



## Case Series

# A case series of platelet rich plasma in genitourinary syndrome of menopause

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## Abstract

Genitourinary syndrome of menopause (GSM) is newer terminology for vulvovaginal atrophy (VVA). Platelet rich plasma (PRP) is newer modality of treatment for GSM. This report is about a series of patients who presented with different symptoms of menopause diagnosed as GSM based on vaginal health index (VHI). The score varied between 2 to 25. VHI score less than 15 was taken as cut off to diagnosed genitourinary syndrome of menopause. Few patients had been earlier treated with conventional treatment who did not improve symptomatically. After obtaining ethics committee approval and informed consent from these patients, they were treated with autologous local injection of PRP and followed up to look for improvement of symptoms. VHI score was used to follow up the patients. Improvement in scores was considered as a positive response after the treatment. PRP is newer, minimally invasive and alternative treatment modality in treating GSM with promising results.

**Keywords:** Genitourinary syndrome of menopause, Platelet rich plasma, Vaginal health index, Vaginal atrophy.

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## 1. Introduction

Genito urinary syndrome of menopause (GSM) is newer term for vulvovaginal atrophy (VVA).<sup>1</sup> GSM includes genital symptoms, sexual dysfunction and urinary symptoms. Average age of menopause in world is 51 years and 46 years in India.<sup>2</sup> GSM are chronic, progressive and worsen over the period of time. GSM has many non-specific signs and symptoms.<sup>3</sup> (**Figure 1**)

Symptoms of GSM are due to reduced circulating estrogen. Due to reduced estrogen levels there is decreased collagen tissue and hyaluronic acid in elastin, thinning of the epithelium and reduction of blood vessels and increase in connective tissue. As result of these changes there is decreased elasticity, increased pH and reduced lubrication.<sup>4,5</sup>

Vaginal health index (VHI) is the commonest clinical tool for diagnosis GSM. VHI evaluates five parameters (**Figure 2**). Final score obtained after the evaluation of each

parameter. The final score can vary between 5 and 25, with a cut-off <15 meaning that there is a VVA.

Platelet rich plasma (PRP) contains concentrated platelets with growth factors in plasma. These growth factors promote natural healing.<sup>6,7</sup> Body's first response to injury is delivery of platelets at the site, these platelets promote healing by attracting stem cells at the site of injury. This underlying principle has promoted use of PRP as treatment modality. PRP promotes collagen growth along with blood vessels thereby promoting vaginal rejuvenation.<sup>4</sup>

PRP is prepared from autologous blood of patient. 34 ml of blood is collected in sodium citrate tubes subjected to centrifugation to obtain 5ml of PRP (**Figure 3**). Inj. PRP is taken in insulin syringe and injected in following sites of vagina.

1. Anterior vaginal wall below the external urethral meatus.
2. Lower 1/3<sup>rd</sup> of posterior vaginal wall.

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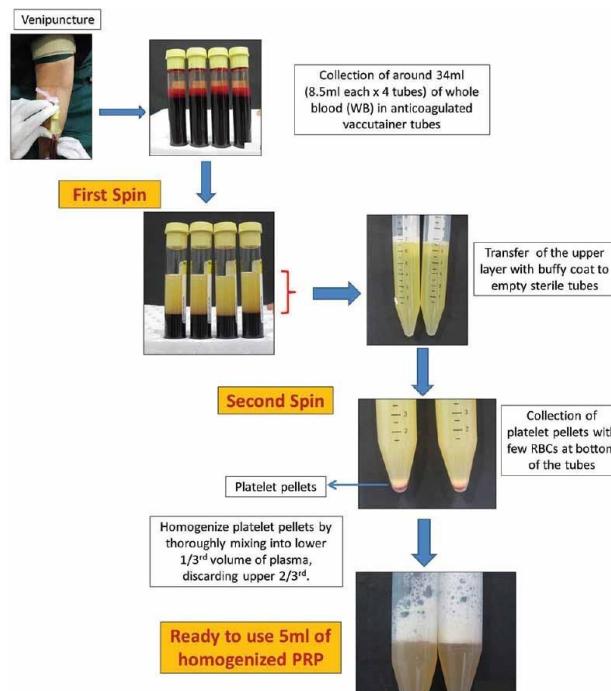
These case series reviews the PRP as treatment option of GSM.

Symptoms	Signs
Genital dryness	Decreased moisture
Decreased lubrication during sexual activity	Decreased elasticity
Discomfort or pain during sexual activity	Labia minora resorption
Post-coital bleeding	Pallor, erythema
Decreased arousal, orgasm, desire	Loss of vaginal rugae
Irritation, burning, or itching of the vulva or vagina	Tissue fragility, fissures, petechiae
Dysuria	Urethral eversion or prolapse
Urinary frequency and urgency	Loss of hymenal remnants
	Prominence of urethral meatus
	Introital retraction
	Recurrent urinary tract infections

**Figure 1:** Symptoms and signs of genitourinary syndrome of menopause (GSM)<sup>8</sup>

Score	Overall Elasticity	Fluid secretion type and consistency	pH	Epithelial mucous	Moisture
1	None	None	6.1	Petechiae noted before contact	None, mucosa inflamed
2	Poor	Scant, thin yellow	5.6 – 6.0	Bleeds with light contact	None, mucosa not inflamed
3	Fair	Superficial, thin white	5.1 – 5.55	Bleeds with scraping	Minimal
4	Good	Moderate, thin white	4.7 – 5.0	Not friable, thin mucous	Moderate
5	Excellent	Normal (white flocculent)	< 4.6	Not friable, normal mucosa	Normal

**Figure 2:** Vaginal Health Index (VHI) scoring system assessing vaginal elasticity, fluid secretion, pH, epithelial mucosa, and moisture<sup>9</sup>



**Figure 3:** Schematic representation of platelet-rich plasma (PRP) preparation using the double-spin method—showing blood collection, first and second centrifugation, platelet pellet formation, and homogenization.<sup>10</sup>

## 2. Material and Methods

After obtaining institutional ethics committee permission and obtaining informed consent from the patient we proceeded with the case series to study the effectiveness of Inj. platelet rich plasma given vaginally for patients with genitor urinary syndrome of menopause. Vaginal health index was used to diagnose and to study the follow up of patients. VHI of less than 15 was the cut off for diagnosis of GSM. The improvement of scores was noted in the follow up.

## 3. Case Series

### 2.1. Case 1

Clinical history and examination: A 42 year old woman had complaints of burning sensation of vagina, vaginal dryness since 1 year. She was diagnosed with genitourinary syndrome of menopause and was earlier treated with estrogen cream vaginally. There was no symptomatic improvement and symptoms persisted.

On examination vagina was dry with loss of rugosities. VHI was 9.

Investigations: A pap smear was taken. PAP report: Negative for intra epithelial malignancy. Vaginal swab was taken to rule out infections.

Treatment and follow up: She was administered Inj. platelet rich plasma in anterior and posterior wall of the vagina. 1 month follow up she has symptomatic improvement and she remained symptom free till 6 months of follow up with VHI of 20.

### 2.2. Case 2

Clinical history and examination: A 47 year old women presented with complaints of urinary incontinence since 2 years. She was diagnosed with stress urinary incontinence and was advised Kegalsexercises.

On examination stress incontinence was present. Vagina was pale dry with loss of rugosities. VHI 14

Investigations: Urine culture had no significant bacteriuria. A pap smear was taken and vaginal swab to rule out malignancy and active vaginal infection.

Treatment and follow up: She received Inj. platelet rich plasma. Post 1 month follows up of the procedure there was symptomatic improvement. She was symptom free till 6 months of follow up. VHI 23

### 2.3. Case 3

Clinical history and examination: 66 year old post menopausal lady with complaints of burning sensation and dryness in vagina since 3 years. She had used estrogens cream earlier but symptoms recurred after stopping the creams.

On examination vagina was pale, dry bleeds on touch. VHI of 9.

Investigations: PAP smear: Negative for intra epithelial malignancy.

Vaginal swab: No growth.

Treatment and follow up: Diagnosis of GSM was made she was offered PRP. Patient received. Inj. PRP. She was symptom free post 1 month and 6 months follow up. VHI of 19.

### 2.4. Case 4

Clinical history and examination: 44 year old women presented with dyspareunia, dryness of vagina since 6 months.

On examination pale dry vaginal mucosa was notes. VHI of 14.

Investigations: PAPSMEAR: Negative for intra epithelial malignancy.

Vaginal swab: no growth.

Treatment and follow up: Diagnosis of GSM was made. She received Inj. platelet rich plasma. Symptoms improved at 1 month follow up did not recur up to 6 months. VHI of 22.

### 2.5. Case 5

Clinical history and examination: 71 year old with complaints of dryness and burning sensation in vagina since 5 years. She is a known case of type 2 diabetes mellitus and hypertension. She was earlier treated with vaginal estrogen cream. Symptoms recurred.

On examination vagina was pale, dry, bleeds on touch with loss of rugosities. VHI 6.

Investigations: Pap smear: Negative for intra epithelial malignancy.

Vaginal swab: no growth.

Treatment and follow up: Diagnosis of GSM was made. She received Inj. platelet rich plasma. Symptoms improved at 1 and received 2<sup>nd</sup> dose of PRP after 2months. She was symptom free after 2<sup>nd</sup> dose of PRP and symptoms did not recur up to 6 months. VHI of 15.

### 2.6. Case 6

Clinical history and examination: 63 year old with complaints of dryness in vagina, dysuria and urinary frequency since 1 year. Patient had history of recurrent urinary tract infections.

On examination vagina was pale, dry, bleeds on touch with loss of rugosities with urethral prolapse. VHI 8.

Investigations: PAPSmear: Negative for intra epithelial malignancy.

Vaginal swab: no growth.

Urine culture: Insignificant bactiuria.

Treatment and follow up: Diagnosis of GSM was made. She received Inj. platelet rich plasma. Symptoms improved at 1 month follow up did not recur up to 6 months. VHI of 19.

### 2.7. Case 7

Clinical history and examination: A 55 year old women presented with complaints of urinary incontinence since 1 year. She was diagnosed with stress urinary incontinence and was advised Kegals exercises. Symptoms persisted.

On examination stress incontinence was present. Vagina was pale dry with loss of rugosities. VHI 11.

Investigations: Urine culture: Insignificant bactiuria. A pap smear was taken and vaginal swab to rule out malignancy. Vaginal swab had no growth.

Treatment and follow up: She received Inj. platelet rich plasma. Post 1 month follows up of the procedure there was symptomatic improvement. She was symptom free till 6 months of follow up. VHI 20.

## 4. Discussion

Prevalence of GSM is around 45% and it significantly decreases quality of life.<sup>11</sup> Hormonal therapy is commonly used treatment modality for vaginal atrophy. Recently energy sources such as lasers have showed promising results.<sup>11</sup> Newer treatment option with Platelet rich plasma is under study.

PRP contains plasma with increased concentration of platelets about 6 to 7 times more than the baseline and growth factors.<sup>12</sup> PRP has growth factors which aids in cell proliferation, differentiation, angiogenesis and chemotaxis.<sup>13-15</sup>

PRP is classified based on method of preparation and anticoagulant used. (Figure 4)<sup>16</sup>

PRP is becoming popular in gynaecological practice as it has varied applications such as wound healing, cervical ectropion, stress incontinence, senile vaginitis, and female sexual dysfunction and in infertility in cases of thin endometrium.<sup>17</sup>

In our present case series all patients have been benefited with autologous injection of PRP. Table 1 demonstrates various symptoms patient presented with and percentage of improvement of symptoms. It was noted patients had presented with more than one symptoms of GSM there was improvement in the symptoms in most of the cases. Table 2 shows VHI of patients before and after treatment and mean

VHI before treatment was 10.1 and post treatment in 19.7 which is significantly higher compared to pre treatment VHI. Hence we can conclude that PRP can be considered as alternative treatment modality for GSM. Few pilot studies have reported promising results with PRP in GSM.<sup>18-20</sup> Kim et al reported the use of autologous lipofilling mixed with PRP in a 67 year-old patient with vaginal atrophy.<sup>18</sup> A total of 40 cc of autologous fat mixed with PRP was transferred to labia majora. Lipofilling with PRP relieved symptoms, restored contour of the labia majora and achieved remission of lichen sclerosus on labia minora. Runels et al injected PRP in clitoris and vagina of 11 women aged between 24-64 with female sexual dysfunction.<sup>20</sup> 71% of the study population improved their status from being “distressed” to being “not distressed” after the procedure, while two patients (18%) showed no change in their levels of distress.

DEPA classification	Subgroup	Description
Dose of injected platelets	Very high	> 5 Billion injected platelets
	High	3-5 Billion injected platelets
	Medium	1-3 Billion injected platelets
	Low	< 1 Billion injected platelets
Efficiency of production	High device efficiency	Recovery rate in platelets > 90%
	Medium device efficiency	Recovery rate in platelets 70%-90%
	Low device efficiency	Recovery rate in platelets 30%-70%
Purity of the PRP	Poor device efficiency	Recovery rate in platelets < 30%
	Very pure PRP	Platelets in the PRP > 90%
	Pure PRP	Platelets in the PRP 70%-90%
Activation process	Heterogeneous PRP	Platelets in the PRP 30%-70%
	Whole-blood PRP	Platelets in the PRP < 30%
Activation process	Autologous thrombin	-
	Calcium chloride	-

**Figure 4:** DEPA classification system for platelet-rich plasma (PRP) characterizing dose of injected platelets, efficiency of production, purity of PRP, and activation process. (Modified from Magalon et al. BMJ Open Sport Exerc Med 2016;2:e000060.<sup>16</sup> DEPA, dose of injected platelets, efficiency of production, purity of the PRP, activation of the PRP; PRP, platelet-rich plasma)

**Table 1:** Table demonstrating symptoms and percentage of improvement of symptoms

Symptoms	Total No	Improvement	Percentage
Burning Sensation	3	3	100%
Vaginal dryness	4	3	75%
Urinary incontinence	2	2	100%
Dyspareunia	1	1	100%
Dysuria	1	1	100%

**Table 2:** VHI of patients before and after treatment

VHI	Before PRP	After PRP
Case 1	9	20
Case 2	14	23
Case 3	9	19
Case 4	14	22
Case 5	6	15
Case 6	8	19
Case 7	11	20
Mean VHI	10.1	19.7

## 5. Conclusion

PRP is minimally invasive, innovative alternative approach to treat GSM with minimal side effects. PRP can be considered in patients in whom hormonal therapy is contraindicated and who do not wish to receive hormonal therapy due to side effect. However only few pilot studies and case series are available to substantiate the usage of PRP in GSM. Large RCTs are required to study the efficacy of PRP.

## 6. Source of Funding

None.

## 7. Conflict of Interest

None.

## 8. Ethical Approval

Ethics committee number: MSRMC/EC/AP-08/11-2023 dated 7th November 2023.

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