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The effect of a penile fracture on ejaculatory and erectile functions: A cross-sectional study

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Ethics Committee Approval
Istanbul Prof. Dr. Cemil Taşçıoğlu Clinical Research Local Ethics Committee approved the study protocol with decision number 002 on 21/01/2020.
All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

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No conflict of interest was declared by the authors.

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Abstract

Background/Aim: There is not enough data in the literature about ejaculatory and erectile functions after a penile fracture. We aimed to report the post-fracture ejaculatory and erectile function change and their relationship with the psychological condition of the patient.
Methods: We retrospectively evaluated 27 patients with a penile fracture who were treated surgically. Pre-fracture and post-fracture ejaculatory and erectile functions were evaluated with Intravaginal Ejaculation Latency Time (IELT) and International Index of Erectile Function (IIEF) questionnaires. The psychological conditions of the patients after the fracture were evaluated with the Beck depression score.
Results: The mean IELT was increased after penile fracture (P=0.007). The post-fracture and pre-fracture IIEF scores were similar (P=0.062). There was a positive correlation between Beck depression score and post-fracture IELT (r=0.498; P=0.008).
Conclusions: According to our results, ejaculation time was longer after penile fractures. It may be related to neurogenic damage due to trauma or the post-fracture psychological condition. However, larger studies with long-term outcomes may reveal the relationship more thoroughly.

Keywords: Penile fracture, Ejaculation time, Erectile dysfunction, Depression

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Introduction

Penile fracture is an uncommon urologic emergency that is defined as the rupture of the tunica albuginea surrounding the corpus cavernosum. The incidence of penile fracture is 1/750,000, and patients in the fourth and fifth decades are affected predominantly [1,2]. The main etiologic mechanism of a penile fracture is the traumatic bend of the penis during erection. The most common reason is trauma during sexual intercourse [3]. Other common causes include masturbation and rolling over one's penis during a night erection [4, 5]. The injury may be accompanied by a dorsal neurovascular bundle and partial or complete urethral damage [6]. Conservative treatment has high complication rates [7]. Therefore, the best treatment is an immediate surgical intervention with the closure of the tunica albuginea and evacuation of the hematoma [8].

Complications such as erectile dysfunction, penile deviation, priapism, urethrocavernosal fistula, and urethral stricture may occur despite immediate surgical intervention [9]. Ejaculatory problems were reported after penile fracture in a recent study [10]. Ejaculatory dysfunction may be related to the penile injury or post-traumatic emotional conditions. There is no data about the relationship between ejaculation time and penile fracture in the literature. We aimed to investigate the effects of penile fracture and post-fracture psychological conditions on ejaculatory and erectile functions.

Materials and methods

We retrospectively analyzed the patients with a penile fracture who visited our Urology Outpatient Clinic. After scanning the data between January 2010 and November 2019, we reached a total of 27 patients with available data. Istanbul Prof. Dr. Cemil Taşçıoğlu Clinical Research Local Ethics Committee approved the study protocol with decision number 002 on 21/01/2020. The study was conducted in line with the Declaration of Helsinki. Written detailed informed consent was obtained from all subjects. Patients with available pre-fracture Intravaginal ejaculation latency time (IELT) and International Index of Erectile Function (IIEF) score data were included in the study. The patients with missing or unavailable data were excluded to prevent bias. All patients were operated on within 4-6 hours after the fracture. Sexual intercourse was forbidden for 6 weeks after the fracture to prevent complications. Demographic data, thorough medical and fracture histories of the patients, and sexual positions during intercourse were obtained from patient archive files.

All patients were evaluated for ejaculation time, erectile functions, and psychologic conditions. IIEF was used to evaluate the erectile capacity of the patients [11]. Post-fracture psychological conditions of patients were evaluated with Beck Depression Inventory [12]. We used the IELT to compare pre-fracture and post-fracture ejaculation times [13]. The control visit time of the patients was 3 months after the penile fracture.

Statistical analysis

The data were analyzed with the Statistical Package for Social Sciences (SPSS) version 22.0™ (IBM Corporation). Descriptive statistics, namely, mean, standard deviation, median, frequency, percentages, minimum, and maximum were presented. The distribution of the variables was assessed with the Shapiro-Wilk test. Wilcoxon Signed Ranks test was used to compare quantitative variables before and after the fractures. Spearman's correlation analysis was used to evaluate the relationship between quantitative variables. All *P*-values were two-tailed and a *P*-value of <0.05 was considered statistically significant.

Results

We evaluated 27 penile fracture patients treated surgically between January 2010 and November 2019 in Istanbul Prof. Dr. Cemil Taşçıoğlu City Hospital. General characteristics of all are presented in Table 1. The mean age of patients was 41.22 (9.55) years, and the mean body mass index (BMI) was 26.05 (3.44) kg/m^2. Eight patients smoked. The etiology was sexual intercourse in 16 patients and masturbation in eight. The etiology of the remaining 3 patients was rolling over one's penis during night erection. The penile fracture was bilateral in 9 patients. Urethral injury accompanied penile fracture in 10 patients. We also questioned the sexual intercourse position of the patients during the fracture. The "man on top" position was reported in 7 patients and the "woman on top" position was reported by nine. The mean Beck depression score of patients was 9.07 (2.5) after the penile fracture.

Table 1: General characteristics of penile fracture patients

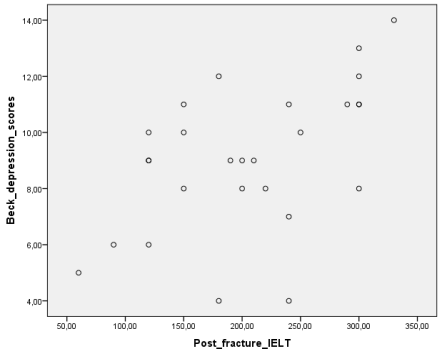
	n:27 mean (SD)
Age	41.22 (9.55)
BMI, kg/m^2	26.05 (3.44)
Cigarette (Yes/No)	8/19
Etiology	
Sexual intercourse	16
Masturbation	8
Rolling over during night erection	3
Sexual position	
Man on top	7
Woman on top	9
BECK depression score	9.07 (2.5)
Accompanying urethral injury	10/27
Bilateral cavernosal injury	9/27

Ejaculatory and erectile features of patients are presented in Table 2. Pre-fracture and post-fracture mean IELTs of the patients were 186.2 (80) sec and 205.55 (75) sec, respectively (*P*=0.007), while the pre-fracture and post-fracture mean IIEF scores were 29.16 (2.94) and 23.96 (6.16), respectively (*P*=0.062). The correlation graph of post-fracture IELT and Beck depression scores is presented in Figure 1. There was a positive correlation between post-fracture IELT and Beck depression scores (r=0.498; *P*=0.008).

Table 2: Ejaculatory and erectile features of patients

	Pre-fracture	Post-fracture	*P*-value
IELT, mean (SD) (secs)	186.2 (80)	205.55 (75)	0.007
IIEF score, mean (SD)	26.19 (2.94)	23.96 (6.16)	0.062

Figure 1: Scatter plot of post-fracture IELT and Beck depression scores; There is a positive correlation between them. (r=0.498; *P*=0.008)



Discussion

Penile fracture is one of the most traumatic injuries of the penis. In the early period of injury, immediate detumescence, severe edema, and hematoma are the most marked symptoms. A penile fracture may cause other long-term complications such as erectile dysfunction, priapism, urethrocavernosal fistula, and urethral stricture. The relationship between erectile function and a penile fracture was investigated in some studies. To the best of our knowledge, there is no study comparing pre-fracture and post-fracture ejaculatory functions.

Increased or decreased penile sensation may develop after penile fracture, due to injury to the accessory structures of the penis. This is also related to the magnitude of trauma. Penile fracture affects human psychology and is one of the frequent reasons for delayed ejaculation. Therefore, the effect of penile fracture and psychological conditions on sexual functioning is a topic worth researching.

Barros et al. reported premature ejaculation and delayed ejaculation cases after penile fracture in their study [10]. However, data on sexual function after an injury is limited. We compared the patients' mean pre- and post-fracture IELTs and found post-fracture IELT to be significantly longer. The dorsal side of tunica albuginea is thicker than the ventral side. Therefore, penile fracture commonly occurs at the ventral tunica albuginea. Ejaculatory functions may be protected in minor penile fractures due to the far localization of the neurovascular bundle from the ventral side. More traumatic injuries may affect the neurovascular bundle and ejaculation times can change. More studies using the traumatic scale can clearly show the relationship.

Sexual activity is important for the quality of men's life and may be affected by penile trauma via psychological factors [14]. Boncher et al. [15] reported that there was a loss of self-confidence leading to anxiety and depression in penile fracture patients and their partners during their early follow-up. This may be related to a fear of recurrence. Similarly, Muentener et al. [16] reported that sexual dysfunction and psychological stress were observed in penile fracture patients. We found a positive correlation between IELT and Beck depression scores. This correlation shows the effect of psychological status on ejaculation time.

Erectile dysfunction is one of the most important complications after a penile fracture. Zargooshi et al. [5] reported that ED rates were very low (1.4%) after surgical treatment and higher (80%) after conservative treatment. There is not still a valid cut-off time for surgery to prevent the complications. However, early surgical intervention and tunica defect repairing are recommended to prevent long-term complications [17-19]. Some studies report that the severity of erectile dysfunction worsens after surgically-treated penile fractures in the long term [20]. On the other hand, studies are showing that erectile functions and sexual potency were preserved in patients treated surgically [21, 22]. In our study, there was not a clear change in IIEF scores after the fracture. There may be confounding factors about the ED etiology. Age and pre-fracture erectile function status have important roles in the future erectile potency of the patient. ED is more likely in elderly patients and erectile functions may worsen in patients who had ED before the fracture. Therefore, the erectile functions of the patients should always be evaluated preoperatively.

In the "woman on top" position, the female partner usually manages the movements. A penile fracture may develop in vigorous action that occurs outside the control of the male partner. Some studies showed that the "woman on top" position has a risk factor for penile fracture [23, 24]. In our study, we found that in 9 of 16 cases, the penile fracture occurred during the "woman on top" position. However, there was not an obvious predominance. The other risk factor may be the BMI of the patients. The mean BMI of the patients with penile fracture was 26.41 (2.06) kg/m^2 in this study. Low-weight people may be more active and faster during sex. Thus, there may be a relationship between male-weight and vigorous action. However, there is insufficient data to define BMI as a risk factor for penile fracture.

Limitations

Our study has some limitations. First, our follow-up time is short, and the study has a small number of patients. Second, detailed neurophysiologic evaluations are needed to demonstrate possible neurogenic injury which may affect ejaculation time. In addition, we did not use a valid scale to evaluate the severity of the penile fracture.

Conclusion

Penile fracture is a very traumatic injury for men, which may lead to complications such as ejaculatory and erectile function failure despite timely surgery. We showed that ejaculation time increases after penile fracture cases. The most probable reason is the post-fracture psychological condition of patients. Further studies with larger numbers of patients may elucidate the factors affecting ejaculation functions. We hope that this study will lead to future work on this subject.

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