Early Surgical Treatment of Penile Fracture: Our Experience with 19 Patients

Penil Fraktürün Erken Cerrahi Tedavisi: On Dokuz Hasta ile Deneyimimiz

Penil Fraktür / Penile Fracture

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Özet

Amaç: Penil fraktür nedeni ile cerrahi tedavi uyguladığımız hastaların sonuçlarını değerlendirmeyi amaçladık. Gereç ve Yöntem: Bu çalışmaya 2007-2013 yılları arasında hastanemize penil fraktür nedeni başvuran ve erken cerrahi onarım yapılan toplam 19 erkek hasta dahil edildi. Hastaların kayıtlarından operasyon öncesindeki yaş, uluslararası erektil fonksiyon indeksi'nin ilk 5 sorusu (IIEF-5) skoru, penil fraktür etiyolojisi, penil fraktür oluşumundan kliniğimize başvurduğu ana kadar geçen süre ve hospitalizasyon süresi retrospektif olarak elde edildi. Operasyon sonrası dönemde, IIEF-5 skoru, penil his kaybı, ağrılı penil ereksiyon ve penil kurvatur gelişimi değerlendirildi. Bulgular: Hastaların ortalama yaşı 37.8 yıl idi. Ortalama takip süresi 33.4 ay idi. Ortalama cerrahiye kadar geçen süre ve hastaların operasyon öncesindeki ortalama IIEF-5 skoru sırası ile 11.1 saat ve 22.7 idi. Operasyon öncesindeki dönemde 1 hastada orta-hafif derecede erektil disfonksiyon (ED), 3 hastada hafif ED var idi. On beş hastada ED saptanmadı. Operasyon sonrasındaki dönemde ortalama IIEF-5 skoru 19.3 idi. Operasyon öncesi ve sonrası dönemdeki IIEF-5 skorları arasında istatistiksel olarak anlamlı fark mevcut idi (p=0.01). Operasyon sonrasındaki dönemde 5 (%26.3) hastada penil kurvatür, 4 (%21.05) hastada ağrılı ereksiyon ve 2 (%10.52) hastada penil his kaybı saptandı. Sonuç: Sonuçlarımız ışığında, penil fraktür nedeni ile erken cerrahi tedavi yapılan hastaların operasyon sonrasındaki dönemde gelişebilecek olası penil kurvatur, ağrılı ereksiyon ve ED açısından iyi bilgilendirilmesi gerektiğine inanıyoruz.

Anahtar Kelimeler

Penil Fraktür; Cerrahi; Komplikasyon

Abstract

Aim: We aimed to evaluate the outcomes of patients who underwent surgical treatment due to penile fracture. Material and Method: Between 2007 and 2013, a total of 19 patients admitted to our hospital for penile fracture treated with early surgical repair were included in the study. In the pre-operative period, Age, first-five questions version of International Index of Erectile Function (IIEF-5) scores, penile fracture etiology, penile fracture formation, duration until referred to our hospital and duration of hospitalization were retrospectively obtained from medical data of patients. In the post-operative period, IIEF-5 scores, loss of penile sensation, painful erection and penile curvature development were evaluated. Results: The mean age of patients was 37.8 years. The mean follow-up time was 33.4 months. The mean time until the surgery and pre-operative IIEF-5 score were 11.1 hours and 22.7, respectively. In pre-operative period, 1 patient had mild-moderate degree erectile dysfunction (ED), 3 patients had mild degree ED. Fifteen patients had no ED. The mean of post-operative IIEF-5 score was 19.3. There was a significant difference between pre-operative and post-operative IIEF-5 scores (p=0.01). In the post-operative period, penile curvature was detected in 5 (26.3%), painful penile erection in 4 (21%) and loss of penile sensation in 2 (%10.5) patients. Discussion: In light of our results, we believe that patients who undergo early penil fracture surgery should be well informed in terms of possible penile curvature, painful erections and ED development.

Keywords

Penile Fracture; Surgery; Complication

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Introduction

Penile fracture is one of the rare urological emergencies. It is defined as the rupture of tunica albuginea surrounding by the corpus cavernosum and corpus spongiosum. The usual cause is blunt trauma during the penile erection. [1]. Diagnosis of penile fracture is easy. It is based on history and physical examination findings, as accepted by many authors. Moreover, several diagnostic imaging modalities such as urethrography, cavernosography, ultrasonography, magnetic resonance imaging (MRI), and angiography could be used [2,3]. Although early surgical treatment is recommended, some complications such as erectile dysfunction (ED), painful penile erection and loss of penile sensation may be occur in the post-operative period [3,4].

In the present study, we aimed to evaluate results of patients who underwent early surgical treatment due to penile fracture.

Material and Method

Between January 2007 and August 2013, 19 patients referred by the emergency service to our clinic due to penile fracture were included in the present study. Demographic and clinical information including age, first-five questions version of International Index of Erectile Function (IIEF-5) score, penile fracture etiology, fracture side, fracture formation, the time until the surgery and duration of hospitalization data were received from patient's file retrospectively. During the initial evaluation of patients, presence of hematoma, edema, penile deviation and urethroragia were recorded. When found to have urethroragia, patients were evaluated with urethrography. Following a broad-spectrum antibiotic prophylaxis (with 1th or 2th generation cephalosporine), all patients underwent an operation for early surgical repair.

Initially, following urethral foley catheterization, incision of circumcision line was made and penile skin was degloved until the fracture zone is observed. After the fracture line was explicitly defined, this line was repaired with 2/0 or 3/0 polydioxanone suture (PDS). After filling corpus cavernosum with saline, leaks were evaluated from fracture line. Skin defect was primarily repaired and wrapped with elastic bandages. In the post-operative period, antibiotic and non-steroid anti-inflammatory drug (NSAID) therapy was administered. Urethral cathater was removed on post-operative 1th day and patients were discharged at the post-operative 1th or 2th day with appropriate oral antibiotic and NSAID therapy. Post-operative IIEF-5 score and development of painful erection, penile curvature and loss of penile sensation were recorded from patients data.

Statistical analysis

Statistical Package for Social Sciences (SPSS) for Windows (SPSS, Chicago, USA) version 13.0 software was used for statistical evaluation. A Wilcoxon signed rank test was used to compare pre-operative and post-operative IIEF-5 scores. A p value less than 0.05 was considered significant.

Results

The mean age of patients was 37.8±12.2 (23-66) years. The mean follow-up time was 33.4±24.3 (3-68) months. As regards etiologic factors for development of penile fracture, patients were declared that 6 patients (31.6%) sudden rotation during sleep in bed, 8 of patients (42.1%) during sexual intercourse, 4 of patients (21.1%) during masturbation in and falling out of bed in 1 patient (5.2%). The time from the development of penile fracture to the operation was 11.1±10.02 (4-48) hours. The mean of pre-operative IIEF-5 score was 22.7±3.2 (5-25). In the pre-operative period, 1 patient had mild-moderate degree ED (IIEF-5 score=12-16), 3 patients had mild degree ED (IIEF-5 score=17-21) and 15 patients had no ED (IIEF-5 score≥22).

The mean of post-operative IIEF-5 score was 19.3±5.9 (5-25). There was a significant difference between pre-operative and post-operative IIEF-5 scores (p=0.01). In the post-operative period, IIEF-5 scores did not change in 10 patients (%52.6). In patients preoperatively without ED (n=15), severe degree ED developed in 1 (%0.6), moderate degree ED developed in 1 (%0.6) and mild degree ED developed in 2 (%10.5) patients.

In the post-operative period, penile curvature (100-300) was detected in 5 (26.3%), painful erection in 4 (21.05%) and loss of penile sensation in 2 (%10.52) patients. In patients with painful erection, severe ED developed in 1 patient and IIEF-5 score decreased in remaning 3 patients. In these patients had mild-degree ED.

Discussion

Penile fracture is described as the rupture of the tunica albuginea in the erected penis caused by sudden blunt force. It is an uncommon injury, but is a medical emergency. While the tunica albuginea thickness of penis is about 2 mm in the flaccid state, the thickness decreases about 0.25 to 0.5 mm during penile erection [1]. The most common cause of penile fracture are traumas during sexual intercourse in patient's history [2]. Less often causes are the penis with hands is forced into flexion, the erected penis bended during sleep and falling out of bed [2-5]. Physical examination is usually sufficient for diagnosis. Common findings in physical examination of patients are hematoma on the rupture side, curvature toward the opposite side associated with edema. However, urethral injuries accompany penile fracture in about 10-33% of cases. Urethral injuries, urethroragia, hematuria or dysuria may occur. These cases must be evaluated by urethrogram [4]. Differences in the incidence of urethral injury may be due to differences in the methodology of studies. In some studies, microscopic hematuria is also considered as urethral injury [4,6]. In our study, urethroragia and difficulty urinating rather than microscopic hematuria was considered suggestive of urethral injury. Urethrography was required only in 2 patients who had difficulty urinating. Urinary leakage was not detected with urethrography in these patients.

In the international literature; elastic bandages, cold application and anti-inflammatory medications were recommended for treatment of penile fracture [7]. Mydlo et al. evaluated five patients conservatively treated due to the penile fracture in a study at 2001 [8]. They reported that these patients had normal erectile and voiding function after one-year follow-up. Mild degree penile curvature, which did not require treatment, was seen in only 1 patient. However, there are some studies reporting that fibrous tissue formation, penile deviation, prolongation of hospitalization and erectile dysfunction occur in approximately 30% of patients who underwent treatment with conservative approach [9-11]. This rate is reported to be about 10% in patients who underwent surgical treatment [12].

In recent years, early surgical treatment is widely recommended. Muentener et al. compared early surgical repair and conservative approach in a study of 29 patients with penile curvature [13]. While the success rate was found to be 92% in surgical treatment, this rate was found to be 59% in conservative approach. The authors emphasized that early surgical repair is more effective than conservative treatment. Similarly, in a study by Gedik et al., 6 patients who underwent conservative treatment and 101 patients who underwent surgical repair for penile fracture were evaluated [14]. For a 3 months follow-up, 18 (17.8%) of 101 patients had loss of penis and glans sensation in surgical repair group. These patients did not have ED. Howewer, 3 (50%) of 6 patients in conservative approach group had penile curvature which did not affect sexual intercourse. Authors stated that the surgical treatment is more effective than the conservative approach for prevention of penile curvature. In the present study, penile curvature (100-300) was observed in 5 (%26.3) patients and loss of penile sensation observed in 2 (%10.5) patients.

Similarly in a more recent study, Yamaçake et al. retrospectively evaluated 42 patients who underwent surgical or conservative treatment due to penile fracture [15]. They reported that, 31 cases (88.6%) of the surgical group and 4 cases (66.7%) of the conservative group had sufficient erections for intercourse, with no voiding dysfunction and no penile curvature during the 19.2 months follow-up. But, the remaining 2 patients (33.3%) from the conservative group developed ED and 3 patients (50%) developed penile deviation. They concluded that, surgical approach provides excellent functional outcomes and lower complications. Early surgical management of penile fracture provides superior results and conservative approach should be avoided.

It is known that, painful erections depending on the curvature may lead to ED [13-15].

In the present study, in 4 patients (5.21%) with penile curvature had painful erection. In one of patients with painful erection, severe ED was seen. Remaing of the patients had mild- degree ED. The relationship between penile curvature and erectile dysfunction have been investigated extensively [3,9,13-16]. In a study, 21 patients with penile fracture were evaluated retrospectively in terms of post-operative sexual function [16]. They were able to establish contact with 17 patients. Fourteen patients demonstrated no evidence of ED, 1 patient reported symptoms of mild ED and one patient reported mild to moderate ED. Thirteen patients (83%) were reported to have a satisfactory sexual life according to Brief Male Sexual Function Inventory scale. Therefore, the authors reported that the early surgical treatment is promising in terms of long term sexual satisfaction. In the present study, the mean pre-operative and post-operative IIEF-5 scores were 22.7 and 19.3, respectively. Although the mean difference between preoperative and postoperative IIEF-5 scores was very small, it was statistically significant (p=0.01). In our follow-up period (mean 33.4 months), 4 patients had no ED in pre-operative period; among whom there was severe degree ED in 1 (0.6%), moderate degree ED in 1 (0.6%) and mild degree ED in 2 (10.5%).

In conclusion, we believe that patients who undergo early penile fracture surgery should be well informed in terms of possible penile curvature, painful erections and ED development.

Competing interests

The authors declare that they have no competing interests.

References

1. Kowalczyk J, Athens A, Grimaldi A. Penile fracture: an unusual presentation with lacerations of bilateral corpora cavernosa and partial disruption of the urethra. Urology 1994;44(4):599-600.
2. Mazaris EM, Livadas K, Chalikopoulos D, Bisas A, Deliveliotis C, Skolarikos A. Penile fractures: immediate surgical approach with a midline ventral incision. BJU Int 2009;104(4):520-3.
3. Ozorak A, Hoşcan MB, Oksay T, Güzel A, Koşar A. Management and outcomes of penile fracture: 10 years' experience from a tertiary care center. Int Urol Nephrol 2013;1(2):22.
4. Karadeniz T, Topsakal M, Ariman A, Erton H, Basak D. Penile fracture: differential diagnosis, management and outcome. Br J Urol 1996 ;77(2):279-81.
5. Gunes M, Pirincci N, Gecit I, Taken K, Çeçen K, Ceylan K. Our 8 Years Experience on Penile Fractures: The Diagnosis and Treatment. J Clin Anal Med 2012;3(4): 429-31.
6. Mydlo JH, Harris CF, Brown JG. Blunt, penetrating and ischemic injuries to the penis. J Urol 2002;168(4 Pt 1):1433-5.
7. Eke N. Fracture of the penis. Br J Surg 2002;89(5):555-65.
8. Mydlo JH, Gershbein AB, Macchia RJ. Nonoperative treatment of patients with presumed penile fracture. J Urol 2001;165(2):424-5.
9. Uygur MC, Gülerkaya B, Altuğ U, Germiyanoğlu C, Erol D. 13 years' experience of penile fracture. Scand J Urol Nephrol 1997;31(3):265-6.
10. 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.
11. Özkan L, Sarıbacak A, Özkan TA, Yılmaz H, Yıldız K, Çulha M. Natural course of tunica albuginea fibrosis and antifibrotic effect of intralesional verapamil injection in rabbits with penile fracture model. J Clin Anal Med 2012;3(2): 203-6.
12. Wespes E, Libert M, Simon J, Schulman CC. Fracture of the penis: conservative versus surgical treatment. Eur Urol 1987;13(3):166-8.
13. Muentener M, Suter S, Hauri D, Sulser T. Long-term experience with surgical and conservative treatment of penile fracture. J Urol 2004;172(2):576-9.
14. Gedik A, Kayan D, Yamiş S, Yılmaz Y, Bircan K. The diagnosis and treatment of penile fracture: our 19-year experience. Ulus Travma Acil Cerrahi Derg 2011;17(1):57-60.
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 J Urol 2013;54(7):472-6.
16. Nason GJ, McGuire BB, Liddy S, Looney A, Lennon GM, Mulvin DW et al. Sexual function outcomes following fracture of the penis. Can Urol Assoc J 2013;7(7-8):252-7.

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