

# Removal of foreskin remnants in circumcised adults for treatment of premature ejaculation

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## Abstract

**Background and Aim:** Premature ejaculation (PE) is the most prevalent sexual dysfunction in every country. There are many types of treatment, but the main limitation of medical treatment for premature ejaculation is recurrence after withdrawal of medicine. The prepuce is a specific erogenous zone that contains a rich and complex network of nerves. Circumcision radically desensitizes the penis, but incomplete circumcision may cause premature ejaculation. We evaluate the effect of removal of foreskin remnants in adults on PE.

**Materials and Methods:** The sensitive area of penile skin and the remaining parts of foreskin in adult men were recognized in 47 selective patients. Under local anesthesia, the remnant parts of foreskin were incised and removed. They were asked to fill the investigating questionnaire about the changes of intravaginal latency ejaculatory time (IVELT), patients and their sexual partners' satisfaction with sexual life, control over ejaculation, and penile sensitivity, before and after treatment.

**Results:** There were no signs of inflammation and no serious adverse reactions in all cases after operation. IVELT significantly increased from 64.25 before surgery to 731.49 sec after surgery ( $P < 0.001$ ). The percentage of postoperative satisfaction in both the patient and his partner significantly increased ( $P < 0.001$ ). After surgery, 95.7% of men had better control over their ejaculation. This surgery significantly decreased sensitivity of penis ( $P < 0.001$ ), but it did not change glans penis insensitivity.

**Conclusions:** These results indicate that removal of foreskin remnants in adults is an effective modality in selective patients of PE.

**Key Words:** Circumcision, foreskin, premature ejaculation, prepuce

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## INTRODUCTION

Although there is no universally accepted definition, etiology, and treatment of premature ejaculation (PE),<sup>[1,2]</sup> the American Psychiatric Association defines PE as "persistent or recurrent ejaculation with minimal sexual stimulation before, upon, or

shortly after penetration and before the person wishes it, over which the sufferer has little or no voluntary control which causes the sufferer and/or his partner bother or distress".<sup>[1,3]</sup> Others have stated an ejaculation time of 2 min after vaginal intromission as definition of normal intravaginal ejaculation latency time (IVELT).<sup>[4-7]</sup>

PE is the most common sexual dysfunction in every country.<sup>[1,3,7,8]</sup> PE is an age-dependent, geographic dependent and culture dependent symptom.<sup>[1,5]</sup> The prevalence in the general population is estimated to be 4% to 39%,<sup>[3,7]</sup> but a prevalence of more than 21% seems to be a realistic figure.<sup>[2,9]</sup>

There is no any formal data about IVELT in Iran. Informal

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data shows that IVELT is too short in Iran. There is no also any formal data about the prevalence of PE in Iran.

Lifelong PE can have a profound and long-lasting impact on self-confidence, relationships, sexual functioning and the ability to relax during sexual intercourse and can cause anxiety, feeling of shame and inferiority, and depression.<sup>[6,7,9]</sup>

Some of the authors believe that various psychological risk factors are involved for PE.<sup>[7]</sup> But most of the authors suggest that PE is not a psychological disturbance but a neurobiological phenomenon. Therefore, psychology is a secondary problem rather than the primary cause of PE.<sup>[3,8]</sup>

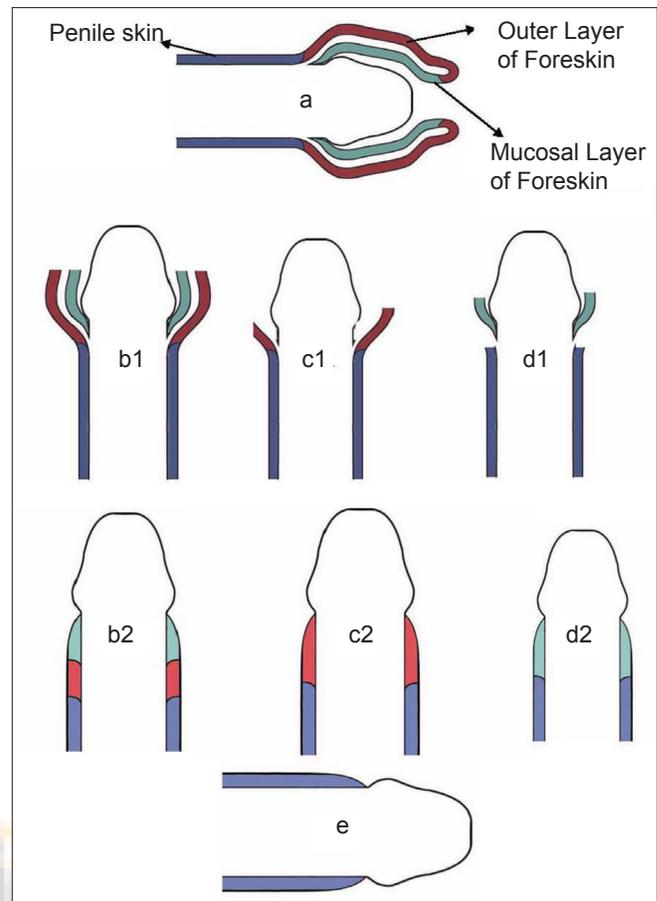
The biological causes of PE considered are hyperexcitable ejaculatory reflex, increased sexual arousability, possible endocrinopathy, a genetic predisposition, central 5-hydroxytryptamine receptor dysfunction and other neurotransmitters disturbances, and penile sensitivity.<sup>[2,3,6,7,10]</sup>

There are many different and controversial different methods for the treatment of PE. Psychotherapy, squeeze technique, injectible hyaluronic acid gel, and drugs are suggested as the treatments.<sup>[3,6,7,10]</sup> The current most popular pharmacotherapeutic approach to treat PE is "off-label" administration of selective serotonin-reuptake inhibitors which are reported to be effective for treating PE. However, treatment of PE with these drugs is not universally successful.<sup>[5]</sup>

Unfortunately, the effectiveness of most of these therapies was only suggested in case reports and their main limitations are short-time effectiveness and recurrence of PE with withdrawal of medication.<sup>[3,10,11]</sup> To date, there is no real cure for lifelong PE. Drugs may alleviate symptoms, but only while they are being administered.<sup>[3]</sup>

Patients with primary PE have penile hypersensitivity.<sup>[10]</sup> For this reason, another suggested method for treatment of PE is dorsal neurectomy of penis. Dorsal neurectomy will decrease the sensitivity of the glans penis.<sup>[7,10]</sup> However, dorsal neurectomy is also not an established treatment of penile hypersensitivity ejaculation due to the uncertain pathophysiology, invasiveness and side effects, for example, numbness paresthesia, pain for neuroma, and even erectile dysfunction.<sup>[10]</sup>

One of the conflicting factors is the effect of circumcision on ejaculation.<sup>[12-14]</sup> The prepuce (foreskin) is a common anatomical structure of the male and female external genitalia of all human and non-human primates.<sup>[15]</sup> The length of the normal prepuce is 6.4 cm (range, 4.8-9.2 cm), and it is said to occupy 93% of the penile shaft.<sup>[16]</sup> It is a simple fold of skin composed of an outer keratinized (skin) and inner (mucosal, lining a preputial sac) layers [Figure 1a] that are rich in



**Figure 1:** a, Schematic normal anatomy of uncircumcised human foreskin; b1, c1, and d1 show schematic incision types that lead to incomplete circumcision and foreskin remained as shown in b2, c2, and d2, respectively, e shows the schematic final appearance of penile skin after removal of remnants of foreskin

nerves.<sup>[17,18]</sup> The abundance of myelinated and nonmyelinated nerve fibers explains the high sensitivity of the human foreskin and its function as erogenous tissue.<sup>[15,18]</sup>

Circumcision is a surgical procedure performed for centuries for medical, religious, cultural, social, medical and several other reasons.<sup>[14-16]</sup> In Muslim and Jewish communities, circumcision is generally done in the neonatal period or during childhood, as a requirement of the religion. In the other western communities, it is mostly practiced for medical or cosmetic reasons. One sixth of the world male population is circumcised at some point in their life.<sup>[16]</sup> It has been reported that 77% of the male population born in the United States has been circumcised. In Turkey, 95% of the population is Muslim and almost all the male population is circumcised in childhood.<sup>[14]</sup> In Iran, more than 99% of the populations are Muslim and Jewish<sup>[19]</sup> and almost all the male population are circumcised.

Surgical amputation of the prepuce removes many of the free-touch corpuscular receptors from the penis. In males, circumcision is essentially a partial penile mucosectomy. The residual exposed

glans mucosa becomes abnormally keratinized with an increase in the number of cell layers in glandular mucosal epithelium.<sup>[15,20]</sup> These changes may result in decreased sensitivity.<sup>[14]</sup>

One of the conflicting factors is the effect of circumcision on ejaculation.<sup>[2]</sup> Few believe that circumcision cause PE and for this reason even suggest that foreskin restoration may improve PE.<sup>[21]</sup> Some believe that circumcision results in more pleasurable sexual intercourse and mostly believe that it results in diminished sensitivity of the glans,<sup>[15,22,23]</sup> Masters and Johnson performed neurological testing on the glans of circumcised and uncircumcised men finding no significant difference in sensation. However, evidence concerning the effect of circumcision on sexual function is lacking.<sup>[20]</sup>

Because circumcision removes many of the free-touch corpuscular receptors from the penis,<sup>[15]</sup> it is one of the effective methods to treat PE.<sup>[22]</sup> Circumcision removes more than 50% of the skin and mucosa from the penis.<sup>[21]</sup> In some of circumcisions, foreskin has not been completely removed [Figure 1, b1-d1 and b2-d2] and its remnants may cause PE. Circumcision is a routine practice in Islamic countries, so the

aim of this work is to investigate the effect of removal of prepuce remnants on PE in circumcised adults. To the best of the authors' knowledge, no study in this regard has been conducted on circumcised adult men.

## MATERIALS AND METHODS

Forty-seven adult men from the general population of Fars province, Iran, aging 18-50 ( $28.4 \pm 0.9$  years) suffering from PE that had remnants of foreskin were selected. Patients who did not have enough foreskin remnants or sensitive part of foreskin remnants were excluded from the study.

During the ordinary circumcision, some parts of foreskin will be remained [Figure 1, b1-d1 and b2-d2]. Physician and patients evaluated for sensitive part of remnants of foreskin on the penis body many times by touching. Then the remnants of foreskin under local anesthesia were removed [Figure 1e]. Figure 2 shows an example of the penile foreskin one of our patients before [Figure 2, a1,b1] and after [Figure 2, a2,b2] the removal of foreskin remnants. They were asked to fill the investigating questionnaire that included over 35 questions



**Figure 2:** Superior (left) and inferior (right) aspects of patient's penis before (a1, b1) and after (a2, b2) removal of foreskin remnants

about patient and his partner age, marriage history, marriage age, PE history, PE history in family changes of intercourse frequency, IVELT, partner orgasm frequency, penis and glans sensitivity, control over ejaculation, men and their partners overall satisfaction, and sexual life before and after operation, and also penis appearance and diameter after operation. We also included open-ended questions to gather descriptive information about perceived benefits and harms, and any general comments. The anonymous surveys were coded to allow tracking. The mean IVELT was recorded by the patients using a stopwatch technique after detailed training.<sup>[1,3,5,10,20,22]</sup> All the subjects were healthy, heterosexual and sexually active, and none was using medication or device to treat PE after surgery.

The whole study protocol and possible side effects were explained to patients before entering the study and written informed consent was obtained, which was conducted in accordance with the Declaration of Helsinki. Ethical committee approved the study.

We analyzed all responders together to find the overall effect of removal of foreskin remnants on men PE. First, we used one-sample Kolmogorov-Smirnov to test normal distribution. We used paired *t* test to compare each category score before and after surgery for IVELT, intercourse and partner orgasm frequencies. We used the nonparametric Wilcoxon signed rank test to compare other scores of patients before and after surgery. *P* values less than 0.05 were considered as statistically significant. Statistical analysis was performed using SPSS 11.5 (SPSS Inc. USA).

## RESULTS

All 47 (100%) responders identified themselves as heterosexual and no men reported that they were bisexual. Nineteen of men (40%) were single. They had a PE history from 3 to 27 (11.52±0.9) years. 52.2% of them had more than one sex partner. Some of them had used local anesthetic (46.8%), opium (10.6%), and combination of opium and drug (21.3%) for treatment of PE before surgery in their medical history. 18.2% of patients reported PE history in their family, although 72.7% of them did not know about this problem. Nobody had erection problems.

Mean periods after operation that patients filled the questionnaires were 18.5±3.0 (1-72) months. Periods after operation did not have any significant effect on any of the evaluating parameters. In addition, age and marital status, marriage history of men, and their partner age were not correlated with any of the evaluated parameters (*P*>0.05). This surgery had no effect on penis diameter, but 63.6% of patients answered that their penis appearance became better than that before surgery (*P*<0.001). Surgery significantly improved sex satisfaction both in men and their partner (*P*<0.001) [Table I].

**Table 1: Scores of sexual functions in men and their partner before and after removal of foreskin remnants as a method for treatment of premature ejaculation**

Parameter	Before surgery	After surgery	<i>P</i> value
Intercourse times/week	1.91 (0.25)	2.47 (0.29)	0.035*
IVELT (sec)	64.25 (8.66)	731.48 (74.54)	<0.001*
Partner orgasm times/week	0.024 (0.02)	1.27 (0.08)	<0.001*
Man satisfaction (unit)	1.29 (0.09)	4.02 (0.15)	<0.001*
Partner satisfaction (unit)	1.41 (0.14)	4.00 (0.15)	<0.001*
Penis sensitivity (unit)	3.00 (0.01)	1.28 (0.08)	<0.001*
Glans insensitivity (unit)	2.00 (0.01)	1.89 (0.06)	0.102
Penis diameter (unit)	2.00 (0.01)	2.05 (0.03)	0.157
Penis appearance (unit)	2.00 (0.01)	2.64 (0.08)	<0.001*
Control on ejaculation (unit)	1.04 (0.02)	2.51 (0.08)	<0.001*
Sex life (unit)	1.43 (0.12)	4.02 (0.14)	<0.001*

Values are mean±standard error of mean,\**P* value is statistically significant, IVELT - intravaginal latency ejaculatory time

Removal of foreskin remnants in adults significantly decreased penis sensitivity (*P*<0.001) in comparison to that before surgery, but glans penis insensitivity in 82.9% of patients showed no change [Table I].

The frequency of intercourse per week significantly increased after treatment (*P*=0.035). Partner orgasm frequency per week also significantly increased after surgery (*P*<0.001) [Table I].

The mean calculated IVELT before treatment was 64.26 sec, but after surgery it significantly increased to 731.49 sec (*P*<0.001). After surgery, 95.7% of men had better control over their ejaculation [Table I].

Sexual life level of the patients as a whole was 1.43 which rose to a mean of 4.02 units after surgery, this finding was statistically significant (*P*<0.001) [Table I].

Most of the patients who answered open ended questions indicated that "This surgery was excellent", "I suggest it to all men", "I wish all men know about this method, Thank you doctor", "you have changed my life", "I pray for you all the time".

No one of the patients has reported major complications yet.

## DISCUSSION

PE is one of the most prevalent male sexual dysfunction and may be seen by every urologist in a daily basis; yet, it is frequently misdiagnosed or overlooked because of numerous patient and physician barriers. It has a strong negative impact on patients' self-esteem, sexual satisfaction, and libido and may be a major factor in marital sex conflicts.<sup>[5]</sup> There are a few informal reports that PE has direct effects on the addiction in men and divorce rate in Iran.

Pathophysiology of PE is not well defined. The biological and psychogenic etiologies have been proposed.<sup>[2]</sup> Some theories have been proposed to define the cause of PE; two more widely accepted theories which may explain the occurrence of fast uncontrolled ejaculation are 5-hydroxytryptamine receptor sensitivity and penile hypersensitivity. The first theory proposes that disorders in the hypothalamus and brain medulla will facilitate ejaculation and may directly lead to PE. The second theory proposes that men with PE have a hypersensitive penis, lower penile vibration perception threshold, and shorter somatosensory evoked potential latency times in glans and penile shaft.<sup>[5]</sup>

A vast array of different therapeutic modalities has been used for the treatment of PE. Psychological/behavior treatment and pharmacotherapy have been used for years. Injection of hyaluronic acid in the penis glans, acupuncture, and also selective dorsal penile nerve resection were also reported to have variable effects on PE.<sup>[5,6]</sup>

There are conflicting studies regarding the effect of circumcision on PE. Some reported increased and some reported decreased IVELT, and still others reported variable penile sensitivity with their own proposed mechanism and role for foreskin.<sup>[2,20,24]</sup> Also there are concerns regarding the length of mucosal cuff after circumcision and its effect on IVELT later in life.<sup>[2]</sup>

Zwang<sup>[13]</sup> indicated that circumcision denudes the penis to direct stimulation, thereby causing circumcised men to have a greater incidence of PE. O'Hara and O'Hara also concluded that women prefer uncircumcised men because of more likely occurrence of PE in circumcised men.<sup>[25]</sup>

Masood *et al.*<sup>[24]</sup> showed that circumcision improved penile sensitivity only in 38% but it had variable outcomes after circumcision. Fink *et al.* have shown that the sensitivity significantly decreases in males who have undergone circumcision in adulthood.<sup>[20]</sup> Our results showed that removal of foreskin remnants in adults significantly decreased penis sensitivity [Table 1] that is in line with Fink *et al.* findings.

In the present study, glans penis insensitivity in 82.9% of patients showed no change. Master and Johnson who have performed neurological testing on the glans of circumcised and uncircumcised men did not find any significant difference in the glans penis sensation<sup>[20]</sup> that is in agree with our finding.

This surgery had no effect on penis diameter, but patients answered that their penis appearance became better than before surgery [Table 1]. "It is more beautiful, uniform and unicolor", our patients said. Masood *et al.* (2005) also indicated that 44%

of patients and 38% of their partners thought that the penis appearance improved after circumcision.<sup>[24]</sup>

The frequency of intercourse per week in our study increased after treatment. In addition, partner orgasm frequency per week increased after surgery. These increases in both parameters were statistically significant [Table 1]. We could not find any surveys that have studied these parameters. These parameters show that treatment of PE can improve sex liking.

The mean calculated IVELT in our study significantly increased [Table 1]. Senkul *et al.* also showed that circumcision in adults significantly increased IVELT. They indicated that effect of circumcision on IVELT may be due to psychological influence and increasing self esteem on Muslims,<sup>[14]</sup> but in our study, we removed remnant of foreskin from circumcised men. Therefore, we consider that removal foreskin can improve IVELT, maybe due to decrease in sensitivity, and this in turn, may increase self esteem.

After surgery, 95.7% of men in the present study had better control over their ejaculation. The sexual satisfaction in men after surgery was good and excellent in 80.9% of our patients. Overall satisfaction was 61% in study of Masood *et al.*<sup>[24]</sup> Peinkos reported that during the Korean War, soldiers were asked for circumcision, with the expectation of an increase in their sexual satisfaction.<sup>[14]</sup>

Laumann *et al.* observed that uncircumcised men have more sexual problems than circumcised men.<sup>[26]</sup> Senkul *et al.* also indicated that adult circumcision does not adversely affect sexual function.<sup>[14]</sup> Hosseini *et al.* have also concluded that circumcision has no deleterious effect on sexual function.<sup>[2]</sup> Our study is in line with them, because no one of our patients has reported major complications yet. Zhang *et al.* indicated that circumcision was an effective method to treat PE.<sup>[22]</sup>

In conclusion, according to the data in this study, it has been shown that removal of foreskin remnants in incomplete circumcised adults increased ejaculation time, man and his partner sexual satisfaction, frequency of orgasm in partner of man and control over ejaculation in man. This operation decreased hypersensitivity of penis. As a whole, sexual life of patients changed to better level after removal of foreskin in adults. Nevertheless, first, assessment of foreskin remnants and its sensitivity should be done precisely and for many times before surgery. Otherwise, the first choice of treatment for PE is pharmacotherapy. Further works for studying of nerve fibers in removed skins, penile biothesiometry and maybe central nervous changes also are needed to assess better our work. To our knowledge, the present study is the first to

assess the effects of removal of foreskin remnants in adults for treatment of PE.

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