



Efficacy evaluation of thickened condom in the treatment of premature ejaculation

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Background: This study aimed to evaluate the efficacy of thickened condoms in the treatment of premature ejaculation.

Methods: From August to December 2021, patients with premature ejaculation treated in the Urology and Andrology Center of the First Affiliated Hospital of Medical College of Zhejiang University were selected for a clinical controlled study. A total of 100 patients with premature ejaculation were enrolled as the premature ejaculation group and 30 normal men as the control (normal married men, age <30 years, normal sexual life). Each patient's ejaculation latency, contraceptive safety, comfort, glans sensitivity, dorsal nerve conduction velocity, serum reproductive hormone level, penile hardness, and penile erection were measured in the premature ejaculation and normal control groups.

Results: The comfortability associated with thickened condoms in the premature ejaculation group was poor ($P < 0.05$). After using a thickened condom, the time to ejaculate of the premature ejaculation group was significantly prolonged ($P < 0.05$). Meanwhile, the penis vibration threshold increased significantly, indicating that the nerve sensitivity decreased ($P < 0.05$). In the premature ejaculation group, the total erection time and the average hardness of coronary sulcus in the thickened condom group were significantly higher than those in the ordinary condom group ($P < 0.05$), and the serum androgen level could be significantly increased after using the thickened condom ($P < 0.05$).

Conclusions: The thickened condom can effectively maintain and prolong the hyperemia state of the penis and enhance the intensity of penile erection. Thickened condoms physically preserve and extend the time of penile erection, resist and overcome premature ejaculation, and improve the ejaculation condition to improve the quality of sexual intercourse.

Keywords: Premature ejaculation; physical delay condom; penis; sexual intercourse

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Introduction

Premature ejaculation is the most common sexual dysfunction in men, and the prevalence is as high as 75% (1). Increased societal pressure is one of the main reasons for the rising incidence rate of premature ejaculation (2,3). Traditionally, the etiology of premature ejaculation has

been divided into psychological and biological factors. Psychological factors include psychodynamic theory, early experience, sexual conditioning, anxiety, technique and frequency of sexual activity. Biological factors include penile allergy, ejaculatory hyperreflexia, hyperarousal, endocrine disorders, genetic predisposition, and serotonin (5-HT) receptor dysfunction. Urinary diseases, including chronic

prostatitis, are also involved (1). Psychological factors are considered a significant cause of premature ejaculation (4). In the past 20 years, studies have been conducted to explore the pathogenic mechanism of premature ejaculation caused by biological factors (1-5). For the complex etiology and pathogenic mechanism, the treatment methods of premature ejaculation include oral drug therapy, behavioral therapy, anesthetic drug therapy, psychological therapy and so on (6,7). The biggest advantage of using thickened condoms in this study is the use of physical blocking to reduce nerve sensitivity, without organic damage, adverse reactions and drug dependence. Previous research in the treatment of premature ejaculation has focused on pharmacotherapy, psychotherapy, and behavioral therapy. There are few prospective studies using thickened condoms. This study compared the effects of thickened condoms in patients with premature ejaculation and normal healthy men in multiple dimensions, which has certain reference significance for clinical decision-making in the treatment of premature ejaculation.

We present the following article in accordance with the STROBE reporting checklist (available at <https://tau.amegroups.com/article/view/10.21037/tau-22-8/rc>).

Methods

Case enrollment

Patients with premature ejaculation who were treated in the Urology Andrology Center of the First Affiliated Hospital of Medical College of Zhejiang University from August to December 2021 were selected for a clinical control study on the physically thickened condom. A total of 100 patients with premature ejaculation were enrolled, and 30 normal men were recruited to the control (normal married men, age <30 years, normal sexual life). All procedures performed in this study involving human participants were in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by the Ethics Committee of the First Affiliated Hospital, Zhejiang University School of Medicine (No. 2021-IIT-168) and informed consent was provided by all participants.

Research materials and instruments

Thickpro 3 series and normal thickness condoms were acquired from Guangzhou Thickpro Health Industry Technology Co., Ltd. (Guangdong, China). Beijing

Dongfang Technology Co., Ltd. (Beijing, China) provided a penile biothesiometer to detect glans sensitivity. A JD-3 electromyograph produced by Shanghai Medical Electronic Instrument Factory (Shanghai, China) was used to measure the conduction velocity of the dorsal penile nerve.

Research methods

A total of 100 premature ejaculation patients (male, younger than 30 years old) who did not have severe hypertension, hyperlipidemia, coronary heart disease, or diabetes, were included in this study. Patients in the premature ejaculation groups had disease durations ranging from 6 months to 12 years, with an average of 6.7 ± 4.2 years. The prostate volume was 18–30 mL, with an average of 19 ± 2.8 mL. No impotence was reported among participants, and they all had normal sex hormones. The pre-ejaculation latency of thickened and conventional condoms was 1–3 minutes, with an average of 0.8–1.8 minutes. In the 30 normal control groups, the pre-ejaculation latency of thickened and traditional condoms was 4–40 minutes, with an average of 7 ± 1.8 minutes. The thickened condom (3 times the normal thickness) was used by each patient in the premature ejaculation group and those in the normal control group. The ejaculation latency before and after the conventional condom, contraceptive safety and comfort, glans sensitivity (penile vibration threshold evaluation, penile sensitivity at grade 0–30, normal at grade 30–60, penile sensory retardation above grade 60), penile dorsal nerve conduction velocity, and serum reproductive hormone levels were measured. The corresponding changes in penile stiffness and penile erection were recorded.

Statistical analysis

All data in this study were statistically analyzed with the software SPSS 22.0 (IBM Corp., Armonk, NY, USA). Counting data were expressed by the number of cases and percentage, and a chi-square test was used. The measurement data were expressed by means and standard deviation, and a *t*-test was used. A *P* value <0.05 was considered statistically significant.

Results

As shown in *Table 1*, before and after using ordinary condoms and thickened condoms, there was no significant difference in contraceptive safety between the premature

Table 1 Comparison of the usage of physically delayed condoms in the premature ejaculation and the control group

Projects	Groups	Ordinary condom	Thickened condom	P value
Contraceptive safety	Premature ejaculation group	100/100	100/100	>0.5
	Control group	30/30	30/30	>0.5
Comfort	Premature ejaculation group	80/100	60/100	<0.05
	Control group	16/30	13/30	>0.5
Dorsal nerve conduction velocity of penis (m/s)	Premature ejaculation group	30.5±2.7	21.0±1.9	<0.05
	Control group	23.9±1.7	22.6±1.2	>0.5
Ejaculation latency	Premature ejaculation group (>3 min)	16/100	78/100	<0.05
	Control group (>5 min)	26/30	29/30	>0.5
Glans sensitivity (penile vibration threshold) (level)	Underside			
	Premature ejaculation group	23±2.7	40±1.4	<0.05
	Control group	35±2.0	45±1.2	<0.05
	Left			
	Premature ejaculation group	28±1.5	46±2.5	<0.05
	Control group	49±2.5	59±2.4	<0.05
	Right			
	Premature ejaculation group	30±2.3	45±2.1	<0.05
	Control group	52±1.8	63±1.9	<0.05
	Upper side			
	Premature ejaculation group	46±2.7	55±1.6	<0.05
	Control group	61±1.7	67±2.7	>0.05
	Total			
	Premature ejaculation group	29±2.5	47±2.0	<0.05
Control group	50±2.1	59±1.8	<0.05	

ejaculation group and control group ($P>0.5$). The comfort of thickened condom in premature ejaculation group was poor ($P<0.05$), and there was no significant difference between the 2 groups ($P>0.5$). In the premature ejaculation group, the ejaculation latency time was significantly prolonged after using thickened condoms ($P<0.05$), but there was no significant difference in the control group. After using thickened condoms, the penis vibration threshold increased significantly, that is, the glans nerve sensitivity decreased ($P<0.05$). The penile dorsal nerve conduction velocity decreased in the premature ejaculation group ($P<0.05$), but there was no significant difference in the control group ($P>0.05$). As shown in *Table 2*, total

erection time and the average hardness of coronary sulcus in the physical delayed condom group were significantly higher than those in the ordinary condom group ($P<0.05$), and the serum androgen level could be significantly increased after using the thickened condom (*Table 3*, $P<0.05$). The results showed that the participants' satisfaction with physical delayed condoms was significantly better than that with ordinary condoms, and the use of thickened condoms could effectively prolong the time of sexual intercourse. The treatment of moderate and mild premature ejaculation with thickened condoms could significantly improve the symptoms of severe cases. At the same time, thickened condoms could improve the penile erectile function of

Table 2 Effect of physical delayed condom on erectile function of participants

Objects	Groups	Ordinary condom	Thickened condom	P value
Penile erection hardness (above grade 3)	Premature ejaculation group	90/100	93/100	>0.5
	Control group	28/30	29/30	>0.5
Easy to insert	Premature ejaculation group	93/100	95/100	>0.5
	Control group	29/30	29/30	>0.5
Total erections (>1)	Premature ejaculation group	100/100	100/100	>0.5
	Control group	30/30	30/30	>0.5
Total erection time (>10 min)	Premature ejaculation group	76/100	88/100	<0.05
	Control group	28/30	29/30	>0.5
Average hardness of coronal groove ($\geq 50\%$)	Premature ejaculation group	78/100	89/100	<0.05
	Control group	25/30	27/30	>0.5
Average hardness of base ($\geq 50\%$)	Premature ejaculation group	84/100	90/100	>0.5
	Control group	26/30	27/30	>0.5

Table 3 Effect of physical delayed condom on reproductive hormone of participants

Objects	Groups	Ordinary condom	Thickened condom	P value
Luteinizing hormone (mIU/mL)	Premature ejaculation group	5.4 \pm 0.8	5.9 \pm 0.7	>0.5
	Control group	6.1 \pm 1.0	5.2 \pm 1.2	>0.5
Follicle stimulating hormone (mIU/mL)	Premature ejaculation group	12.5 \pm 1.6	11.2 \pm 1.8	>0.5
	Control group	10.4 \pm 1.1	9.5 \pm 0.9	>0.5
Prolactin (ng/mL)	Premature ejaculation group	13.6 \pm 1.7	12.9 \pm 1.2	>0.5
	Control group	11.6 \pm 1.4	12.2 \pm 1.5	>0.5
Progesterone (ng/mL)	Premature ejaculation group	1.2 \pm 0.13	1.1 \pm 0.09	>0.5
	Control group	0.8 \pm 0.06	0.9 \pm 0.10	>0.5
Estradiol (pg/mL)	Premature ejaculation group	88 \pm 14	85 \pm 11	>0.5
	Control group	56 \pm 9	53 \pm 12	>0.5
Testosterone (ng/dL)	Premature ejaculation group	137 \pm 12	165 \pm 13	<0.05
	Control group	231 \pm 22	245 \pm 21	>0.5

patients with premature ejaculation, increase the level of serum androgen, and improve the quality of sexual life. The control group participants were also satisfied with the use of physical delayed condoms, and their use significantly improved the glans sensitivity and penis vibration threshold ($P < 0.05$); however, there was no significant difference in the effect on the erectile function of users compared with ordinary condoms ($P > 0.05$).

Discussion

Penile erection is the most essential state of male sexual activity, determining the completion and quality of male and female sexual life. The physiological process of erection includes 4 factors: adequate innervation, normal endocrine function, functional blood supply and blood circulation system, and complete anatomical structure, which are

coordinated and completed. The absence or defect of any factor will affect the erectile function, and the vascular mechanism is more critical in penile erection (8,9).

Premature ejaculation is the most common sexual dysfunction in men (10), and about 45% of men will experience premature ejaculation at some stage of their life. Treatment methods for premature ejaculation include behavioral therapy, drug therapy, surgical treatment, and combined treatment. Each method has its advantages and disadvantages, and the effect is different. In recent years, the use of antidepressant drugs (such as clomipramine) has been associated with definite effects for most patients. Nonetheless, the compliance is poor, there are many side effects, and the recurrence rate is relatively high after stopping treatment (10). Traditional behavioral therapy requires both husband and wife to cooperate continuously and closely, and many patients fail due to the challenges associated with adhering to the rules (11,12). Hawton *et al.* (13) reported from 3-year follow-up survey of a set of data that the treatment effect of 75% of patients with premature ejaculation was not long-lasting.

In the early years of clinical practice, ancient Chinese behavioral therapy was to treat premature ejaculation, incorporating the principles of “sexual foreplay” and “nine shallow and one deep” from ancient Chinese atrioventricular health preservation works. This behavioral therapy also requires the cooperation of women in treatment and long-term participation in training to avoid low compliance and subsequent high failure rates. Such therapy has been shown to be more operable and more in line with national conditions in practice (14,15). It has a better protective effect on men’s self-esteem, dramatically increases patients’ self-confidence so that it is easier to control ejaculation, and thus has a good outcome. However, with the deepening of research, this behavioral therapy alone still has limitations (16,17). Various mental and psychological factors accompany most patients with premature ejaculation. They are restricted by the patient’s cultural influences and treatment habits, especially those who lack self-confidence and where there is poor cooperation between husband and wife. Relying solely on spiritual strength without material dependence is prone to failure (18,19). In addition, premature ejaculation can also be caused by other factors such as penile hypersensitivity or increased excitability of the central, sensory, and conductive nerves (20). Therefore, thickened condoms have been developed to treat patients.

The process of sexual reflex is that after the receptor is stimulated, the pain, temperature and tactile information

is transmitted to the corresponding nerve center through the dorsal penile nerve and pudendal nerve, and then the information is sent out. The output nerves, such as the sacral nerve and pudendal nerve, act on the effectors such as bulbocavernosus muscle and cavernous sciatic muscle to control erection and ejaculation. This study found that the excitability of penile dorsal nerve in patients with premature ejaculation, especially the sensory nerve excitability of the penile head, is higher than that of normal people. The sensitivity of the penile head is too acute. The sensitivity to stimulation during sexual intercourse is too high, making it difficult to control the ejaculatory reflex, and premature ejaculation occurs.

The results showed that a thickened condom with 3 times the thickness of a conventional condom was designed according to the physiological characteristics of blood inflow and outflow during penile erection and the anatomical distribution characteristics of penile arteriovenous vessels. This type of condom can effectively reduce the sensitivity of the glans and nerve conduction velocity by physical methods. It can also reduce the blood reflux rate of the erect penis, effectively maintain and prolong the hyperemic state of the penis, enhance the intensity of penile erection, and maintain and extend the penile erection time, thus improving the quality of sexual intercourse. The constrictive effect of the front-end tightening ring structure of the physical delayed natural latex rubber condom on the coronal sulcus or the front of the penis is helpful to resist and overcome premature ejaculation. It has the function of delaying ejaculation and generating urethral pressure simultaneously, which stimulates the body to produce more pressure during ejaculation to improve male sexual pleasure. It should be noted, however, that thicker condoms can reduce the comfort of intercourse. We suggest that lubricants can be used in combination to increase emotional interaction before sex.

The jitter and twitch of the penis in the vagina are enhanced to increase the stimulation in the female vagina and improve the quality of sexual intercourse by increasing ejaculation pressure. Since psychological factors are causative for more than 50% of the premature ejaculation population, it cannot be ruled out that using this kind of condom has the effect of psychological suggestion and treatment to improve the quality of sexual life of this part of the population. The delayed effect of drugs combined with thickened condoms may be better than thickened condoms alone, and further research is needed to confirm whether it is statistically significant. The combination of the two can

be used in patients who are less effective when used alone. The physically delayed condom will not bring any other changes to the reproductive organs, has no dependence, is safe and convenient to use, and has a noticeable effect to minimize premature ejaculation.

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Footnote

Reporting Checklist: The authors have completed the STROBE reporting checklist. Available at <https://tau.amegroups.com/article/view/10.21037/tau-22-8/rc>

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Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at <https://tau.amegroups.com/article/view/10.21037/tau-22-8/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study involving human participants were in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by the Ethics Committee of the First Affiliated Hospital, Zhejiang University School of Medicine (No. 2021-IIT-168) and informed consent was provided by all the patients.

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