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ORIGINAL PAPER

The effect of glandular frenulectomy on refractory lifelong premature ejaculation: A pilot study

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Summary

Purpose: Premature ejaculation (PE) is one of the most common male sexual disorders and is influenced by both psychological and biological factors. Despite available treatments, including psychosexual therapy and pharmacological interventions, no definitive cure exists. In addition, various interventional approaches have been investigated for lifelong PE, such as glandular filler injections, partial dorsal nerve neurectomy, and frenulectomy.

Patients and Methods: This pilot study evaluated the effect of glandular frenulectomy in 25 married men with lifelong PE who had not responded to conventional treatments for at least six months. Participants underwent glandular frenulectomy and were assessed before surgery and three months postoperatively using Intravaginal Ejaculatory Latency Time (IELT) and the Arabic Index of Premature Ejaculation (AIPE) scores.

Results: No statistically significant improvement was observed in IELT or AIPE scores after surgery. The mean IELT and AIPE scores before and three months postoperatively yielded P-values of 0.058 and 0.090, respectively.

Conclusion: In this pilot study, glandular frenulectomy did not result in significant short-term improvement in men with lifelong PE unresponsive to conventional therapy. Larger studies with longer follow-up are needed to further evaluate its therapeutic role.

KEY WORDS: *Premature ejaculation; Frenulectomy; Intravaginal ejaculatory latency time; Sexual sysfunction; Male.*

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INTRODUCTION

Premature ejaculation (PE) represents the most prevalent male sexual dysfunction, with a global bedside prevalence estimated between 20% and 30%. Beyond the physiological symptom of abbreviated latency, PE functions as a significant psychosocial stressor, frequently precipitating performance anxiety, diminished self-esteem, and profound interpersonal discord between patients and their partners (1, 2). While clinical definitions have historically varied, the *International Society for Sexual Medicine* (ISSM) provides a multidimensional framework: *Lifelong PE* (LPE) is characterized by an *intravaginal ejaculatory latency time* (IELT) consistently under one minute from the first sexual encounter, whereas Acquired PE involves a clinically significant reduction in latency typically to three minutes or less. Both conditions are fundamentally defined by a perceived lack of ejaculatory control and the subsequent development of psychological distress (3).

The precise pathophysiology of PE is increasingly viewed as a complex interplay between central neurobiological predispositions and peripheral hypersensitivity.

Centrally, the ejaculatory reflex is modulated by a delicate balance of neurotransmitters, particularly the inhibitory role of serotonin (5-HT). Modern genomic studies have implicated polymorphisms in the dopamine transporter and serotonin receptor subtypes, which may lower the threshold for the ejaculatory reflex arc. Peripherally, factors such as chronic prostatitis, hyperthyroidism, and heightened penile somatosensory sensitivity are thought to provide excessive afferent input to the spinal ejaculatory generator, accelerating the transition to the point of ejaculatory inevitability (4).

Current therapeutic strategies predominantly rely on multimodal management, combining psychosexual counseling with pharmacotherapy. The latter typically involves *selective serotonin reuptake inhibitors* (SSRIs) or *tricyclic antidepressants* (TCAs) to enhance central inhibitory signaling, or topical anesthetics to desensitize the glans. However, these treatments are often limited by systemic side effects, high discontinuation rates, and a "*plateau effect*" in refractory cases (2, 5).

This therapeutic gap has prompted the investigation of nerve-modulating interventions for patients with refractory LPE. Emerging surgical and minimally invasive options include glandular hyaluronic acid filler injections, botulinum toxin type A, and partial dorsal nerve neurectomy. Among these, glandular frenulectomy has gained interest due to the frenulum's status as a concentrated "*trigger zone*" for mechanoreceptors. By surgically modifying this high-sensitivity area, it is hypothesized that the intensity of sensory afferent feedback can be attenuated, thereby delaying the reflex arc (6, 7).

The present study aims to evaluate the clinical efficacy and safety of glandular frenulectomy as a targeted surgical intervention for patients with refractory lifelong PE who have failed conventional pharmacological therapies.

Patients and methods

This prospective pilot study was conducted at the Andrology Department, Faculty of Medicine, Cairo University, between 2018 and 2020. Prior to recruitment, the study protocol received formal approval from the Institutional Review Board and the local Research Ethics Committee. All clinical procedures were performed in strict accordance with the ethical standards established in the 1964 Declaration of Helsinki and its subsequent amendments. Every participant provided written informed consent after a comprehensive explanation of the surgical procedure, potential risks, and the experimental nature of the pilot study.

Given the novel nature of this pilot investigation, the sample size was calculated based on the primary outcome of IELT improvement. Assuming a significant clinical increase in IELT based on preliminary data from existing literature on nerve-modulating surgeries, a power analysis was conducted using a significance level of 0.05 and a power of 80%. This indicated that a minimum of 22 patients were required to detect a statistically significant difference; therefore, a cohort of 25 patients was recruited to account for potential attrition or loss to follow-up.

Inclusion criteria

The study population consisted of 25 married men, aged 18 to 55, who presented with refractory LPE characterized by a consistent failure to delay ejaculation for more than 60 seconds since their first sexual experience. To ensure the integrity of the clinical data, participants were required to have been in a stable marital relationship for at least 12 months. All patients were classified as refractory, meaning they had failed to achieve a clinically meaningful response after a supervised six-month trial of first-line therapies, including psychosexual counseling and pharmacological agents such as SSRIs or topical desensitizing creams.

Exclusion criteria

Stringent exclusion criteria were applied to isolate the surgical impact from other confounding variables. Patients were excluded if they presented with comorbid erectile dysfunction, defined as an *International Index of Erectile Function* (IIEF-5) score below 25, or if they reported hypoactive sexual desire or primary orgasmic disorders. Active urogenital infections, such as chronic prostatitis or urethritis, were ruled out via the Meares-Stamey two-glass test and microbiological analysis of expressed prostatic secretions. Furthermore, individuals with a history of pelvic trauma, prior genital surgeries, major psychiatric disorders, substance abuse, or uncontrolled systemic metabolic diseases like diabetes mellitus were omitted from the cohort.

Clinical evaluation focused on the multidimensional aspects of ejaculatory control. Baseline and three-month postoperative assessments utilized a digital stopwatch to measure IELT, with patients instructed to record the latency period for each coital act over a four-week span. Additionally, the *Arabic Index of Premature Ejaculation* (AIPE), a validated 7-item questionnaire, was employed to evaluate the patient's perceived control, sexual satisfaction, and psychological distress (8).

Surgical procedure

The surgical intervention, glandular frenulectomy, was performed under local anesthesia in an outpatient setting. Initial desensitization was achieved with a topical eutectic mixture of 2.5% lidocaine and 2.5% prilocaine, followed by a targeted sub-frenular infiltration of 2% lidocaine. To optimize the surgical field, a 2/0 Vicryl stay suture was positioned at the proximal frenular base for hemostatic control and penile stabilization. The procedure involved a total frenulectomy, where the concentrated mechanoreceptor trigger zone of the frenulum was excised parallel to the penile shaft. This targeted resection is hypothesized to attenuate the peripheral somatosensory afferent limb of the ejaculatory reflex arc. The resulting wound was closed via frenuloplasty using interrupted 4/0 Vicryl sutures, facilitating a tension-free, longitudinal-to-transverse apposition. Postoperative management included a course of amoxicillin/clavulanic acid and a mandatory 21-day period of sexual abstinence to ensure complete primary intention healing and tissue remodeling (Figure 1).

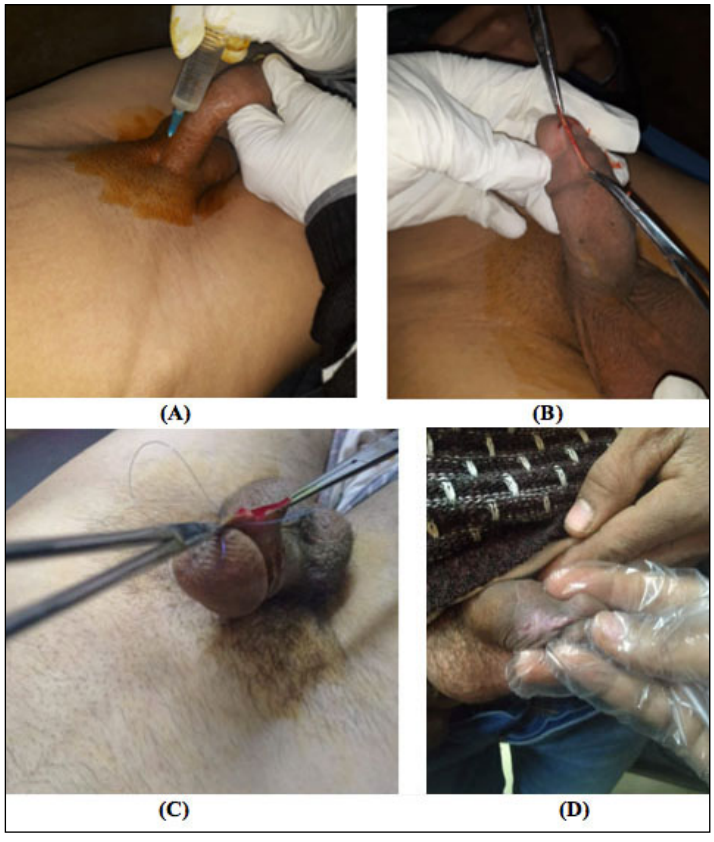

Figure 1.
Procedural stages of glandular frenulectomy.
(A) Induction of regional anesthesia via dorsal penile nerve block and local ventral infiltration.
(B) Intraoperative view of the surgical excision of the frenulum (frenulectomy).
(C) Primary wound closure using interrupted sutures to achieve a tension-free frenuloplasty.
(D) Postoperative clinical appearance demonstrating complete primary intention healing and tissue remodeling.

Statistical analysis

Data were analyzed using IBM SPSS Statistics 24.0. Continuous baseline variables (age, marriage duration, intercourse frequency, IIEF-5 score) were summarized as mean ± SD, minimum, and maximum. Pre- and post-intervention IELT and AIPE scores were compared using Wilcoxon signed-rank tests. P-values < 0.05 were considered statistically significant.

Results

The study successfully analyzed a final cohort of 25 married Egyptian men; all diagnosed with primary (lifelong) *premature ejaculation* (PE) that had proven refractory to standard pharmacological and psychosexual interventions. The demographic profile revealed a mean age of 31.2 ± 4.9 years and a mean marital duration of 4.36 ± 2.29 years. Regarding coital activity, the subjects reported a mean intercourse frequency of 3.72 ± 1.67 sessions per week. To ensure that the abbreviated latency was not secondary to erectile dysfunction, potentia coeundi was verified via the IIEF-5; the cohort maintained a mean score of 24.0 ± 1.16, indicating robust erectile capacity and isolating the ejaculatory reflex as the primary clinical pathology. The baseline demographic and clinical characteristics are summarized in Table 1.

Clinical efficacy was assessed by comparing the IELT and AIPE scores at baseline versus the three-month postoperative follow-up. The primary outcome measure, the mean IELT, demonstrated a negligible increase from 34.52 ± 17.72 seconds preoperatively to 34.84 ± 17.70 seconds postoperatively. Statistical analysis revealed that this difference failed to reach clinical or statistical significance (P=0.058).Similarly, the secondary outcome measure, the mean AIPE score, showed only a marginal shift from 13.48 ± 3.42 at baseline to 13.76 ± 3.67 after three months. This variation was also found to be statistically non-significant (p = 0.090), suggesting that the surgical modification of the frenular somatosensory pathway did not provide a meaningful modulation of the ejaculatory threshold in this specific cohort of refractory LPE patients. Detailed comparative data for the IELT and AIPE metrics are presented in Table 2.

Table 1.
Descriptive data of the subjects included.

n = 25	Minimum	Maximum	Mean	SD
Age (Y)	22	40	31.20	4.92
Duration of marriage (Y)	1	9	4.36	2.29
Frequency of intercourse / Week	1	6	3.72	1.67
IIEF-5	22	25	24.00	1.16

Table 2.
IELT and AIPE scores of patients before and after glanular frenulectomy.

n = 25	Minimum	Maximum	Mean	SD	P-value
IELT (Before)	5.00	60.00	34.52	17.72	0.058
IELT (After)	5.00	61.00	34.84	17.70	
AIPE (Before)	7.00	20.00	13.48	3.42	0.090
AIPE (After)	7.00	22.00	13.76	3.67	

Discussion

PE is a common male sexual dysfunction that negatively affects psychosexual and social health as well as overall quality of life (9, 10). Its exact etiopathogenesis remains unclear, with proposed mechanisms including psychogenic and organic factors such as penile hypersensitivity, neurotransmitter receptor gene polymorphisms, hormonal imbalances, and chronic prostatitis (11, 12). Some studies have suggested that a short frenulum (frenulum breve) may predispose men to PE by causing discomfort during intercourse or increasing sensitivity in this nerve-rich region of the penis (13, 14). However, evidence supporting this hypothesis remains limited.

Current management of PE includes psychosexual therapy and/or pharmacotherapy (topical anesthetics or antidepressants), with combined therapy showing superior outcomes compared to monotherapy (15-17). Recently, novel interventions have been explored for refractory lifelong PE, including glanular filler injections, partial dorsal nerve neurectomy, botulinum toxin injections (18-20), and frenulectomy (14).

Declarations

Ethical approval and consent for participate: *This prospective pilot study was conducted at the Andrology Department, Faculty of Medicine, Cairo University, between 2018 and 2020. Prior to recruitment, the study protocol received formal approval from the Institutional Review Board and the local Research Ethics Committee. All clinical procedures were performed in strict accordance with the ethical standards established in the 1964 Declaration of Helsinki and its subsequent amendments. Every participant provided written informed consent after a comprehensive explanation of the surgical procedure, potential risks, and the experimental nature of the pilot study.*

Consent for publication: *Written informed consent for publication of the clinical data and accompanying images was obtained from all included patients.*

Availability of data and material: *The datasets used and/or analyzed during the current study are available upon reasonable request from the corresponding author.*

Competing interests: *The authors declare that they have no competing interests.*

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Authors' contributions: *MFR, study concept, design, and supervision; YIEK, methodology, data interpretation, and contribution to manuscript writing; OASED, data collection and manuscript original drafting; FLAA, clinical examination and data curation; AHTK, statistical analyses and literature review; MAA, manuscript critical revision and editing. All the authors read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.*

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To our knowledge, this is the second human study to evaluate frenulectomy for lifelong PE. Compared to *Gallo et al.*, (14) our cohort was younger (31.2 ± 4.92 *vs.* 38.2 ± 5.3 years) and included both short and normal frenula, with a lower prevalence of frenulum breve (16% *vs.* 43%). Unlike *Gallo et al.* (14), who reported significant improvements in IELT and PEDT scores after a mean follow-up of 7.3 ± 3.18 months, our study found no statistically significant change in IELT (34.52 ± 17.72 *vs.* 34.84 ± 17.70 seconds, p = 0.058) or AIPE scores (13.48 ± 3.42 *vs.* 13.76 ± 3.67, p = 0.090) at three months postoperatively. This discrepancy may be due to differences in baseline severity, inclusion of refractory patients, shorter follow-up, smaller sample size, and inclusion of patients with normal frenula.
No complications were observed, consistent with previous studies. Frenulectomy targets ventral hypersensitivity without affecting dorsal glans innervation (21).

Study limitations

The study is primarily limited by its small sample size and the absence of a control or sham-surgery arm, which restricts the ability to account for placebo effects or perform subgroup analyses based on frenular anatomy. The three-month follow-up may be insufficient to observe long-term neuroplasticity or the behavioral "*re-learning*" of the ejaculatory reflex.

Conclusions

Lifelong PE remains a complex condition with multifactorial etiology. Although frenulectomy was safe in our cohort, it did not produce significant short-term improvement in IELT or AIPE scores among males that are refractory to conventional therapy. Future studies should include larger sample sizes, control groups, longer follow-up, and objective assessment tools to better evaluate the efficacy and safety of frenulectomy in lifelong PE management.

References

1. Saitz TR, Serefoglu EC. Advances in understanding and treating premature ejaculation. Nat Rev Urol. 2015; 12:629-40.

2. Saitz TR, Serefoglu EC. The epidemiology of premature ejaculation. Transl Androl Urol. 2016; 5:409-15.

3. Althof SE, McMahon CG, Waldinger MD, et al. An Update of the International Society of Sexual Medicine's Guidelines for the Diagnosis and Treatment of Premature Ejaculation (PE). Sex Med. 2014; 2:60-90.

4. Raveendran AV, Agarwal A. Premature ejaculation - current concepts in the management: A narrative review. Int J Reprod Biomed. 2021; 19:5-22.

5. Gillman N, Gillman M. Premature Ejaculation: Aetiology and Treatment Strategies. Med Sci (Basel). 2019; 7:102.

6. Martin C, Nolen H, Podolnick J, Wang R. Current and emerging therapies in premature ejaculation: Where we are coming from, where we are going. Int J Urol. 2017; 24:40-50.

7. Hu QB, Zhang D, Ma L, et al. Progresses in pharmaceutical and surgical management of premature ejaculation. Chin Med J (Engl). 2019; 132:2362-2372.

8. Arafa M, Shamloul R. Development and evaluation of the Arabic Index of Premature Ejaculation (AIPE). J Sex Med. 2007; 4:1750-6.

9. Revicki D, Howard K, Hanlon J, et al. Characterizing the burden of premature ejaculation from a patient and partner perspective: a multi-country qualitative analysis. Health Qual Life Outcomes. 2008; 6:33.

10. Hanafy S, Hamed AM, Hilmy Samy MS. Prevalence of premature ejaculation and its impact on the quality of life: Results from a sample of Egyptian patients. Andrologia. 2019; 51:e13298.

11. Hatzimouratidis K, Amar E, Eardley I, et al. Guidelines on male sexual dysfunction: erectile dysfunction and premature ejaculation. Eur Urol. 2010; 57:804-14.

12. El-Hamd MA, Saleh R, Majzoub A. Premature ejaculation: an update on definition and pathophysiology. Asian J Androl. 2019; 21:425-432.

13. Halata Z, Munger BL. The neuroanatomical basis for the protopathic sensibility of the human glans penis. Brain Res. 1986; 371:205-30.

14. Gallo L, Perdonà S, Gallo A. The role of short frenulum and the effects of frenulectomy on premature ejaculation. J Sex Med. 2010; 7:1269-76.

15. McMahon CG. Current and Emerging Treatments for Premature Ejaculation. Sex Med Rev. 2015; 3:183-202.

16. Perelman MA. A new combination treatment for premature ejaculation: a sex therapist's perspective. J Sex Med. 2006; 3:1004-1012.

17. Ciocca G, Limoncin E, Mollaioli D, et al. Integrating psychotherapy and pharmacotherapy in the treatment of premature ejaculation. Arab J Urol. 2013; 11:305-12.

18. Abdallah H, Abdelnasser T, Hosny H, et al. Treatment of premature ejaculation by glans penis augmentation using hyaluronic acid gel: a pilot study. Andrologia. 2012; 44 Suppl 1:650-3.

19. Littara A, Palmieri B, Rottigni V, Iannitti T. A clinical study to assess the effectiveness of a hyaluronic acid-based procedure for treatment of premature ejaculation. Int J Impot Res. 2013; 25:117-20.

20. Sun S, Han L, Li Y, et al. The safety and efficacy of dorsal penile nerve block for premature ejaculation: A systematic review and meta-analysis. Medicine (Baltimore). 2019; 98:e16479.

21. Yang CC, Bradley WE. Innervation of the human glans penis. J Urol. 1999; 161:97-102.

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