

Penile Morphology among a Sample Size of Egyptian Males

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Abstract

Objective: To survey the different aspects of penile morphology among a sample of Egyptian males (normal, congenital curvature, etc.) and their relation to erectile dysfunction.

Patients and Methods: A sample of 110 male subjects (age ranges from 20–36 years) was selected from our private centre to participate in our study. Although nearly half of them (54 subjects, 49%) had congenital penile angulation (because of physiological curvatures) of $\geq 25^\circ$, according to measurement on a graph, those patients were suffering from uncomfortable vaginal penetration. 14/54 of subjects (26%) were suffering from erectile dysfunction. Assessment of these patients has included; history (concentrating on the past history of trauma or surgical interventions in cases of curvatures), general and local objective examination, induction of erection using prostaglandin E1 (dosage 10–20 g), a graph was taken while the penis is erect, dynamic and basal Duplex ultrasonography examination of the penis, penile length measurement and hormonal profile assessment. Erectile dysfunction measurement was assessed using the International Index of Erectile Function-5 (IIEF-5).

Results: A total of 54 subjects (49%) have suffered from congenital physiological penile curvatures of $\geq 25^\circ$, which made 14 of them to suffer from erectile dysfunction.

Conclusion: Almost half of the selected sample had congenital penile angulation, hence, surgical correction of penile curvature correction is recommended, especially in cases suffering from erectile dysfunction or vaginal penetration discomfort.

Keywords: Penile morphology; Penile length

Introduction

The human penis serves as the male external sexual organ, in addition to being the urinal duct, it consists of the root the body (the corpus) and the epithelial parts (shaft skin, which extends to cover the glans and the glans itself). The corpus of the penis is composed of three parts of two different tissues, on the dorsal aspect the two corpora cavernosa and the corpus spongiosum on the ventral side. The urethra passes through the prostate, where it is connected to the ejaculatory duct, then it traverses through the corpus spongiosum till the tip of the glans where its meatus is located, hence being the passage for both the urine and the semen [1]. It is estimated that; 0.4/1000 cases suffer from congenital penile angulation without associated congenital anomalies (e.g., hypospadias, epispadias, or spongiosal hypoplasia) [2]. Ventral angulation is the most frequent form of angulation, which is sometimes associated with a lateral curvature, however, pure lateral angulations are scarce (3). A curvature over 25–30° affects vaginal entry and intercourse [4]. Male subjects suffering from such a condition usually seek medical help between the age of (20–28) years [2,4,5]. Until now, surgery is the accepted therapy for congenital penile curvature if intercourse is affected or based on the patient request, the basis is to straighten the penile shaft to reach a better penetration [2]. Nesbit procedure or tunica albuginea plication are the recommended methods of straightening for patients with adequate rigidity and less severe deformity described as curvature $<60^\circ$ without narrowing/

hinging [6]. Patients who have more serious, complex Peyronie's disease, with curves of $>60^\circ$ but maintaining good preoperative erectile function should be submitted to a straightening consisting in plaque incision or partial excision and grafting [7]. In the end, for those patients who have erectile dysfunction and Peyronie's disease, penile prosthesis placement with straightening procedure is the best method to cure both diseases [8,9]. Difficulty in vaginal entry is the principal symptom of congenital penile curvature. Some studies sustained that the embarrassment of the patients induced by their subjective perception of their disfigured penis might affect either their ability to begin/continue an affective relationship. Several studies have reported that the patient's perception of his penile morphology disfigurement is the main cause of psychological erectile dysfunction and the inability to sustain a successful relationship or their erection [2,3,5]. It was assumed that; aesthetic surgery of male genitals, in addition to aesthetic surgery of other organs is associated with improvement in self-esteem, although this statement is not yet supported by clinical evidence [6,7]. Although comfortable vaginal intromission and satisfactory penile features, which are the outcomes in the vast majority of patients undergoing surgery, are the common primary endpoints of papers testing the efficacy of this surgery, the improvement of the subjective perception of penile features and of comfort in vaginal penetration, which could modify psychogenic ED and/or the social relationships of these patients, has been studied little [8]. Therefore, we are compelled to explore the subjective perception of penile features, vaginal penetration ability and ED simultaneously in a

sample of patients, of which some are affected by congenital penile curvature.

Patient and Methods

A cross-sectional study was conducted with a consecutive series of patients who were selected from our andrology center at Nasr City, Egypt. Almost half of the selected patients were referred for penile curvature affecting successful and comfortable vaginal penetration. The ethical committee of Al Azhar University has approved the research and written informed consent was obtained from all patients before the start of the study. All patients referred to our center with the main complaint of congenital penile angulation and curvature (which was responsible for uncomfortable vaginal penetration) was enrolled in the current study. The cut-off angle of the penile curvature was $>25^\circ$ according to the published literature [7]. Patients were excluded from the study according to the following exclusion criteria: (i) Peyronie's disease, (ii) Previous penile fracture, (iii) Epispadias, hypospadias or spongiosal hypoplasia or (iv) Hormonal alterations. This research was carried out using interviews and questionnaires; the reasons for this are presented in the discussion section Each patient has undergone an initial thorough assessment, which included; case history, objective examination (general and local, inspection and palpation of both penis and testicles). A drug-induced erection using intra-cavernosal prostaglandin E1 (PGE1) in a dose of (10-20 μg). A photograph was taken during erection at an outpatient clinic according to the Kelami procedure [9]. A dynamic (with intracavernosal PGE1 10 μg) and basal echo-color Doppler ultrasonography (performed with ESAOTE-AU5-EPI equipment, a 7.5 MHz probe), and penile length measurement [10]. Hormonal serum profile (follicle-stimulating hormone, luteinizing hormone, free and total testosterone and prolactin) were also performed [11]. In order to investigate the presence of erectile dysfunction with the cases presented with congenital penile curvatures, the International Index of Erectile Dysfunction-5 (IIEF-5) was used [12], where the following scales were used for assessment: 1-7; Severe ED, 8-11: Moderate ED, 12-16: Mild-moderate ED, 17-21: Mild ED, 22-25: No ED. In the present study, we have surveyed the following items; (i) satisfaction with the subjective perception of penile features;

(ii) the comfort of vaginal penetration and (iii) ED. Furthermore, we attempted to determine whether differences exist in penile length between satisfied and dissatisfied patients with regard to their subjective perception of penile features. Studied sample was then classified into 2 groups, group 1 (subjects with penile curvature; 54) and group 2 (subjects without penile curvatures; 56). The 2 groups were compared regarding the prevalence of ED among their subjects, hormonal serum profile and the doppler ultrasonography indices.

Statistical analysis

All data analyses were carried out according to a pre-established analysis plan; subjects with normal penile features were compared with those with congenital penile angulation. Proportions were compared using the z-test and means were compared using the t-test.

Results

The present study has enrolled 120 eligible patients between (20 and 36 years). Four patients have refused to participate and 6 have dropped out during the course of investigations. In total, results were available from 110 patients (mean age 29.2 ± 5.1 years, range 20-36 years). The demographic and clinical characteristics of the studied sample are presented in Table 1. 54 out of 110 subjects (49%) have suffered from congenital penile curvature of different types. Ventral angulation subjects have a mean angle of ($40.6 \pm 9.1^\circ$) and ventral angulation associated with left curvature subjects has a mean angle of ($29 \pm 5^\circ$). Thirteen subjects were single, however, has sexual intercourse without marriage, 77 were married and 20 subjects were divorced, separated or widowed. Thirty two subjects were illiterate, 22 were able to read and write, 21 have a pre-university education and 35 had a university education. Fifty-one subjects were healthy and not suffering any medical conditions, 27 have diabetes and were receiving anti-diabetic drugs, 14 have hypertension and were maintained on anti-hypertensive medications. Fourteen subjects among the group who have been suffered from congenital penile curvature had ED of different degrees (5 mild; 4 mild-moderate; 2, oderate and 3 severe), while normal group have only 4 subjects with ED (3 mild and 1 mild-moderate).

Parameter	Mean \pm SDOR No. (%)
Age (Years)	29.2 \pm 5.1
Marital Status	
Single	13 (11.8)
Married	77 (70)
Divorced, separated, widowed	20 (18.2)
Educational Level	
Illiterate	32 (29.1)
Read and write	22 (20)
Pre-university	21 (19.1)
University	35 (31.8)
Occupation	
Employed	52 (47.3)

Un-employed	58 (52.7)
Residence	
Rural	64 (58.2)
Urban	46 (41.8)
Co-morbidities	
Healthy	51 (46.4)
Hypertension and Anti-hypertensive	14 (12.7)
Diabetes mellitus and Anti-diabetics	27 (24.5)
Cardiovascular and CV medications	11 (10)
Undiagnosed medical condition	1 (0.9)
Erectile Dysfunction Degree	
Mild	8 (7.3)
Mild-Moderate	5 (4.5)
Moderate	2 (1.8)
Severe	3 (2.7)
Hormonal Profiles	
Total testosterone, ng/mL	5.4 ± 1.6
Free testosterone, pg/mL	22.3 ± 5
Luteinizing hormone, IU/L	4.1 ± 0.8
Follicle-stimulating hormone, IU/L	4 ± 1
Prolactin, g/L	7 ± 2.4
Arterial Dynamic Duplex Penile Patterns (cm/s)	
Left Cavernosal Artery	
PSV	48.1 ± 4.5
EDV	2.5 ± 1.1
Right Cavernosal Artery	
PSV	50.7 ± 6.3 2.1 ± 1.2
EDV	
Left Dorsal Artery	
PSV	54 ± 7.5
EDV	2.1 ± 1.3
Right Dorsal Artery	
PSV	55.5 ± 4
EDV	2.1 ± 0.8
Degree of Erectile Dysfunction	

mild	8 (7.3)
mild-moderate	5 (4.5)
moderate	2 (1.8)
severe	3 (2.7)

Table 1: Demographic and clinical characteristics of the studied sample (n=110). Comparison between the 2 groups regarding the number of ED subjects, p=0.02.

Discussion

The goal of this study was to survey the different aspects of penile morphology among a sample size of Egyptian males (normal, congenital curvature, etc.) and its relation to erectile dysfunction. Our data have showed that; almost half of our selected sample was suffering from congenital penile angulation with curvature, which was ventral or ventral with left curvature of varying degrees. A comparative study was done between two groups (normal individuals and patients with curvature) as regards different parameters. There was no significant difference between the two groups, except for the prevalence of erectile dysfunction for both, where the higher percentage was recorded among the congenital penile curvature (CPC) group (14 subjects). Similar data were reported by Cavallini and Caracciolo. They have found that CPC was associated with psychological ED, which did not improve, even after surgical correction of the condition [8]. This may be due to the fact that; psychological ED is associated with interpersonal relationships and the psychological perception of the penile morphology and satisfaction. Moreover, the current data have showed that CPC was not associated with altered hormonal and/or penile doppler changes, which further have supported the fact that ED in CPC cases is psychological, similar data were previously reported [8]. CPC is the result of abnormal development of the tunica albuginea of the corporal bodies and increased elasticity of the tunica on the greater curvature. Patients usually present for repair in their twenties while the curvature becomes apparent with progression of puberty [13]. These data are in agreement with our findings, where the range of age in our sample was (20–36 years) with a mean of (29.2 ± 5.1 years). The severity and direction of the curvature can range with most patients seeking intervention for curvatures greater than 30°. A number of techniques have been described for repair with overall success rates ranging from (71-100%) [13]. Congenital penile curvature (CPC) or chordee is a relatively uncommon condition that may present in late adolescent or early adult life [14]. The incidence was estimated to be (0.6%), but the incidence of clinically significant CPC was much lower, as the degree of curvature and sexual dysfunction varied widely [15]. CPC can be mistakenly classified as Peyronie's disease because the physical manifestations may be similar, yet the etiology and pathophysiology are different. CPC may be ventral, dorsal or lateral. While dorsal curvature is often associated with epispadias, ventral curvature is often associated with hypospadias. Typically, isolated cases of CPC occur ventrally with an orthotopic meatus. This review will discuss isolated CPC without associated

urethral plate malformation such as hypospadias, epispadias or shortened urethral plate [13].

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