J Surg Med. 2020;4(5):390-393.
DOI: 10.28982/josam.727165

Research article
Araştırma makalesi

Journal of Surgery and Medicine
e-ISSN=2602-2079

Relationship of orgasm with measurable dimensions of clitoris and visibility of clitoral glans

Klitorisin ölçülebilir boyutları ve glansın görünürlüğü ile orgazm arasındaki ilişki

Çiğdem Pulatoğlu [1], Aşkı Ellibeş Kaya [2]

[1] Department of Obstetrics and Gynecology, Istinye University, Gaziosmanpasa Medical Park Hospital, Istanbul, Turkey
[2] Department of Obstetrics and Gynecology, Duzce University School of Medicine, Duzce, Turkey

ORCID ID of the author(s)
ÇP: 0000-0002-7595-3629
AEK: 0000-0002-1323-7416

Corresponding author/Sorumlu yazar:
Çiğdem Pulatoğlu
Address/Adres: İstinye Üniversitesi Gaziosmanpaşa Medical Park Hastanesi, Kadın Hastalıkları ve Doğum Kliniği, İstanbul, Türkiye
e-Mail: cigdempulatoglu@gmail.com

Ethics Committee Approval: Ethics approval was obtained from the Ethics Committee of Düzce University, Medical Faculty Hospital (Number: 2017/122). All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.
Etik Kurul Onayı: Çalışma Düzce Üniversitesi Tıp Fakültesi Hastanesi Etik Kurulu (Sayı: 2017/122) tarafından onaylandı. İnsan katılımcıların katıldığı çalışmalardaki tüm prosedürler, 1964 Helsinki Deklarasyonu ve daha sonra yapılan değişiklikler uyarınca gerçekleştirilmiştir.

Conflict of Interest: No conflict of interest was declared by the authors.
Çıkar Çatışması: Yazarlar çıkar çatışması bildirmemişlerdir.

Financial Disclosure: The authors declared that this study has received no financial support.
Finansal Destek: Yazarlar bu çalışma için finansal destek almadıklarını beyan etmişlerdir.

Published: 5/30/2020
Yayın Tarihi: 30.05.2020

Abstract

Aim: The clitoris is the dominant sexual organ in the female, varies in size and plays an active role in genital sensation and orgasm. Since the importance of clitoral glans visibility is known, surgeries of clitoris are increasing day by day. However, there is insufficient literature on the subject. The aim of this study is to determine the effect of measurable dimensions of clitoris and the clitoral glans visibility on female sexual function.

Methods: Seventy-seven patients included in this cross-sectional study were examined in the lithotomy position and the measurable dimensions of the clitoris, the visibility of the clitoral glans and the length of the prepuce were noted. The Female Sexual Function Index (FSFI) was applied to all participants, which were divided into two groups, as those with normal orgasmic function and orgasmic dysfunction. One researcher made all measurements.

Results: There were no statistically significant differences in clitoral glans width, length, or prepuce length (P=0.11, P=0.63, P=0.35, respectively). Clitoral glans was visible in 41 of 51 patients in the normal orgasmic function group, which was significantly higher than the group with orgasmic dysfunction (P<0.001).

Conclusion: Since there is a significant relationship between clitoral glans visibility and orgasm, genital surgeries performed to increase clitoral glans visibility can facilitate sexual satisfaction and/or increase orgasm intensity. The fact that the relationship between measurable dimensions of clitoris, length of prepuce and orgasm cannot be shown suggests that clitoral glans visibility is more important than clitoral size for sexual stimulation.

Keywords: Sexual dysfunction, Clitoris, Orgasm

Öz

Amaç: Klitoris kadında baskın cinsel organıdır ve boyut olarak değişken olup genital duyum ve orgazmda etkin bir rol oynamaktadır. Klitoral glans görünürlüğünün önemi bilindiğinden klitoral glansı açığa çıkaracak cerrahiler gün geçtikçe artmaktadır. Ancak bu durumu destekleyecek literatür bilgisi yetersizdir. Bu çalışmanın amacı klitorisin ölçülebilir boyutları ve klitoral glans görünürlüğünün kadın cinsel fonksiyonu üzerindeki etkisini belirlemektir.

Yöntemler: Bu kesitsel çalışmaya dahil edilen 77 hastanın litotomi pozisyonunda klitorislerinin ölçülebilen boyutları ile klitoral glansın görünürlüğü ve prepisyum uzunlukları ölçülerek kaydedildi. Kadın Cinsel Fonksiyon İndeksi (FSFI) uygulandı. Hastalar normal orgazmik fonksiyonu olan ve orgazmik disfonksiyonu olan iki gruba ayrıldı. Bütün ölçümler tek araştırmacı tarafından yapıldı.

Bulgular: Klitoral glans genişliği, glans uzunluğu, prepisyum uzunluğu ölçümlerinde orgazmik fonksiyonlar açısından gruplar arasında istatistiksel olarak anlamlı bir fark izlenmedi (P=0.11, P=0.63, P=0.35). Klitoral glansın görünür olduğu 51 hastanın 41 tanesi orgazmik grupta yer aldı. Klitoral glans görünürlüğünün orgazmik grupta daha fazla olduğu izlendi (P<0,001).

Sonuç: Klitoral glans görünürlüğü ile orgazm arasında anlamlı bir ilişki olduğundan klitoral glans görünürlüğünü artıracak şekilde uygulanan genital cerrahiler cinsel tatmini kolaylaştırabilir ve/veya orgazm yoğunluğunu artırabilir. Klitorisin ölçülebilen boyutları ve prepisyum uzunluğu ile orgazm arasındaki ilişkinin gösterilememesi klitoral uyarı için boyutlardan daha çok klitoral glansın görülebilir olmasının ön planda olduğunu düşündürmektedir.

Anahtar kelimeler: Cinsel disfonksiyon, Klitoris, Orgazm

How to cite/Atıf için: Pulatoğlu Ç, Kaya AE. Relationship of orgasm with measurable dimensions of clitoris and visibility of clitoral glans. J Surg Med. 2020;4(5):390-393.

Introduction

Sexual health is one of the most important indicators of the individual's quality of life, which is negatively affected by sexual dysfunction [1].

Sexual dysfunction classification systems are structured on the coordination of the phases of sexual response cycle, which are defined by Master and Johnson and developed by Kaplan, including desire, arousal, and orgasm [2]. According to the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) criteria, the most common female sexual dysfunction is desire / arousal and orgasmic disorders [3,4].

The frequency of orgasmic disorders in women is between 18% and 34%, which is quite high [5]. Studies have shown that only 39-47% of married women achieve orgasm in every sexual intercourse and only 12-16% are multi-orgasmic [6].

The clitoris, located in the vulva and distal vagina of the female sexual anatomy, is the dominant sexual organ of the woman. Anatomical and physiological differences can facilitate sexual satisfaction or increase the intensity of orgasm [7]. The clitoris is called the clitoral complex with the distal vagina and urethra [7]. The clitoral complex is variable in size and plays an active role in genital sensation and orgasm [8,9]. Some studies suggest that there is a relationship between the clitoral position and orgasm by measuring urethrovaginal and clitoral-urethral distances [10]. However, very few studies have addressed the relationship between clitoral size, visibility, and female sexual response. While conducting these studies, many different scales are used to detect sexual response and sexual dysfunction in women. One of the most frequently used is the Female Sexual Function Index (FSFI). Different individual domains such as desire, arousal, lubrication, orgasm, satisfaction, and pain are analyzed with this questionnaire [11].

The aim of this study is to determine the effect of measurable clitoral dimensions and clitoral glans visibility on female sexual function by comparing women with normal and dysfunctional orgasms.

Materials and methods

This cross-sectional study included 77 participants who applied to our hospital's outpatient clinic between April 2018 and January 2019 for routine gynecological examination. These participants who reflected the healthy society were premenopausal women, over the age of 18 years, had been sexually active for the past 12 months and having sexual intercourse for at least in every 15 days.

Informed consent forms were obtained from all patients. Those who did not want to participate in the study, who were not sexually active, patients with organic pathologies in their vaginal examinations, patients under the age of 18 years or over the age of 55 years, patients who underwent genital surgery for aesthetic or other reasons, postmenopausal patients or those under hormone replacement therapy, patients with symptoms that may be due to hormonal imbalances such as increased muscle mass, clitoral growth, acne development or voice thickening, those using oral contraceptives, topical estrogen or sexual enhancement drugs, patients with menstrual irregularity, primary anorgasmic patients, and morbidly obese patients with BMI >30 kg/m^2 were excluded from the study.

Ethical approval was obtained from the Ethics Committee of Düzce University Medical Faculty Hospital (Ethics Committee Number: 2017/122). All participants were informed about the study and the confidentiality of the interview before they were included. Demographic data of the patients (age, body mass index (BMI), parity, marital status, number of partners, smoking habit, and delivery type) were recorded.

The patients underwent gynecological examination in the lithotomy position. After evaluation of the clitoral glans visibility only by spontaneous inspection, it was recorded whether the glans of clitoris was visible or not. The skin fold on the clitoris was measured craniocaudally and noted. Clitoral measurements were made with the help of 'digital stainless steel vernier caliper' which can measure one tenth of a millimeter. In terms of hygiene, calipers were sterilized by ethylene oxide or used by passing into disposable pouch gloves. All clitoral glans measurements were measured by pulling the prepuce back.

The clitoral length was measured as the distance from crura insertion at the symphysis pubis to the tip of the glans, as described by Verkauff [12]. The clitoral width was recorded as the transverse diameter at the widest point. All measurements were made by the same researcher (AEK).

Female Sexual Function Index (FSFI) with a Turkish validity and reliability analysis (Cronbach's alpha coefficient of 0.95, test retest reliability of 0.75-0.95) was applied to all patients [13]. The cutoff scores for the FSFI scales were created by using the scale-specific means for women without sexual dysfunctions minus one SD as reported by Wiegel and colleagues [14]. The cutoff score was 3.75 for orgasm. Based on this value, the patients were divided into two groups, as those with and without orgasmic dysfunction according to total scores of the scale.

An FSFI total score of 26.55 is generally considered the optimal cut-off score to differentiate women with and without sexual dysfunction (maximum possible score: 36) [14].

Statistical analysis

The descriptive statistics for continuous variables were expressed as mean (standard deviation) or median (minimum-maximum), while nominal variables were expressed as number and percentage (%). The significance of the difference between the mean values of the groups was evaluated using Mann Whitney U test. A *P*-value< 0.001 was considered statistically significant. Statistical analysis was performed using SPSS for Windows version 22 software (SPSS Inc., Chicago, IL, USA).

Results

The mean age of the patients was 32.8 (7.8) years, and the mean BMI was 24.91 kg/m^2 (4.68). Age and BMI were compared between the groups with no significant differences (*P*=0,17). All patients were sexually active, 14 (18.2%) were never married, 58 (75.3%) were married, and 5 (6.5%) were divorced. Seventy-one (92.2%) patients had one partner, while 6 (7.8%) had two partners. While 41 (53.2%) patients were non-smokers, 36 (46.8%) were smoking. The mean parity of the patients was 2 (min-max 0-6). Thirty-four patients (44.2%) gave

birth by normal vaginal route. The demographic data of the patients are presented in Table 1.

The measurable dimensions of the clitoris were evaluated in patients with orgasmic dysfunction. Clitoral glans width, length and prepuce length were 0.66 (0.16) cm, 0.91 (0.24) cm and 2.00 (0.45) cm, respectively. In patients with normal orgasmic function, the glans width, length, and prepuce length were 0.59 (0.14) cm, 0.87 (0.17) cm, 2.07 (0.40) cm, respectively. There was no statistically significant difference between the measurable dimensions of the clitoris between both groups (P=0.11, P=0.63, P=0.35, respectively). The evaluation of 77 patients for clitoris glans visibility revealed that the glans was invisible in 26 patients, and visible in 51 patients.

Ten of 51 patients with a visible glans were in the group with orgasmic dysfunction, while 41 were in the orgasmic group. It was found that clitoral glans visibility was higher in the orgasmic group (P<0.001). The FSFI total scores in the groups with orgasmic dysfunction and normal orgasmic function were 16.5 (0.95) and 28.9 (0.42), respectively. The increase in total score of FSFI is significantly and directly related to the intensity of orgasm (P<0.001). In Table 2, the comparison of the measurable dimensions of the clitoris, prepuce length, clitoral glans visibility and FSFI Total scores in patients with or without orgasmic dysfunction are presented.

Table 1: Demographic data of patients

	n=77 mean (SD), median, min-max
Age mean (SD)	32.8 (7.8)
BMI mean (SD)	24.91 (4.68)
Parity (median, min-max)	2, 0-6
Marital status (n, %)	
Single/Partner	14, 18.2%
Married	58, 75.3%
Divorced	5, 6.5%
Partner count (n,%)	
One	71, 92.2%
Two	6, 7.8%
Smoking (n,%)	
No	41, 53.2%
Yes	36, 46.8%
Delivery method (n,%)	
Vaginal	
Yes	34, 44.2%
No	43, 55.8%

BMI: Body mass index, SD: Standard deviation

Table 2: Comparison of measurable clitoral dimensions, clitoral glans visibility and FSFI total scores in patients with or without orgasmic dysfunction

	OD-G (n= 28)	O-G (n= 49)	*P*-value
Clitoral Glans width	0.66 (0.16)	0.59 (0.14)	0.11
Clitoral Glans length	0.91 (0.24)	0.87 (0.17)	0.63
Prepuce length	2.00 (0.45)	2.07 (0.40)	0.35
Visibility of the Clitoral Glans			
Not visible (n = 26)	18	8	<0.001
Visible (n = 51)	10	41	
FSFI			
Total	16.5 (0.95)	28.9 (0.42)	<0.001

OD-G: Orgasmic dysfunction group, O-G: Orgasmic group, Data are expressed as mean (Standard deviation), Measurements are given in centimeters.

Discussion

There is surprisingly limited data on relationship between the measurable dimensions of the clitoris and orgasm in the literature. The most important finding of this study is to reveal the importance of clitoral glans visibility in achieving orgasm. However, no relationship was found between the measurable dimensions of the clitoris, prepuce length and orgasm.

In a study in which clitoral measurements were made, the measurement results obtained by different physicians were evaluated and no statistically significant difference was found [15]. The fact that there is no significant difference between the measurements of different physicians also shows that measurements are completely reliable in this study, in which all the measurements were done by a single physician. This study represents the first in the literature which indicates the relationship between visibility of clitoral glans and orgasm. Since the assessment may vary by person, patients were examined by a single physician who has expert publications in the field of female genital area anatomy and practiced in examination of the vulvar region (AEK).

In a study conducted by Doğan et al. [16], improvement of sexual functions has a prominent place among the reasons that motivate women towards genital aesthetic surgeries. According to a study conducted by Goodman et al. [17], it was shown that there was a significant increase in postoperative sexual satisfaction rates in patients who underwent clitoral hoodplasty in order to increase the visibility of clitoral glans. However, since combined surgeries such as labioplasty and clitoral hoodplasty were performed concomitantly in some patients, one should not incorrectly state that clitoral hoodplasty alone improves sexual satisfaction. Placik et al. [18] reported that no decrease in clitoral region sensitivity was observed in patients who underwent clitoral hoodplasty. To the best of our knowledge, there is no study that shows the negative effects of clitoral region surgeries on orgasm. In our study, among the patients who had no previous genital surgeries, a statistically significant relationship was found between clitoral glans visibility, sexual function, and orgasm. This suggests that performing genital surgery to increase clitoral glans visibility may benefit patients in improving sexual satisfaction.

In a cohort study of Vaccaro et al. [19], women with normal orgasmic function have been shown to have smaller clitoral complexes in MR examination. In contrast, another study on measurements determined by non-contrast pelvic MRI shots showed that orgasmic functions are associated with larger clitoral complexes [20]. In both MRI examinations, the entire clitoris was measured. In our study, the measurable dimensions of the clitoris were evaluated. There was no statistically significant relationship between the glans width and length, the measurable dimensions of clitoral glans, and orgasm. In the research by Oakley et al. [20], an evaluation was also made according to the location of the clitoris, that is, the distance from the entrance of the vagina. Although the absence of such a measurement in this study seems like a limitation, more studies should be conducted in larger series regarding whether the clitoral glans visibility or location of clitoris is a more prominent factor for orgasm.

Lloyd et al. [5] showed that clitoral dimensions are not related to age, parity, ethnicity, hormone use, or history of sexual activity. However, in another study, there was a relationship between high androgen and estradiol levels and the dimensions of clitoral glans, which showed that clitoral tissue responds to serum hormones [21]. Although it seems a limitation of the study to not evaluate the hormone profile, this limitation was tried to be overcome by excluding patients who are likely to have hormone irregularities. Patients with menstrual irregularities, menopausal symptoms as well as those under hormone replacement therapy, who use oral contraceptives, topical

estrogen or sexual enhancement drugs and those with symptoms related to an increase in testosterone production were not included in the study.

Limitations

Measuring only the visible parts of the clitoris, not using other imaging techniques to measure the size of the corpus and crus, and using only FSFI among all sexual assessment scales to evaluate sexual and orgasmic dysfunction are the other limitations of our study.

Conclusion

Since there is a significant relationship between clitoral glans visibility and orgasm, genital surgeries performed to increase clitoral glans visibility can facilitate sexual satisfaction and/or increase orgasm intensity. The inability to show the relationship between the measurable dimensions of the clitoris and orgasm suggests that clitoral stimulation is more related to visibility of clitoris rather than the size of it. The localization of the prepuce is more important for orgasm compared to its length: It should be localized in such a way that it does not cover the clitoris. Although this study contributes significantly to the literature, future studies with larger series are required.

References

1. Ellibes AK, Dogan O. Does Educational Level Affect Vulvar Perception? Journal of Clinical Obstetrics &Gynecology. 2018;28(3):95-104.
2. Puppo V. Anatomy and physiology of the clitoris, vestibular bulbs, and labia minora with a review of the female orgasm and the prevention of female sexual dysfunction. Clin Anat. 2013;26(1):134–52.
3. Dysfunction FS. ACOG Practice Bulletin. 2011;117(4):996–1007.
4. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th edition. Washington, DC; 2013.
5. Hayes RD, Dennerstein L, Bennett CM, Fairley CK. What is the "true" prevalence of female sexual dysfunctions and does the way we assess these conditions have an impact? J Sex Med. 2008;5:777–87.
6. Asafo-Agyei SB, Ameyaw E, Chanoine JP, Zacharin M, Nguah SB. Clitoral size in term newborns in Kumasi, Ghana. International Journal of Pediatric Endocrinology. 2017;2017:6.
7. O'Connell HE, Eizenberg N, Rahman M, Cleeve J. The anatomy of the distal vagina: towards unity. J Sex Med. 2008;5:1883–91.
8. Lloyd J, Crouch NS, Minto CL, Liao LM, Creighton SM. Female genital appearance: "Normality" unfolds. BJOG. 2005;112:643–6.
9. Jannini EA, Rubio-Casillas A, Whipple B, Buisson O, Komisaruk BR, Brody S. Female orgasm(s): One, two, several. J Sex Med. 2012;9:956–65.
10. Wallen K, Lloyd EA. Female sexual arousal: Genital anatomy and orgasm in intercourse. Horm Behav. 2011;59:780–92.
11. Rosen R, Brown C, Heiman J, Leiblum S, Meston C, Shabsigh R, et al. The Female Sexual Function Index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. J Sex Marital Ther. 2000;26:191.
12. Verkauf BS, Von Thron J, O'Brien WF. Clitoral Size in Normal Women. Obstet Gynecol. 1992;80(1):41–4.
13. Aygin D, Aslan FE. Kadın Cinsel İşlev Ölçeği'nin Türkçeye Uyarlaması. Turkiye Klinikleri Journal of Medical Sciences. 2005; 25(3):393-9.
14. Wiegel M, Meston C, Rosen R. The Female Sexual Function Index (FSFI): Cross-validation and development of clinical cutoff scores. J Sex Marital Ther. 2005;31(1):1–20.
15. Konak BA, Özkan B. Yenidoğan Bebeklerde Anogenital Mesafe Çlçümü Ve Etkileyen Faktörler. Atatürk Üniversitesi Tıp Fakültesi. Çocuk Sağlığı ve Hastalıkları Uzmanlık Tezi. Erzurum 2010
16. Dogan O, Yassa M. "Major motivators and sociodemographic features of women undergoing labiaplasty." Aesthetic surgery journal. 2019; 39(12):517–27.
17. Goodman MP, Placik OJ, Benson RH III, Miklos JR, Moore RD, Jason RA, et al. A large multicenter outcome study of female genital plastic surgery. J Sex Med. 2010;7:1565–77.
18. Placik OJ, Arkins JP. A Prospective Evaluation of Female External Genitalia Sensitivity to Pressure following Labia Minora Reduction and Clitoral Hood Reduction. Plastic and Reconstructive Surgery. 2015;136(4):442–52.
19. Vaccaro CM, Fellner A, Zoorob D, Pauls RN. The relationship between female sexual function and the clitoral complex using pelvic MRI assessment. J Sex Med. 2011;8(2 suppl):58.
20. Oakley SH, Vaccaro CM, Crisp CC, Estanol MV, Fellner AN, Kleeman SD, et al. Clitoral size and location in relation to sexual function using pelvic MRI. The journal of sexual medicine. 2014:11(4):1013-22.
21. Vaccaro CM, Herfel C, Karram MM, Pauls RN. Sexual function in a woman with congenital bladder exstrophy and multiple pelvic reconstructive surgeries: A case report. J Sex Med. 2011;8:617–21.

This paper has been checked for language accuracy by JOSAM editors.
The National Library of Medicine (NLM) citation style guide has been used in this paper.