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Outcomes of Surgical Intervention in Penile Fracture in Terms of Sexual Function and Anatomical Deformity: A Case Series

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ABSTRACT
Penile fracture is a relatively rare urological emergency, which requires immediate surgical intervention. It may have a devastating long standing functional, sexual and psychological effect on patients. The purpose of this study were to follow up patients to assess the outcomes and complications after emergency surgical repair of penile fractures. Special importance was given to assess erectile dysfunction or any anatomical defect using IIIEF-5 Scoring system and with USG and color doppler studies (PSV, EDV and RI) after surgical repair of fracture penis. The aim of this study was to observe the outcome in terms of sexual function and anatomical deformity in cases of penile fracture following surgical intervention in our institution. This is a prospective observational study of 23 patients presenting in trauma care unit of R. G. Kar Medical College, Kolkata with clinical diagnosis of fracture penis and undergoing surgical repair in between January 2020 to July 2021. Patients with penile fracture who refused surgery were excluded from the study. Each patient has undergone systematic follow up after discharge with thorough clinical examination, evaluation for sexual function and assessment of any anatomical deformity. Assessment of sexual function was carried out at 12 months follow up. Mean IIEF-5 score of all the patients was 22. Two patient (8.7%) developed moderate to severe erectile dysfunction with IIEF-5 score 10 and 7 who had marked delayed presentation at 74 and 88 hrs, respectively. Both of them showed cavernously insufficiency in colour Doppler ultrasound study. Out of 23 patients 1 patients (4.3%) developed penile curvature who also had delayed presentation at 52 hrs. Pain full intercourse was complained by 4 patients (17.4%). To evict long term complications especially erectile dysfunction immediate surgical repair is highly advisable. Painful intercourse is the most common long term complication following surgical management of penile fracture. Delay in presentation carries a potential risk for development of long term complications.

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Key Words
Penile fracture, sexuality, erectile dysfunction, traumatology

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INTRODUCTION

It has been almost a century since the first case of penile fracture was reported in modern literature in 1924[1]. Penile fracture is a traumatic rupture tunica albuginia of Penis with or without involvement of corpus spongiosum and urethra. The incidence of penile fracture is underreported because of embarrassment associated with it. Usual mechanism of injury is blunt trauma to erected Penis due to thrusting against pubis or perineum following accidental slippage of penis during intercourse. A snapping sound is usually heard by the patient followed by acute pain and rapid detumescence. If Buck fascia is intact the resultant hematoma remains confined in penis leading to what is known as "eggplant deformity". Rarely, bucks fascia may also be violated and hematoma may spread to suprapubic regions or perineum in a "Butterfly pattern". Despite the stereotypical history and reliable examination of most penile fractures, negative findings are occasionally encountered at the time of penile fracture exploration[2]. Cases that lack the popping sound or in which there is gradual detumescence have a higher rate of false-positive diagnosis. Rupture of dorsal artery and vein of penis are the most common mimics and they lack the typical popping sound and not followed by rapid detumescence. Rupture of the suspensory ligament of the penis might present in the emergency room with a similar history of traumatic intercourse but the injury should be identifiable based on physical presentation of the floppy penis. In such diagnostic dilemma some investigators have recommended the use of ultrasound, carver nosography and magnetic resonance imaging (MRI) to image and locate the site of the tunical tear before surgery[3]. If there is no tunica albuginea rupture, the injury can be managed non-operatively with cold compresses and simple analgesia. Surgical repair for penile f0racture was first advocated by Fetter and Gartman in 1936. However it gained popularity over conservative approach in last few decades based on the reports some recent studies supporting the role of immediate surgical repair to prevent serious complications such as penile curvature, erectile dysfunction, urethral fistula etc. ED seems to be the most critical problem because of the serious physical and psychological consequences that may have on the patient. The incidence of ED after surgical repair of fracture penis ranges from 0-12%, whereas the incidence of long term complications have been reported to be more than 30% without surgical intervention[4].

MATERIALS AND METHODS

This is a prospective observational study of 23 patients undergoing surgical repair for Penile fracture presenting in the trauma centre of RG KAR Medical College and Hospital from Jan 2020 to July 2021. Clinical presentation, baseline sexual function, operative and post-operative details were recorded. Sexual function of all patients were evaluated 12 months after surgical repair by three parameters: The international index of erectile function-5 questionnaire, curvature of penis and presence of painful intercourse. Those patients who complained of erectile dysfunction were further evaluated with colour Doppler ultrasound. Those patients who had associated urthral injury were followed up with Retrograe urethrography at 3 month follow up.

DISCUSSIONS

Penile fracture occurs exclusively in erected penis and it is accepted that similar laceration to cavarnosa caused by penetrating injury or gunshot injury to flaccid penis should not be regarded as penile fracture. In erect penis, tunica thins out from 2 mm to approximately 0.25 mm due to expansion and the firmly engorged corpora under strain from buckling can generate a pressure in excess of 1500 mmHg that exceeds the tensile strength of tunica. The mechanism of injury has been noted to vary with cultural contrast. While sexual intercourse is the driving factor in western countries, *Taqandaan*, a cultural practice to achieve quick detumescence and/or prevent ejaculation by manipulation of erected penis has been noted to be prime because in Middle East[5]. In our study sexual intercourse similar to western pattern was found to be the leading cause.

The tunica albuginea lacks longitudinal layer at 5 and 7 O'clock positions and thus is extremely thin and has been mentioned to be the most common site for penile fracture. Furthermore, penile fracture, for not very clear reason, has a propensity to involve the right side as evident by various individual reports by Amit, Mbonu and Omisanjo. At least for the fractures caused by penile manipulation, predominance of right sided lesion has been linked by Ateyah *et al*.[7] with the matter of fact the right handed population is greater than left handed ones, thus penile manipulation is frequently to left side, resulting obvious tunica tear on right side. This hypothesis is further strengthened by a report from Srinagar showing that the left side was more common in their centre because most of the cases of penile fracture resulted from habitual masturbation using the left hand. This made the left side more prone to injury from masturbation[6]. In our study we found a right sided preprondance of site of injury.

About 19 (82.6%) patients had proximal penile tear which was also the most common site mentioned in the previous literature. Although the site of tear has been extensively described in previous literature, the length of the tear has been highlighted in only one

Table: Demographic and descriptive analysis

Parameters	No.	Percentage
Total patients	23	-
Mean age	32.1 year (range19-52 year)	-
Married	18	78.30
Unmarried	5	21.70
Mean delay in presentation	11.3 hr (range 1 hr to 4 days)	-
Mode of injury		
Intercourse	14	60.90
Force full bending	7	30.40
Others	2	8.70
Location of tear side		
Proximal	19	82.60
Distal	4	17.40
Right	18	78.30
Left	5	21.70
Mean tear length	15.8 mm (range 8-24 mm)	-
Associated urethral injury	3	13.04
Added circumcision	15	65.20
Prepucial skin necrosis	3	13.04
Mean IIIEF score at 6 MO	22	-
Erectile dysfunction	2	8.70
Penile curvature	1	4.30
Painful intercourse	4	17.40

study by Ateyah *et al*.[7] which has a mean tear length of 2 cm. In our study the average length of the tear in the tunica albuginea noted was 15.8 mm, with the largest tear documented being 24 mm. Length of the tear could correlate with the postoperative outcome including erectile dysfunction and penile crvature. However, due to a small sample size of this study, we were unable to ascertain an association between length of tear and postoperative outcome.

Urethral injury could be associated in about 10-33% of penile fractures[8]. The incidence of urethral injury varied from 0-3% in reports from Iran, Persian Gulf countries and Japan to 20-38% in reports from European countries[8]. Variations in the incidence over the globe could be linked to the severity of impact at the time of injury. In our study we found 3 urethral injury (13%) that is comparable to previous reports from Asian countries.

Both the elective incision over the probable site of tear and circumferential degloving incision approach has been described in literature with their merits and demerits. High incidence penile curvature has been noted with elective incision. On the other hand circumferential incision has been critised to raise the possibility of distal skin necrosis, diminished penile sensation and haematoma. However, in addition to being the most cosmetic incision, distal degloving readily allows exposure to the entire tunica bilaterally, facilitating diagnosis and repair of coexisting urethral and contralateral injuries. We performed surgery with circumferential incision with added Circumcision in most patients. No patients developed any postoperative complications relating to wound in circumcised group, however 3 out 6 non-circumcised patient developed superficial distal skin necrosis. Penile curvature was reported by one patient who also had delay in presentation and incidence of penile curvature in our study was consistent with the previous reports by Zargooshi[5] (4.1%) and Hinev (8%) (Table 1)[9].

Both conservative and interventional approach has been described in literature for management of fracture penis. Our study reinforce and opt for the surgical approach as the primary standard in managing a case penile fracture with an outstanding long term functional outcome when compared with conservative approach. Time gap between injury and intervention has been claimed to be leading cause of erectile dysfunction in two different series that is consistent with our finding[9]. Higher age group (>50 year), Bilateral cavernously involvement have also been described as a risk factor for poor long term outcome. Psychogenic cause of erectile dysfunction has also been described in postoperative patients following penile fracture due to fear of recurrence of injury while having sexual activities. Colour Doppler ultrasound is an usefull tool in these group of patients both to detect arterial insufficiency, if present and to rule out psycogenic cause of ED. Cavernous arterial insufficiency is likely when the PSV is <25 cm sec^{-1}, as a PSV consistently >35 cm sec^{-1} defines normal cavernous arterial inflow. The vascular RI was defined as follows:

$$RI = \frac{PSV\text{-}EDV}{PSV}$$

RI values >0.9 have been associated with normal penile vascular function, while RI values <0.75 are consistent with veno-occlusive dysfunction. In our study both of patients who developed erectile dysfunction showed cavernosal insufficiency.

Painful intercourse may play a role in overall sexual dysfunction following surgical management of penile fracture and has been reported to be the most common long term complication in different series. In our study also it appears to be most common long terms morbidity however no specific factor could be linked as a risk factor for its incidence in our study.

CONCLUSION

To evict long term complications especially erectile dysfunction immediate surgical repair is highly recommended. Circumferential degloving incision when used should be followed by limited or formal Circumcision to prevent post-operative prepeucial skin necrosis. Painful intercourse is the most common long term complication following surgical management of penile fracture. Delay in presentation carries a potential risk for development of long term complications. Colour Doppler ultrasound is a usefull tool in evalution of patients developing erectile dysfunction following surgical repair for penile fracture.

REFERENCES

1. Malis, J. and K. Zur, 1924. Der fractura penis. Arch. Klin. Chir., Vol. 129.
2. Beysel, M., A. Tekin, M. Gürdal, E. YücebaŞ and F. Şengör, 2002. Evaluation and treatment of penile fractures: Accuracy of clinical diagnosis and the value of corpus cavernosography. Urology, 60: 492-496.
3. Abolyosr, A., A.E.A. Moneim, A.M. Abdelatif, M.A. Abdalla and H.M.K. Imam, 2005. The management of penile fracture based on clinical and magnetic resonance imaging findings. BJU Int., 96: 373-377.
4. Nicolaisen, G.S., A. Melamud, R.D. Williams and J.W. McAninch, 1983. Rupture of the corpus cavernosum: Surgical management. J. Urol., 130: 917-919.
5. Zargooshi, J., 2000. Penile fracture in Kermanshah, Iran: Report of 172 cases. J. Urol., 164: 364-366.
6. Wani, I., 2008. Management of penile fracture. Oman. Med. J., 23: 162-165.
7. Ateyah, A., T. Mostafa, T.A. Nasser, O. Shaeer, A.A. Hadi and M.A. Al-Gabbar, 2008. Penile fracture: Surgical repair and late effects on erectile function. J. Sexual Med., 5: 1496-1502.
8. Ekwere, P.D. and M.A. Rashid, 2004. Trends in the incidence, clinical presentation and management of traumatic rupture of the corpus cavernosum. J. Natl. Med. Assoc., 96: 229-233.
9. Emanuel, E.G. and R.W. Joseph, 2000. Penile fracture with complete urethral disruption. J. Trauma: Injury, Infec. Crit. Care, 49: 339-341.