

The effect of post-circumcision mucosal cuff length on premature ejaculationSakir Ongun¹; Murat Dursun²; Sedat Egriboyun³¹Department of Urology, Balikesir University School of Medicine,Balıkesir, Turkey; ²Department of Urology, SB Malatya Training and Research Hospital, Malatya, Turkey;³Department of Urology, SB Izmir Odemis State Hospital, Izmir, Turkey**Cite as:** *Can Urol Assoc J* 2020 February 4; Epub ahead of print.<http://dx.doi.org/10.5489/cuaj.6016>

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Abstract

Introduction: Circumcision is considered the most common surgical procedure in the world. We aimed to compare the length of mucosal cuff after circumcision in patients with and without a complaint of premature ejaculation (PE).

Methods: Sexually active patients without erectile dysfunction that presented to the urology polyclinic between March 2018 and June 2018 were included in this multicentered, prospective study. The circumcision age of the patients, the person who performed the procedure (surgeon, non-surgeon), penile length, and dorsal and ventral penile measurements were recorded and compared between patients with and without PE.

Results: A total of 208 patients were included in the study. The mean circumcision age of the patients was 5.7 ± 4.2 years, and the mean dorsal and mucosal size was 15.02 ± 4.58 mm and 16.31 ± 4.92 mm, respectively. PE was present in 106 of the participants. There was no statistically significant difference between the PE and non-PE groups in terms of the person who performed the procedure (surgeon, non-surgeon). However, the patients with PE had statistically significantly longer dorsal and ventral mucosal measurements compared to those without PE ($p < 0.001$).

Conclusions: We think that the dorsal and ventral lengths of mucosal tissue left behind after circumcision is a risk factor for PE. Therefore, special attention should be paid not to leave redundant dorsal and ventral mucosal tissue during this procedure.

Introduction

Premature ejaculation (PE) is the most common sexual dysfunction in young males, it constitutes a major health problem with a prevalence varies between 9% and 31%^{1,2}. Despite the high prevalence of PE, there is still no clear consensus regarding its definition, etiology or treatment.

According to the definitions of the International Society of Sexual Medicine (ISSM), lifelong PE refers to ejaculation that occurs from the first sexual intercourse and almost always occurs prior to or within one minute of vaginal penetration, and acquired PE is a clinically significant and upsetting reduction in the duration of intravaginal ejaculation latency time (IELT) that is often less than three minutes³.

The etiology of PE is not yet precisely known; however, there are biological and psychological hypotheses, including penile hypersensitivity, anxiety, and 5-HT receptor dysfunction⁴. The most sensitive areas in the penis are the glans and the frenulum⁵. Despite the unclarified effect of circumcision on ejaculation time, surgeons tend to leave a large amount of skin during this procedure not to lead to the development of PE^{6,7}. Although researchers have not shown a significant effect of the post-circumcisional mucosal cuff on ejaculation time⁸, it is still thought that the excess amount of this redundant tissue might reduce ejaculation time⁹.

Circumcision is considered to be the most common surgical procedure in the world. It is routinely performed for religious reasons, especially in Muslim countries. This study aimed to investigate the relationship between mucosal cuff after this surgical procedure and PE, the most common sexual dysfunction worldwide.

Methods

Sexually active, circumcised males that presented to the urology polyclinic between March 2018 and June 2018 were included in this multi-centered, prospective study. The information on the patients' height and weight, age at circumcision, the person that had performed the circumcision (surgeon, non-surgeon), penile length, and dorsal and ventral mucosa measurements were recorded. Those data compared between the patients with and without PE. The diagnosis of PE was made according to the ISSM definition of life-long PE (an IELT of less than one minute)³.

The patients with a PE diagnosis aged 18 to 65 years and volunteers (for non-PE group) that presented to the same polyclinic for another health-related reason included to the study. Patients with penile deformity, history of previous penile or pelvic surgery or thyroid disease, and those that used selective serotonin reuptake inhibitors were excluded. Turkish validated version of IIEF-5 (international index of erectile function) were used¹⁰. We also excluded patients with erectile dysfunction according to the IIEF-5 (IIEF-5<22). The self-estimated IELT of all patients was recorded and the patients were administered the validated Turkish version of the five-item premature ejaculation diagnostic tool (PEDT)¹¹. The ethical committee approval and written informed consent of the patients were obtained.

Penile size measurements were performed in a warm examination room with the penis in the flaccid state. The penis was stretched and the penile length was measured from the dorsal to the end of the glans penis by pressing the base of the ruler toward the pubic bone. Mucosal cuff length measurements were undertaken on the dorsal and ventral aspects at the mucosal skin border toward the glans (6 o'clock and 12 o'clock). The measurements taken by the researcher in the participating centers.

A priori power analysis using G*Power version 3.1.9.4 performed to detect the sample size according to Yuruk et al.'s study.⁹ Statistical analysis of the data was performed using SPSS v.22.0 software (IBM Corp., Armonk, NY). The Student's t-test was used to compare the results between the PE and non-PE groups by taking statistical significance as $p < 0.05$. The effect of the person that performed circumcision (surgeon, non-surgeon) and undergoing the procedure during the phallic period (3-6 years) on the presence of PE was investigated using the chi-square test based on a statistical significance value of $p < 0.05$.

Results

A total of 208 patients were included in the study. The mean age of the patients was calculated as 34.9 ± 8.4 years, the mean height as 1.73 ± 0.05 m, and the mean weight as 79 ± 10 kg. The mean circumcision age of the patients was 5.7 ± 4.2 years, the mean penile length was measured as 12.5 ± 1.9 cm, and the mean dorsal and ventral mucosal size as 15.02 ± 4.58 mm and 16.31 ± 4.92 mm, respectively.

PE was present in 106 of the participants. No statistically significant difference was found between the PE and non-PE groups in terms of age, height, weight, age at circumcision, penile length, and IIEF-5 scores. The patients with PE had significantly longer dorsal and ventral mucosal measurements than those without PE ($p < 0.001$). Similarly, the PE group had significantly lower IELT and significantly higher PEDT scores than the non-PE group ($p < 0.001$). Table 1 presents the comparative data obtained from the two groups. There was no statistically significant difference between the PE and non-PE groups concerning the person that had performed the circumcision (surgeon, non-surgeon). Similarly, no statistically significant relationship was observed between PE and undergoing circumcision during the phallic period (3-6 years). Table 2 shows the detailed results of the relationship between PE and these two variables.

Discussion

The pathophysiology of PE has not been fully elucidated. Among the organic causes listed are penile hypersensitivity, genetic predisposition, increased sexual excitability, and endocrine-related reasons¹². Another cause of lifelong PE is considered to be the hyposensitivity of the 5-HT_{2c} receptor or hypersensitivity of the 5-HT_{1A} receptor¹³.

Circumcision is considered to be the oldest known surgical procedure with circumcised penises having been detected in the drawings of the Paleolithic period¹⁴. Circumcision is one of the most performed surgical interventions worldwide, and 1/3 of men in the world are circumcised for religious, cultural, medical or personal reasons¹⁵. The effect of circumcision on sexual symptoms has been widely researched but there is no general

consensus on the results. In a systematic review published in 2013, 19,542 uncircumcised and 20,931 circumcised men were included, and it was suggested that circumcision was not related to penile sensitivity, erectile dysfunction, PE, or ejaculation time¹⁶. In a prospective randomized trial involving 2,784 men, PE was found to be 17% less in the uncircumcised group¹⁷. In another study, the researchers stated that women preferred uncircumcised men as a sexual partner because PE was less common in this group¹⁸. In studies on the effect of adult circumcision on sexual function, IELT was found to be increased after circumcision^{7,19}. As revealed by the literature studies, circumcision does not have an effect on erection, but it affects the time of ejaculation although there is no consensus in the results.

The prepuce (preputial foreskin) is one of the most sensitive places in the penis⁶. Removal of sensory receptors in the prepuce during circumcision may also have a positive effect on PE by decreasing sensitivity²⁰. The normal length of the prepuce is 6.4 cm²¹. Gallo reported a longer prepuce and increased post-circumcision ejaculation time in patients with patients with lifelong PE²⁰. In these patients, Gallo author almost completely excised the prepuce in a circumcision procedure¹⁹. Although our study group did not include uncircumcised patients, we found ejaculation time to be shorter in the group that had redundant mucosa following circumcision. This can be explained by the length of mucosa increasing stimulation, and thus triggering PE.

Gallo et al. reported that lifelong PE was associated with a short frenulum and patient complaints improved after frenulectomy²². The authors defined a short frenulum as a ventral curvature of 20° in the glans, which restricts the movement of the prepuce in retraction. In another study, Hosseini et al. found a significant relationship between reduced IELT and presence of frenular web (residual frenulum tissue after circumcision)²³. A short frenulum²² and frenular web²³ are concepts contributed by the respective authors in the literature, and due to the limited research in this area, we chose to use ventral length of mucosal cuff in the current study as a more objective discussion point. We determined that the ventral aspect of the penile mucosa was statistically significantly longer in patients with PE. We consider that this may be associated with the frenulum.

In a study that examined the relationship between PE and post-circumcisional mucosal cuff in 42 with PE and 42 without PE, it was found that the mucosal cuff length measured from the dorsal aspect was not a risk factor for PE⁸. In another study, Yuruk et al. compared the dorsal length of mucosal cuff between 49 patients with PE and 50 patients without PE and reported it to be longer in the former group, albeit with no statistical significance⁹. Similarly, Bodakcı et al. and Telli et al. did not find a statistically significant relationship between the dorsal measurement of mucosal cuff length^{24,25}. In contrast to our findings, the authors found a shorter mucosal cuff length in patients that had been circumcised by a surgeon^{24,25}. In the current study, the dorsal and ventral lengths of mucosal cuff were found to be significantly shorter in patients with PE than in the non-PE group ($p < 0.001$). The significant results of our study which opposed with the previous non-significant findings reported in the literature may be due to various reasons. Firstly, in two studies with a similar design^{8,9}, the number of patients was lower (42 and 49, respectively) compared to our study group (106). Although

Bodakcı et al. investigated the relationship between IELT and mucosal cuff length in a similar number of patients, they did not mention how many people were diagnosed with PE²⁴. Secondly, previous researchers measured the mucosal cuff length only on the dorsal aspect, whereas we also performed a ventral measurement. Although the authors did not include the measurement of mucosal cuff length in their respective studies, increased post-circumcisional ejaculation time reported by Gallo in patients with a lifelong PE complaint²⁰ and longer IELT reported by Senkul et al. after adult circumcision⁷ support the results of our study.

The phallic period refers to the time between 3-6 years of age, in which the child's sexual identity develops. In a study examining the effect of circumcision performed during this period on sexual functions, the results were not significant²⁶. Similarly, we found that undergoing circumcision during the phallic period was not associated with PE.

Although many methods have been described concerning how to perform circumcision, to the best of our knowledge, there is no data providing information on the amount of mucosa that should be left behind (or the mucosal cuff length that should be considered) during circumcision. The results of this study led us to think "if only it was possible to foresee the mucosal cuff length in adulthood based on the amount of skin left behind during childhood circumcision". Since most circumcisions are performed during childhood, we could not know what size the mucosal cuff length would be once the penis reaches complete development. Even though a solution to this situation may simply appear to perform circumcision, if necessary, in adulthood, we are almost certain that the majority of circumcisions in the world will continue to be undertaken in childhood for religious and cultural reasons. Future prospective studies starting from childhood may shed light on how much mucosa should be left behind after circumcision.

Based on the present study's results it may be speculated that circumcision may be considered as a therapeutic option in men with a diagnosis of lifelong PE. We think that the effect of preputial excision in PE deserve to be investigated in future studies.

Conclusions

We consider that the dorsal and ventral lengths of the post-circumcisional mucosal cuff is a risk factor for PE. It may be helpful in preventing PE not to leave excessive dorsal and ventral mucosal tissue during circumcision.

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Figures and Tables

Table 1. The comparative data obtained from premature ejaculation and non-premature ejaculation patients

	Premature ejaculation (+) (n=106)	Premature ejaculation (-) (n=102)	p
Age (years)	35.1±7.8	34.6±9.0	0.652
Height (m)	1.73±0.05	1.72±0.05	0.643
Weight (kg)	78.7±10.8	79.4±9.3	0.612
Penile length (cm)	12.73±1.93	12.41±1.86	0.220
Dorsal mucosa (mm)	16.87±4.84	13.10±3.37	<0.001
Ventral mucosa (mm)	18.18±5.35	14.36±3.50	<0.001
Age at circumcision (years)	6.1±5.0	5.2±3.2	0.137
IELT (seconds)	29.73±14.81	301.17±101.93	<0.001
PEDT	14.77±2.56	4.47±2.07	<0.001
IIEF-5	24.08±1.00	24.26±0.93	0.183

IELT: intravaginal ejaculation latency time; IIEF-5: international index of erectile function;
PEDT: premature ejaculation diagnostic tool.

Table 2. The results of the relationship between PE and the person who performed the circumcision (surgeon, non-surgeon), undergoing circumcision during the phallic period

	Premature ejaculation (+)	Premature ejaculation (-)	p
Circumciser			
Non-surgeon	90	84	0.619
Surgeon	16	18	
Circumcision period			
Phallic	35	37	0.622
Non-phallic	71	65	