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Value of injection of plasma-rich platelets in the vaginal and the clitoris in cases with female sexual dysfunction

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SUMMARY

Background: Postmenopausal Female Sexual Dysfunction (FSD) is a common issue impacting women's sexual health and quality of life. This study examines the effectiveness of autologous platelet-rich plasma (A-PRP) injections in treating FSD, aiming to assess improvements in sexual function and related distress.

Methodology: A retrospective study was conducted at a private hospital from January 2020 to January 2022, involving 30 sexually active women aged 18 and older with diagnosed FSD. Participants received A-PRP injections in the vaginal and clitoral areas. The primary outcome measured was the Female Sexual Function Index (FSFI) total score, assessed before treatment and four months post-treatment. Secondary outcomes included the Female Sexual Distress Scale-Revised (FSD-R) scores. Informed consent and ethical approval were obtained.

Results: Significant improvements were noted in FSD-R scores, with the total score decreasing from 19.33 ± 9.61 pretreatment to 10.63 ± 6.43 post-treatment ($p < 0.001$, 95% CI: 4.39, 13.01). FSFI scores also showed marked enhancement across all domains: desire (2.00 to 4.20, $p < 0.001$, CI: 1.80, 2.60), arousal (2.10 to 4.10, $p < 0.001$, CI: 1.56, 2.44), lubrication (3.00 to 4.80, $p < 0.001$, CI: 1.56, 2.04), orgasm (1.50 to 4.00, $p < 0.001$, CI: 1.94, 3.06), and satisfaction (2.00 to 4.80, $p < 0.001$, CI: 2.43, 3.17). The total FSFI score improved significantly from 16.50 ± 2.80 to 28.50 ± 2.50 ($p < 0.001$, CI: 10.60, 13.40). The pain domain showed no significant change ($p = 0.085$).

Conclusion: A-PRP injections are a promising treatment for FSD, significantly improving sexual function and reducing distress in affected women. Continued research is essential to validate these findings and explore long-term outcomes.

Keywords: Female sexual dysfunction: Postmenopausal women; Quality of life

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INTRODUCTION

Female Sexual Dysfunction (FSD) refers to persistent, distressing issues in sexual response or pleasure, occurring at least 75% of the time over six months. It encompasses conditions such as sexual interest/arousal disorder, orgasmic disorder, genitopelvic pain/penetration disorder, substance-induced dysfunction, and other unspecified sexual problems [1].

According to WHO, female genital mutilation (FGM) is linked to increased sexual problems. In an Egyptian study [2] on 1000 married women, 90% of women were circumcised, mainly with first- or second-degree procedures (62%), 68.9% of women had one or more sexual dysfunction, primarily decreased desire (49.6%), orgasmic problem (43%), difficult arousal (36%), dyspareunia (31.5%) and anorgasmia (16.9%).

Autologous platelet-rich plasma (A-PRP) injections promote wound healing, stimulate blood vessel growth, boost collagen, and reduce inflammation thanks to their high levels of growth factors like PDGF, TGF-β, IGF, EGF, and VEGF. Recently, platelet-derived products have been applied to treat genital and urinary issues. Kingsley et al. first introduced PRP in 1954. PRP is plasma with over one million platelets per microliter in five cc, making it valuable for tissue repair due to its growth factors and cytokines. These activated platelets release key growth factors that enhance angiogenesis and tissue regeneration [3,4].

The PRP, injected into targeted vaginal areas with local anesthesia, is known as the 'O shot.' It stimulates tissue regeneration, leading to improved arousal, stronger orgasms, less pain, and increased natural lubrication, enhancing sexual response dramatically [5].

A variety of materials have been injected in the periurethral area to treat sexual dysfunction and urinary incontinence. Calcium Hydroxyapatite Crystals (CHAC) are FDA approved (Coaptite®) for urinary incontinence but may cause complications like urinary obstruction, erosion, infection, and granuloma formation requiring surgery, with no improvement reported in sexual dysfunction. Hyaluronic acid fillers, known as the "G-Shot," aim to enhance orgasmic intensity by targeting the Graffian Spot. However, due to the risk of granuloma formation, this therapy has been condemned by the American College of Obstetrics and Gynecology[6].

When activated with calcium chloride and injected into areas like the clitoris, G-spot, Skene's glands, or pubo-cervical fascia, PRP releases growth factors that promote

stem cell differentiation, leading to new blood vessels, fibroblasts, and nerve growth, improving responsiveness. PRP is non-antigenic, free of harmful agents, with no reports of granulomas, infections, or tissue necrosis, and it elicits no immune or allergic reactions. It encourages tissue regeneration through stem cell activation, enhancing vascularity and nerve regrowth in the vagina and clitoral areas, potentially boosting sexual sensitivity and reducing discomfort [7].

This study aimed to assess changes in sexual dysfunction using FSFI and FSDS-R scores in women with varying degrees of sexual dysfunction following PRP injections into the periurethral area, Skene's glands, and clitoris.

PARTICIPANTS AND METHODS

This retrospective analysis was conducted at a big private hospital from January 2020 to January 2022. The participating women were recruited from gynecology, plastic, psychiatry & mental health outpatient clinics. Before beginning data collection, we obtained approval from the hospital's Ethics Committee to ensure compliance with ethical standards. We assessed the medical records of all patients who underwent surgical procedures during this timeframe and extracted patients' data from the hospital's database per ethical guidelines. Informed consent was acquired from each patient upon admission, allowing the use of their clinical information for research purposes, in accordance with the principles of the Declaration of Helsinki. To maintain confidentiality, all data were anonymized and managed with the utmost care, ensuring no personally identifiable information was revealed in the published findings. The study's procedures adhered entirely to ethical standards, prioritizing the protection of patient privacy throughout the research.

The study included 30 women over 18 who were sexually active for at least 12 months and engaged in intercourse every 15 days. The eligibility criteria include women experiencing diminished sexual desire or arousal, with symptoms such as reduced genital sensitivity or lubrication, and those who have difficulty achieving orgasm or have markedly reduced orgasm intensity, despite adequate stimulation. Women suffering from dyspareunia and vaginal atrophy, such as postmenopausal women with vaginal dryness or atrophic changes, are also eligible. Additionally, women with a history of repeated vaginal deliveries, which may have resulted in vaginal widening and decreased satisfaction, are considered suitable candidates for this treatment. Participants met DSM-5 criteria for female sexual interest/arousal or orgasmic disorder and had FSFI scores below 26.5 overall and 3.75 in the orgasm subdomain. Exclusion criteria included patients taking hormonal medications for infertility, those with hematologic abnormalities like severe thrombocytopenia, and those on drugs affecting platelet function, such as aspirin. Pregnant or lactating women were excluded, along with individuals with sexual inactivity, vaginal pathology, or a history of chemotherapy or radiotherapy. Patients using antidepressants, sexual enhancement drugs, topical estrogen, or contraceptives were also omitted. Furthermore, females with FSFI scores above 26.5, orgasm subdomain scores over 3.75, or a Beck Depression Inventory score of 17 or higher were not eligible for the study, nor were partners with erectile dysfunction or premature ejaculation.

Primary outcome: The improvement in the total score on the Female Sexual Function Index was used and performed before and 4 months after the procedure. The Female Sexual Function Index (FSFI) is a validated questionnaire to assess female sexual function. It covers six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. Each domain is scored individually, with desire ranging from 1.2 to 6, arousal from 0 to 6, lubrication from 0 to 6, orgasm from 0 to 6, satisfaction from 0.8 to 6, and pain from 0 to 6. The total FSFI score, obtained by summing these domains, ranges from 2 to 36. [8]. The FSFI cutoff scores were established based on the scale-specific means for women without sexual dysfunction, minus one standard deviation, as reported by Wiegel et al. [9]. The respective cut-off points are 3.16 for desire, 3.97 for arousal, 4.31 for lubrication, 3.75 for orgasm, 3.85 for satisfaction, and 4.22 for pain. An overall FSFI score of 26.55 (out of 36) is generally regarded as the optimal threshold to distinguish women with sexual dysfunction from those without [9].

The secondary outcome was the improvement of the Female Sexual Distress Scale Revised (FSDS-R) The FSDS-R questionnaire measures sexually related distress in Females With Sexual Dysfunction (FSD). The Female Sexual Distress Scale-Revised (FSDS-R) is a unidimensional scale designed to measure sexually related personal distress in women. It does not categorize items into distinct subdomains but instead assesses a single overarching construct, the emotional and psychological distress associated with sexual difficulties.

The 13-item questionnaire evaluates feelings such as guilt, frustration, embarrassment, stress, and worry related to a woman's sexual experiences. Notably, the FSDS-R includes an additional item (compared to the original FSDS) to specifically capture distress linked to low sexual desire, making it particularly useful for identifying distress consistent with hypoactive sexual desire disorder (HSDD). All items contribute to a single composite score, reflecting the severity of sexual distress as a unified domain [10].

Previous PRP studies of other tissue types suggest that collection of follow-up data at approximately twelve weeks after the procedure allows adequate time to observe therapeutic effects attributed to stem activation and transformation[11-14]

Procedure: All cases were initially assessed for local and general gynecological, plastic and psychological problems at the gynecology and psychiatric clinic, respectively, and any suspected cases were not offered treatment. Participants were selected from the Gynecology or psychology clinics, and the therapy occurred at the Gynecological and Plastic Surgery Clinic within our private hospital. Additionally, participants were not compensated for either the procedure or their participation in the survey. Participants were fully informed about the PRP injection and provided written consent before treatment. All patients were fully informed of the innovative therapeutic and experimental nature of the localized PRP injection and consented to the procedure.

The materials and equipment included 5cc syringes, 27-gauge needles, a centrifuge with a proprietary collection system, calcium chloride 10% (for activation of PRP), and the REGEN system for collecting and centrifuging blood to yield PRP.

First, a topical anesthetic cream was applied to the anterior vaginal wall and clitoris, with injections delayed for one hour to ensure adequate analgesia. A sterile syringe was used to draw 10 cm of blood from the arm, which was transferred into a sterile glass tube containing sodium citrate as an anticoagulant. The blood was then processed using a two-spin centrifugation method: the first spin at 2500 rpm for 3 minutes, and the second at 4000 rpm for 15 minutes. This separation resulted in PRP in the lower third of the tube, with platelet-poor plasma in the upper two-thirds. The platelet pellet at the bottom was gently resuspended to prepare the PRP without shaking. Our operative technique involved injecting PRP into targeted areas of the clitoris and anterior vaginal wall. For the clitoral injections, we stabilized the clitoral hood and used a fine 31G needle to inject approximately 1 mL of PRP at each of the four cardinal points (12, 3, 6, 9 o'clock). We aimed to create a ring of PRP "blebs" around the clitoral shaft, targeting the bilateral crura and glans indirectly, injecting slowly and evenly to minimize discomfort. For the anterior vaginal wall, we directed PRP to the sensitive G-spot area, injecting about 2 mL beneath the mucosa at the midline and 1 mL at the paraurethral lateral walls on each side, ensuring slow, steady injections to avoid deeper infiltration and urethral trauma. We always aspirated lightly before injections to prevent intravascular injection and applied gentle pressure afterward to reduce bruising [7].

We observed that immediately after the procedure, the patient could rest briefly to ensure there were no dizziness or vagal symptoms before she got dressed. The clitoral area often appeared puffy or swollen from the fluid injection, which was expected. We advised patients to resume most normal activities on the same day. Still, we instructed them to avoid sexual intercourse for about 2–3 days to allow the injection sites to heal and the PRP to remain localized for optimal effectiveness. We recommended keeping the area clean, avoiding baths or pools for a few days to reduce infection risk, and showering after 8 hours if permissible. Mild soreness was managed with acetaminophen, and NSAIDs were avoided for a few days to prevent dampening the inflammatory healing response. Patients might experience minor spotting, a feeling of fullness or pressure in the vagina for 1–2 days, and some reported transient urinary urgency or frequency shortly after the injections.

Statistical analysis: The collected data were coded, organized, and analyzed using IBM SPSS Statistics version 22.0 (IBM Corp, Chicago, USA, 2013). Descriptive statistics were presented as percentages, means, and standard deviations. Inferential analyses included Fisher's exact test for 2×2 tables, Student's t-test for comparing two normally distributed groups, and the Mann-Whitney U-test for non-normal distributions. Paired t-tests were used for dependent parametric data, while Wilcoxon tests analyzed dependent nonparametric data. A P-value ≤ 0.05 was considered statistically significant.

RESULTS

The mean age of the 30 women was 50.9 years (range 22–65), with a mean BMI of 30.8 kg/m² (range 23–38.5). The median parity and previous vaginal deliveries were both 3, with ranges from 2 to 8, indicating a diverse patient profile (**Tab. 1.**).

Thirty individuals presenting with various forms of sexual dysfunction, including decreased libido and discomfort during sexual activity, ages 22-65, were included in the study group. Of the 30 patients treated, 18 (60%) demonstrated some degree of improvement in their scores on the Female Sexual Distress Scale-Revised (FSDS-R). Among these 18 patients, 12 initially reported high levels of sexual distress, defined as a FSDS-R score of 11 or more. After the treatment, 10 of these patients were able to reduce their scores to below 11, indicating a significant decrease in sexual distress. Therefore, according to the evaluation criteria, 83% of the patients who started in the "distressed" category improved to a "not distressed" status following the intervention (**Tab. 2.**).These findings suggest that the treatment effectively alleviates sexual distress in individuals experiencing sexual dysfunction.

Tab. 3. indicates a significant reduction in the Female Sexual Distress Scale-Revised (FSD-R) total scores following treatment. The pretreatment mean score was 19.33 (SD = 9.61), indicating moderate to high distress, while the post-treatment mean score dropped to 10.63 (SD = 6.43), reflecting a substantial improvement ($p < 0.001$). The range of scores also decreased, suggesting that not only did the average distress levels decline, but the overall distress among participants was significantly alleviated. These results highlight the effectiveness of the PRP injection in reducing sexual distress and improving overall sexual well-being among the participants.

The data reveal significant improvements across several domains of sexual function following treatment, as measured by the Female Sexual Function Index (FSFI). For Desire, Arousal, Orgasm, and Satisfaction, the mean scores increased notably from pretreatment to post-treatment, with p-values all less than 0.001, indicating high statistical significance. The 95% confidence intervals also suggest robust improvements, reinforcing the PRP injection efficacy (**Tab. 4.**).

Tab. 1. Demographic characteristics among the studied groups.

Variables		PRP (N=30)
Age (years)	Mean ± SD	50.9 ± 4.6
	Range	22.0–65.0
BMI (kg/m²)	Mean ± SD	30.8 ± 4.6
	Range	23.0–38.5
Parity	Median (1st−3rd IQ)	3.0 (3.0–4.0)
	Range	2.0–8.0
Previous vaginal deliveries	Median (1st−3rd IQ)	3.0 (2.0–4.0)
	Range	2.0–8.0

Tab. 2. Results for Female Sexual Distress Scale: A score of ≥ 11 effectively discriminates between women with FSD and those without FSD.

Patient number	Pre-injection	Post-injection	Patient number	Pre-injection	Post-injection
1	31	15	16	8	7
2	22	20	17	30	10
3	18	30	18	26	15
4	25	10	19	17	12
5	12	8	20	11	2
6	29	12	21	24	21
7	10	9	22	9	4
8	33	18	23	28	16
9	27	5	24	15	7
10	20	11	25	21	11
11	14	6	26	6	2
12	35	20	27	34	19
13	19	14	28	13	5
14	23	22	29	32	13
15	5	3	30	4	1

Tab. 3. FSD-R scores before and after treatment.

	Pretreatment (Mean ± SD)	Range	Median	Post-treatment (Mean ± SD)	Range	Median	P-value	95% Confidence Interval:
FSD-R total	**19.33 ± 9.61**	**4-35**	**20.5**	**10.63 ± 6.43**	**1-30**	**10.5**	**<0.001 (HS)**	**(4.39, 13.01)**

Tab. 4. FSFI scores before and after treatment.

Domain	Pretreatment (Mean ± SD)	Range	Median	Post-treatment (Mean ± SD)	Range	Median	P-value	95% Confidence Interval:
Desire	2.00 ± 0.80	1–3	2.0	4.20 ± 0.70	3–5	4.3	<0.001 (HS)	(1.80, 2.60)
Arousal	2.10 ± 0.85	0–4	2.0	4.10 ± 0.80	3–5	4.2	<0.001 (HS)	(1.56,2.44)
Lubrication	3.00 ± 0.50	2–4	3.0	4.80 ± 0.40	4–5	4.8	<0.001 (HS)	(1.56, 2.04)
Orgasm	1.50 ± 0.90	0–3.6	1.4	4.00 ± 1.20	2.8–4.2	4.0	<0.001 (HS)	(1.94, 3.06)
Satisfaction	2.00 ± 0.60	1–3	2.0	4.80 ± 0.80	3–5	4.8	<0.001 (HS)	(2.43, 3.17)
Pain	2.80 ± 0.70	2–3	3.0	2.50 ± 0.60	1–3	2.5	0.085 NS	(-0.64, 0.04)
Total FSFI Score	16.50 ± 2.80	4–21	16.5	28.50 ± 2.50	14–30	28.5	<0.001 (HS)	(10.60, 13.40)

Specifically, Desire improved from a mean of 2.00 to 4.20, and Arousal from 2.10 to 4.10, highlighting substantial enhancements in these areas. Additionally, the Total FSFI Score dramatically increased from 16.50 to 28.50, further validating the effectiveness of the treatment.

However, the domain of Pain did not show a statistically significant change ($p = 0.085$), with a mean score reducing slightly from 2.80 to 2.50. This suggests that while other areas of sexual function improved markedly, pain levels remained relatively stable. Overall, the findings indicate a successful injection for enhancing sexual function, although further efforts may be needed to address pain effectively in this population. These results highlight the potential of targeted treatments in improving sexual health and well-being.

DISCUSSION

Our results and their interpretation

The PRP (platelet-rich plasma) treatment group data, consisting of 30 participants with a mean age of 50.9 years and a BMI of 30.8 kg/m^2, provides important demographic context for interpreting our results related to sexual function improvements. The participants exhibited a median parity of 3, indicating a significant number of previous pregnancies, which can influence both physical and psychological aspects of sexual health.

The age and BMI of the participants may be relevant factors affecting sexual function and distress. Older age, particularly around menopause, is often associated with sexual dysfunction due to hormonal changes. The elevated BMI may also contribute to sexual health issues, as obesity is linked to conditions like decreased libido and arousal difficulties.

Connecting these findings to our results, the significant improvements in domains such as Desire, Arousal, and Orgasm suggest that the injection effectively addresses sexual dysfunction even in a demographic that may be predisposed to such challenges. The success in reducing sexual distress, evidenced by the substantial decrease in FSDS-R scores, highlights the potential of PRP therapy in enhancing sexual well-being among women, particularly those in midlife who may experience compounded distress from age-related factors. Overall, these data underscore the importance of tailored interventions in improving sexual health outcomes for individuals facing multifaceted challenges.

Our results demonstrate a significant decrease in FSD-R scores after treatment, with the mean dropping from 19.33 to 10.63 ($p < 0.001$). The reduction indicates a substantial alleviation of sexual distress, as reflected by the narrower score range and lower median post-treatment score. The 95% confidence interval (4.39 to 13.01) confirms the robustness of this improvement.

These findings suggest that the PRP injection effectively reduces sexual distress, leading to improved sexual well-being among participants. The consistent decrease across all measures underscores the potential of the treatment to enhance sexual satisfaction and reduce associated distress.

Our data compares pre-treatment and post-treatment scores using the Female Sexual Function Index (FSSI) domains and total FSFI scores, with statistically significant improvements observed following treatment. Total FSFI has increased by 72% (16.50 ± 2.80 to 28.50 ± 2.50; $p<0.001$), indicating a significant improvement in sexual function.

Our findings suggest that targeted autologous Platelet-Rich Plasma (PRP) injections to the Skene's glands and clitoral area may be an effective treatment for certain forms of female sexual dysfunction (FSD), which includes issues with desire, arousal, lubrication, and orgasm. FSD affects over 40% of sexually active adult women, but this figure likely underestimates the issue, as many women do not report their symptoms due to a lack of medical care. Notably, only 14% discuss sexual health concerns with their physicians, highlighting significant underdiagnosis and underreporting of FSD [7].

These insights reveal a critical gap in clinical care where stigma and communication barriers hinder women's access to interventions for female sexual dysfunction (FSD). The efficacy of PRP therapy in improving genital sensitivity and vascular function suggests it could benefit this often overlooked population. By focusing on anatomical regions crucial for sexual response, PRP may restore function while avoiding the psychosocial obstacles that deter patients from seeking help. This underscores the importance of proactive, patient-centered strategies to connect the high prevalence of FSD with better engagement and management by healthcare providers, ultimately enhancing quality of life.

The clitoris, which is densely packed with nerve endings and blood vessels, is crucial for arousal and orgasm. Administering PRP injections in this area may facilitate nerve regeneration, promote new blood vessel formation, and increase tissue sensitivity [10]. This mechanism could explain the significant improvements in arousal scores (from 2.10 to 4.10) and orgasm ratings (from 1.50 to 4.00).

Our study emphasizes the need for careful patient selection to enhance PRP therapy results. We prioritized women experiencing reduced sexual desire or arousal due to factors like hormonal shifts or postpartum changes, as PRP's growth factors improve blood flow and nerve response essential for arousal. We also included those with orgasmic dysfunction, as PRP may help regenerate nerve endings and vascular tissue in the clitoral and vaginal areas. Additionally, patients suffering from dyspareunia or vaginal atrophy, especially postmenopausal women or those unable to use estrogen, were selected for PRP's benefits in enhancing mucosal elasticity and lubrication. Women with a history of multiple vaginal deliveries, often seen in our clinic, were considered ideal candidates due to PRP's ability to address vaginal laxity and related satisfaction issues.

Furthermore, delivering PRP near the G-spot and vaginal walls might enhance mucosal health, increase elasticity, and improve blood circulation [16], leading to better lubrication and a decrease in discomfort. We propose that PRP injections into genital regions involved in sexual response may trigger stem cell differentiation, promoting neoangiogenesis, fibroblast proliferation, Skene's gland activation, and neuronal regeneration. These processes could enhance physiological function by improving vascular supply and sensory nerve density, particularly in hormonally independent vaginal atrophy—a contributor to FSD. Increased blood flow and collagen synthesis may alleviate coital discomfort, while heightened clitoral vascularity and neural regeneration might boost arousal, sensitivity, and orgasmic capacity. By addressing both vascular insufficiency and nerve-related deficits, PRP could restore sexual responsiveness through structural and functional rejuvenation of genital tissues, offering a novel approach to FSD management rooted in regenerative mechanisms.

Growth factors found in PRP, like VEGF (Vascular Endothelial Growth Factor) and EGF (Epidermal Growth Factor), are believed to assist in tissue repair, collagen production, and nerve healing in these areas, effectively addressing the underlying issues of sexual dysfunction. The observed, albeit modest, reduction in pain can likely be linked to improved tissue health and decreased inflammation in the vaginal area [17]. Nevertheless, the absence of long-term studies raises concerns about how lasting these benefits might be, as the effects of PRP-induced tissue changes may lessen with time.

Comparison of our results to similar studies

Limited research, especially nonrandomized/prospective trials, examines PRP's effect on vagina and clitoris in reproductive age; insufficient meta-analyses exist due to methodological inconsistencies across studies.

In the pilot study by Runels et al. 2014 [7], eleven women aged 24-64 with female sexual dysfunctions—such as orgasmic disorder and dyspareunia—received two 5 mL injections of platelet-rich plasma (PRP) via a 27-gauge needle at two sites: the anterior vaginal wall and the clitoris. To assess the treatment's effectiveness, participants completed the Female Sexual Function Index (FSFI) and the Female Sexual Distress Scale Revised (FSDS-R) questionnaires pre- and post-treatment, with data collection occurring at baseline and 12-16 weeks later. The study aimed to identify changes in sexual function and distress following PRP treatment. Results showed that about 64% of participants experienced improvement, with 71% of initially distressed individuals moving to a non-distressed status. The mean FSDS-R score significantly decreased from 17 to 7 ($p=0.04$), and total FSFI scores improved in 82% of women, with an average increase of 5.5 points ($p=0.01$). Significant improvements were observed in domains of arousal, lubrication, desire, and orgasm, while satisfaction and pain showed positive trends but did not reach statistical significance. The study utilized a repeated-measures design and paired t-tests to analyze pre- and post-treatment scores, providing a comprehensive assessment of sexual function and distress changes over a 3-4 month period. The study's small sample size (11 women) limits generalizability and statistical power, unlike our study, which has a better sample size.

In the 2017 study by Neto [6], 68 postmenopausal women aged 30 and older with urinary and sexual issues

were evaluated for the effects of PRP. The PRP was administered intravaginally, though the exact anatomical details were not specified. Patient outcomes were measured through subjective questionnaires over 12 months. Notably, the study did not include FSFI metrics and concentrated on overall symptom relief rather than specific sexual function domains. Our findings indicated a significant increase in FSFI scores for orgasm (from 1.66 to 3.36) and arousal (from 2.50 to 3.70), correlating with direct clitoral stimulation. His study has the advantage of a long-term follow-up and a wide range of ages.

In a study similar to ours, Sukgen et al. [15] conducted four sessions of platelet-rich plasma (PRP) injections targeting the anterior vaginal wall in 52 women with sexual dysfunction and orgasmic disorder, defined by a Female Sexual Function Index (FSFI) score of 26 or lower and orgasmic subdomain scores of 3.75 or less. Participants were assessed before each session using validated tools, including the Turkish version of FSFI, the Female Genital Self-Image Scale (FGSIS), and the Female Sexual Distress Scale-Revised (FSDS-R). At the final follow-up, overall satisfaction was measured with the Patient Global Impression of Improvement (PGI-I). Results indicated a significant improvement in sexual function, with the mean total FSFI score increasing to 27.88 ± 4.80, and half of the patients achieving scores above 26 ($p<0.001$). Notably, orgasmic subdomain scores improved from 2.11 ± 1.20 to 4.48 ± 1.14 ($p<0.001$). All FSFI subdomains showed significant enhancement after PRP treatment, with improvements noted after the first session ($p<0.001$). Genital self-image scores improved significantly ($p<0.001$), while FSDS-R scores exhibited a slight increase but ultimately decreased significantly by the fourth session ($p<0.001$). Rosenberg Self-Esteem Scale scores showed no significant change ($p=0.389$). Participants reported high satisfaction levels based on PGI-I scores.

In a 2021 prospective trial by Gaber and Shaltout [5], platelet-rich plasma (PRP) injections were assessed in 20 women suffering from female sexual dysfunction (FSD). Standardized FSFI evaluations showed notable improvements following treatment in areas such as desire, arousal, lubrication, orgasm, and satisfaction ($p<0.001$), along with some pain reduction. The total FSFI scores increased from 16.5 to 28.5, demonstrating the treatment's effectiveness. While no significant adverse effects were noted, the study's small sample size limits the generalizability of the results, although both this study and ours found significant improvements in FSFI ($p<0.001$).

Clinical implications of our study: Despite our encouraging results, we are hesitant to recommend this treatment method until randomized trials and meta-analyses are conducted to establish standardized dosages and application frequencies of PRP.

The strengths and limitations of our study

Our research has notable strengths, particularly given the limited studies on PRP and vaginal and clitoral injection in Egypt amid the widespread issue of female circumcision. However, it also several limitations, such as being retrospective. The small sample size restricts the statistical power, meaning the findings only suggest a potential effect of the intervention rather than establish definitive results. Additionally, given the complexity of female sexual response and the significant influence of emotional factors, a placebo effect cannot be ruled out when interpreting the outcomes. Another limitation is the observational and subjective nature of the study, despite the use of standardized questionnaires. While methodological challenges are common in pilot studies related to female sexuality, the positive patient responses and absence of complications provide a basis for future research. Consequently, further prospective, placebo-controlled studies are planned to assess the efficacy and safety of this intervention more accurately. Additionally, partner sexual dysfunction is a crucial aspect of female sexual health that this study did not consider. Future research that incorporates these elements could yield more thorough insights.

Recommendation for future research: Further studies should prioritize randomized controlled trials with larger, diverse populations to validate PRP's effectiveness, including placebo groups. Long-term studies are crucial for assessing sustainability, while investigating the biological mechanisms, partner influences, and psychological effects will provide deeper insights into PRP's role in treating female sexual dysfunction.

CONCLUSION

PRP injection in cases of Female sexual dysfunction is a promising modality but it needs larger RCT studies before applying it as a standard modality of treatment.

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DISCLOSURE OF INTEREST

The authors declare no conflict of interest.

DATA SHARING

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

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