penile deviation away from the fracture site, a finding corroborated by previous studies [19,23]. Diagnosis is primarily clinical, relying on the patient's history and physical findings, with additional diagnostic tests rarely necessary in classic presentations [24,25].Immediate surgical intervention is widely recognized as the gold standard, offering the fastest recovery of erectile function and optimal cosmetic outcomes. Studies have shown that only 4.1% of patients undergoing immediate repair experience erectile dysfunction, compared to 18.2% in those with delayed intervention [26]. Delayed repair, defined as occurring 1 to 7 days post-injury, is associated with higher rates of erectile dysfunction. Kozacıoğlu *et al*. (2017) classified cases based on the time elapsed from injury to surgical repair and found no significant differences in outcomes as long as surgery was performed within 24 hours [27]. Two commonly used surgical approaches for penile fracture repair are the distal circumcising-degloving and vertical penoscrotal incisions. In our study, the sub-coronal, distal degloving incision was the preferred technique. This method is frequently cited in the literature for its efficacy [28,29]. Alternative techniques, such as the lateral and longitudinal incision anterior to a cavernous body, allow elective access to the fracture site without skin compromise, though they may result in aesthetically unfavorable scars [20]. The complication rate observed in our study was 30.00%, predominantly comprising discomfort during sexual intercourse and erectile dysfunction, consistent with findings reported by Amer *et al*. (2016) [7]. Furthermore, Penbegul *et al*. assessed the long-term psychological well-being of surgically treated penile fracture patients, concluding that immediate repair does not increase the incidence of depression, anxiety, or psychogenic sexual dysfunction [30]. Our findings suggest that the frequency of complications may partly stem from non-compliance with the recommended postoperative abstinence period. We identified a statistically significant correlation ($p < 0.05$) between the duration of abstinence and the likelihood of complications. Additionally, a significant relationship ($p < 0.05$) was observed between the length of the fracture line and the risk of both short- and long-term complications. We hypothesize that larger fracture lines contribute to substantial fibrosis of the tunica albuginea, leading to penile curvature and impaired erectile function due to extensive leakage of cavernous venous blood into spongy tissue.

Limitations of the study:

This studyhas certain limitations. The relatively small sample size of 50 participants may limit the generalizability of the findings to larger populations. The study's setting in a single institution also restricts the diversity of the patient cohort, which could affect the applicability of the results to other healthcare contexts.

CONCLUSION AND RECOMMENDATIONS

Our study highlights the effectiveness of prompt surgical intervention in the management of penile fractures, demonstrating favorable outcomes in functional recovery and aesthetic preservation. With a majority of patients presenting due to coital missteps, timely surgical repair within 24 hours of injury significantly reduced complications, such as erectile dysfunction and penile curvature. The study underscores the importance of immediate diagnosis, surgical expertise, and adherence to postoperative abstinence guidelines for optimal recovery. Despite the rarity of this condition, the insights gained emphasize the necessity of raising awareness about early intervention and its critical role in minimizing long-term sequelae.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee.

REFERENCES

1. Alafifi M, Doumer A, Safwate R, Mahanna HA, Kbiro A, Moataz A, Dakir M, Debbagh A, Aboutaieb R. Surgical Repair of Penile Fractures: Outcomes of a Prospective Mono-Centric Case Series Study. Mathews Journal of Urology and Nephrology. 2024 Apr 1;6(1):1-1.
2. Orvis BR, McAninch JW. Penile rupture. Urologic Clinics of North America. 1989 May 1;16(2):369-75.
3. Mazaris EM, Livadas K, Chalikopoulos D, Bisas A, Deliveliotis C, Skolarikos A. Penile fractures: immediate surgical approach with a midline ventral incision. BJU international. 2009 Aug;104(4):520-3.
4. Hassali MA, Nouri AI, Hamzah AA, Verma AK. Role of penile doppler as a diagnostic tool in penile fracture. Journal of medical ultrasound. 2018 Jan 1;26(1):48-51.
5. Falcone M, Garaffa G, Castiglione F, Ralph DJ. Current management of penile fracture: an up-to-

date systematic review. Sexual medicine reviews. 2018 Apr;6(2):253-60.
6. Ateyah A, Mostafa T, Nasser TA, Shaeer O, Hadi AA, Al-Gabbar MA. Penile fracture: surgical repair and late effects on erectile function. The journal of sexual medicine. 2008 Jun;5(6):1496-502.
7. Amer T, Wilson R, Chlosta P, AlBuheissi S, Qazi H, Fraser M, Aboumarzouk OM. Penile fracture: a meta-analysis. Urologiainternationalis. 2016 Mar 1;96(3):315-29.
8. Andersen JT, Nickel JC, Marshall VR, Schulman CC, Boyle P. Finasteride significantly reduces acute urinary retention and need for surgery in patients with symptomatic benign prostatic hyperplasia. Urology. 1997 Jun 1;49(6):839-45.
9. Hinev A. Fracture of the penis: treatment and complications. ActaMedica Okayama. 2000 Oct 1;54(5):211-6.
10. Mydlo JH, Hayyeri M, Macchia RJ. Urethrography and cavernosography imaging in a small series of penile fractures: a comparison with surgical findings. Urology. 1998 Apr 1;51(4):616-9.
11. Saglam E, Tarhan F, Hamarat MB, Can U, Coskun A, Camur E, Sarica K. Efficacy of magnetic resonance imaging for diagnosis of penile fracture: a controlled study. Investigative and clinical urology. 2017 Jul;58(4):255-60.
12. Kitrey ND, Djakovic N, Hallscheidt P, Kuehhas FE, Lumen N, Serafetinidis E, *et al*. EAU guidelines on urological trauma. Presented at: EAU Annual Congress; 2018; Copenhagen, Denmark.
13. Wong NC, Dason S, Bansal RK, Davies TO, Braga LH. Can it wait? A systematic review of immediate vs. delayed surgical repair of penile fractures. Canadian Urological Association Journal. 2017 Jan;11(1-2):53.
14. Bella AJ, Shamloul R. Addressing the barriers to optimal management of penile fracture. Canadian Urological Association Journal. 2013 Jul;7(7-8):258.
15. Yamaçake KG, Tavares A, Padovani GP, Guglielmetti GB, Cury J, Srougi M. Long-term treatment outcomes between surgical correction and conservative management for penile fracture: retrospective analysis. Korean journal of urology. 2013 Jul;54(7):472.
16. Kominsky H, Beebe S, Shah N, Jenkins LC. Surgical reconstruction for penile fracture: a systematic review. International Journal of Impotence Research. 2020 Jan;32(1):75-80.
17. Miller S. Penile fracture and soft tissue injury. Traumatic and reconstructive urology. 1996.
18. Penson DF, Seftel AD, Krane RJ, Frohrib D, Goldstein I. The hemodynamic pathophysiology of impotence following blunt trauma to the erect penis. The Journal of urology. 1992 Oct 1;148(4):1171-80.
19. Zargooshi J. Penile fracture in Kermanshah, Iran: report of 172 cases. The Journal of urology. 2000 Aug;164(2):364-6.
20. Padja E, Bahri A, Tayiri A, Chafiki J, Janane A. Surgical treatment of rod fractures: Surgical treatment of yard fractures: Surgical treatment of 24 cases. Uro'Andro. 2016;1:251-55.
21. Nicolaisen GS, Melamud A, Williams RD, McAninch JW. Rupture of the corpus cavernosum: surgical management. The Journal of urology. 1983 Nov 1;130(5):917-9.
22. Hinev A. Fracture of the penis: treatment and complications. ActaMedica Okayama. 2000 Oct 1;54(5):211-6.
23. Mydlo JH, Gershbein AB, Macchia RJ. Nonoperative treatment of patients with presumed penile fracture. The Journal of urology. 2001 Feb;165(2):424-5.
24. Mensah JE, Morton B, Kyei M. Early surgical repair of penile fractures. Ghana medical journal. 2010;44(3).
25. Yamaçake KG, Tavares A, Padovani GP, Guglielmetti GB, Cury J, Srougi M. Long-term treatment outcomes between surgical correction and conservative management for penile fracture: retrospective analysis. Korean journal of urology. 2013 Jul;54(7):472.
26. Yapanoglu T, Aksoy Y, Adanur S, Kabadayi B, Ozturk G, Ozbey I. Seventeen years' experience of penile fracture: conservative vs. surgical treatment. The journal of sexual medicine. 2009 Jul;6(7):2058-63.
27. Kozacıoğlu Z, Ceylan Y, Aydoğdu Ö, Bolat D, Günlüsoy B, Minareci S. An update of penile fractures: long-term significance of the number of hours elapsed till surgical repair on long-term outcomes. Turkish Journal of Urology. 2017 Mar;43(1):25.
28. El-Assmy A, El-Tholoth HS, Abou-El-Ghar ME, Mohsen T, Ibrahiem EH. Risk factors of erectile dysfunction and penile vascular changes after surgical repair of penile fracture. International journal of impotence research. 2012 Jan;24(1):20-5.
29. Hatzichristodoulou G, Dorstewitz A, Gschwend JE, Herkommer K, Zantl N. Surgical management of penile fracture and long-term outcome on erectile function and voiding. The Journal of Sexual Medicine. 2013 May;10(5):1424-30.
30. Penbegul N, Bez Y, Atar M, Bozkurt Y, Sancaktutar AA, Soylemez H, Ozen S. No evidence of depression, anxiety, and sexual dysfunction following penile fracture. International journal of impotence research. 2012 Jan;24(1):26-30.