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PRP Therapy of Hypertrophic Gingivitis in Pregnant Women with Pregnancy Pathology: A Case Study

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Abstract This study evaluated the clinical effectiveness of platelet-rich plasma (PRP) therapy as an adjunct to conventional periodontal treatment in pregnant women with pregnancy-associated hypertrophic gingivitis (PHG). A controlled clinical pilot study was conducted in 52 pregnant women diagnosed with PHG, who were divided into two comparable groups: a main group receiving conventional periodontal therapy plus PRP injections and a control group receiving conventional treatment alone. Clinical effectiveness was assessed using the Papillary-Marginal-Alveolar (PMA) index, the Simplified Oral Hygiene Index (OHI-S), and gingival bleeding severity before and after therapy. In the main group, a significantly greater reduction in inflammatory indices was observed compared with the control group. The PMA index decreased from 56.0 ±8.4% to 24.3 ±6.1% in the main group and from 55.1 ±7.9% to 37.8 ±7.0% in the control group ($p < 0.05$). OHI-S values improved from 2.9 ± 0.4 to 1.5 ± 0.3 and from 2.8 ± 0.5 to 2.1 ± 0.4, respectively ($p < 0.05$). These findings suggest that PRP therapy may enhance the effectiveness of conventional treatment in PHG by reducing inflammation and improving periodontal status. PRP administration in the presented clinical case was performed postpartum, whereas in the broader study protocol PRP was administered during the second trimester in selected patients and again 30 days after delivery when clinically indicated.

Keywords Platelet-rich plasma (PRP), PRP therapy, Pregnancy-associated hypertrophic gingivitis (PHG), Autologous platelet-rich plasma (APRP), Periodontal inflammation, Oral hygiene index (OHI-S)

1. Introduction

Pregnancy-associated hypertrophic gingivitis (PHG) is a common inflammatory condition of the gingival tissues that develops or worsens during gestation under the influence of hormonal, microbial, and local hygienic factors [3,4,14]. Gingival inflammation during pregnancy has been reported in a substantial proportion of pregnant women, although prevalence estimates vary widely across studies depending on diagnostic criteria, population characteristics, oral hygiene status, and study design [3,4]. Because PHG may impair quality of life, complicate oral hygiene, and aggravate pre-existing periodontal pathology, effective and safe therapeutic approaches are needed [4,10,14].

Conventional treatment of pregnancy-associated gingival inflammation includes professional oral hygiene, elimination of local irritants, individualized hygiene instruction, and anti -inflammatory supportive care [4,14]. However, in moderate and severe forms of PHG, clinical improvement may be slow, incomplete, or unstable, especially in women with pregnancy -related somatic or obstetric complications [4,10].

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Platelet-rich plasma (PRP) is an autologous biological product enriched with platelets and growth factors that may promote tissue repair, angiogenesis, collagen synthesis, and modulation of inflammation [6,7,9,11,12]. PRP has been widely used in oral surgery, regenerative dentistry, and periodontology [6–9,17–20]. Nevertheless, its role in the treatment of pregnancy-associated hypertrophic gingivitis remains insufficiently studied. The available literature includes only limited evidence directly focused on pregnant patients, although preliminary findings suggest a beneficial effect of PRP on gingival health and inflammatory status in this population [2,15,16].

Periodontal inflammation in pregnancy is also of broader clinical relevance because periodontal disease has been discussed as a possible contributing factor in adverse pregnancy outcomes, including placental dysfunction, preeclampsia, and preterm birth [4,10]. This increases the importance of identifying local treatment approaches that are both effective and biologically safe.

The aim of this study was to evaluate the clinical effectiveness of PRP therapy as an adjunct to conventional periodontal treatment in patients with pregnancy-associated hypertrophic gingivitis. The study hypothesis was that adjunctive PRP therapy would result in significantly greater clinical improvement in periodontal inflammatory indices than conventional treatment alone.

2. Materials and Methods

Study design. This investigation was designed as a controlled clinical pilot study with parallel comparison of two treatment groups. In addition, one representative severe clinical case was analyzed descriptively to illustrate the practical application of PRP therapy [15,16].

Study setting. The study was conducted at the pathology department of the maternity clinic affiliated with Tashkent State Medical University.

Participants. A total of 52 pregnant women diagnosed with pregnancy-associated hypertrophic gingivitis were included in the study. After clinical screening and application of eligibility criteria, the participants were divided into two comparable groups: the main group (n = 26), which received conventional periodontal treatment plus PRP therapy, and the control group (n = 26), which received conventional periodontal treatment only. The groups were comparable at baseline in terms of age, gestational period, severity of gingival inflammation, gingival bleeding, PMA index, and oral hygiene status.

Eligibility criteria. Inclusion criteria comprised confirmed pregnancy, diagnosis of pregnancy-associated hypertrophic gingivitis, informed voluntary consent to participate, and ability to attend clinical follow-up. Exclusion criteria included HIV infection, COVID-19 or other acute viral infection, viral hepatitis, malignant neoplasms, multiple pregnancy, severe obstetric complications requiring urgent non-dental management, severe iron-deficiency anemia (hemoglobin < 90 g/L), arterial hypotension (systolic blood pressure < 100 mmHg), acute or chronic inflammatory disease associated with body temperature > 37.2 ℃, and severe psychiatric disorders.

Clinical examination. All participants underwent standardized dental and periodontal examination. The following parameters were assessed before and after treatment: gingival enlargement and visual signs of inflammation, gingival bleeding, gingival tenderness, the Papillary-Marginal-Alveolar (PMA) index, and the Simplified Oral Hygiene Index (OHI-S) [14–16]. OHI-S values were interpreted as follows: 0.0–1.2, good oral hygiene; 1.3–3.0, satisfactory oral hygiene; and 3.1–6.0, unsatisfactory oral hygiene.

Treatment protocol. All patients received conventional periodontal therapy, including professional oral hygiene, removal of plaque-retentive factors, individualized oral hygiene instruction, and local anti-inflammatory periodontal care. Patients in the main group additionally received local PRP injections into affected gingival tissues.

PRP preparation. PRP was prepared from 17 mL of autologous venous blood collected from the cubital vein under sterile conditions. The blood was distributed into two 8.5 mL tubes: a vacuum tube containing sodium heparin and a specialized PRP tube containing separation gel and highly purified sodium heparin. The protocol was based on established principles of autologous platelet concentrate preparation and Plasmolifting™ technology described in the literature [11–13].

3. Research Results

A detailed analysis was performed for a clinical case of severe PHG. Patient U.M.M.**,** born in 2002, presented with severe gingival inflammation during her fourth pregnancy at 38 weeks of gestation. The patient reported that her first pregnancy occurred at the age of 19 years. A concomitant disease of grade I iron-deficiency anemia was diagnosed.

Photo 1. Caries indicator staining

Photo 2. after professional cleaning

Clinical examination revealed hypertrophic gingivitis affecting multiple dental regions, including teeth 15, 14, 13, 12, 11/21, 22, 23, 24, 25 and 35, 34, 33, 32, 31/41, 42, 43, 44, 45**.** In addition, the patient presented with deep caries and chronic pulpitis in the posterior teeth, while teeth 36, 37, 46, and 47 were severely destroyed.

Prior to the administration of PRP therapy, professional oral hygiene procedures were performed. The initial dental examination included caries indicator staining to visualize dental plaque accumulation and evaluate the hygienic status of the oral cavity.

At baseline, no statistically significant differences were found between the main and control groups in the principal periodontal indicators ($p > 0.05$), confirming comparability of the groups before treatment.

Both groups demonstrated improvement after therapy; however, the reduction in inflammatory manifestations was more pronounced in the main group treated with adjunctive PRP. In the main group, the PMA index decreased from 56.0 ± 8.4% to 24.3 ± 6.1% ($p < 0.001$), whereas in the control group it decreased from 55.1 ± 7.9% to 37.8 ± 7.0% ($p < 0.01$).

OHI-S improved from 2.9 ± 0.4 to 1.5 ± 0.3 in the main group ($p < 0.001$) and from 2.8 ± 0.5 to 2.1 ± 0.4 in the control group ($p < 0.05$). Gingival bleeding severity also decreased more markedly in the main group, from 2.4 ± 0.5 to 0.9 ± 0.3 ($p < 0.001$), compared with a decrease from 2.3 ± 0.4 to 1.4 ± 0.4 in the control group ($p < 0.05$). These findings are consistent with previous studies demonstrating the regenerative and anti-inflammatory potential of PRP in periodontal therapy [6–9,17–20].

The magnitude of clinical improvement was greater in the main group than in the control group. The mean reduction in PMA index was 31.7 percentage points in the PRP group versus 17.3 percentage points in the control group. OHI-S decreased by 1.4 points in the PRP group compared with 0.7 points in the control group. Gingival bleeding score decreased by 1.5 points and 0.9 points, respectively. These data indicate that adjunctive PRP therapy enhanced the anti-inflammatory and clinical effectiveness of conventional treatment.

Table 1. Baseline periodontal characteristics of the study groups

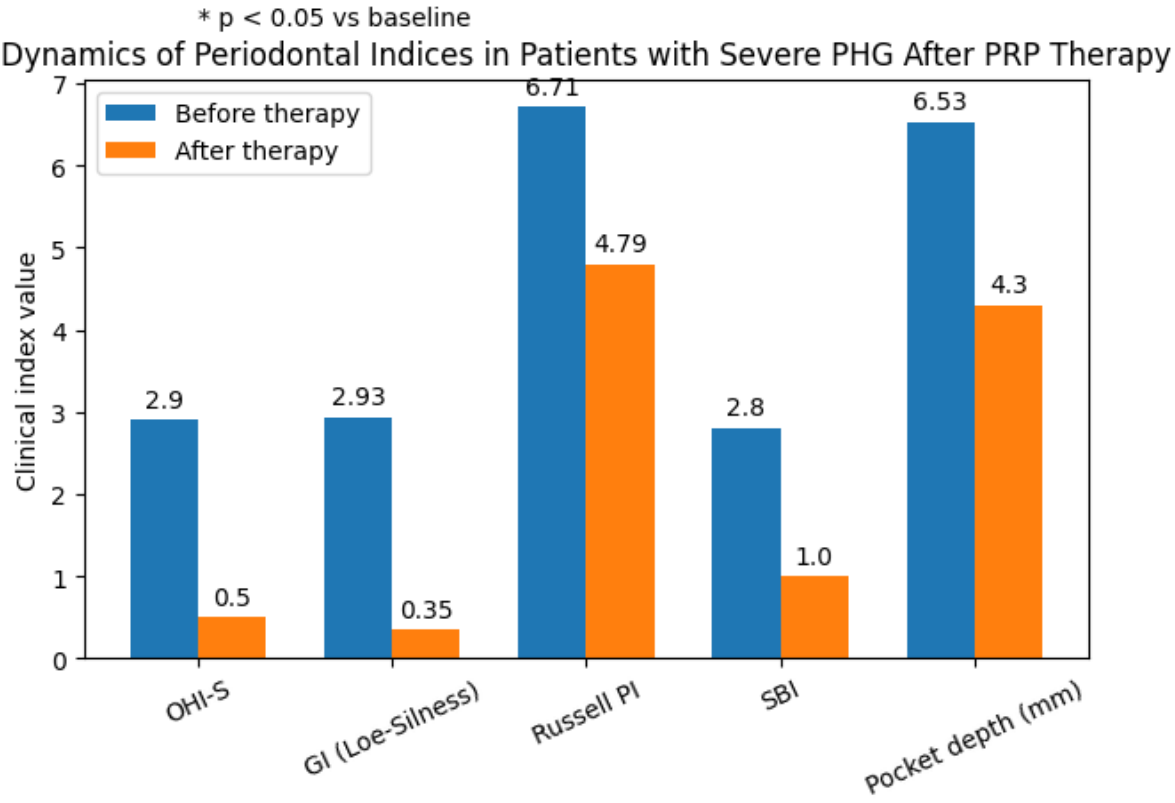
Parameter	Main group (n = 26)	Control group (n = 26)	p-value
PMA index, %	56.0 ±8.4	55.1 ±7.9	> 0.05
OHI-S	2.9 ±0.4	2.8 ±0.5	> 0.05
Gingival bleeding score	2.4 ±0.5	2.3 ±0.4	> 0.05

Table 2. Dynamics of clinical indices before and after treatment

Parameter	Main before	Main after	p	Control before	Control after	p
PMA index, %	56.0 ±8.4	24.3 ±6.1	< 0.001	55.1 ±7.9	37.8 ±7.0	< 0.01
OHI-S	2.9 ±0.4	1.5 ±0.3	< 0.001	2.8 ±0.5	2.1 ±0.4	< 0.05
Gingival bleeding score	2.4 ±0.5	0.9 ±0.3	< 0.001	2.3 ±0.4	1.4 ±0.4	< 0.05

Table 3. Comparison of treatment-related improvement between groups

Parameter	Main group improvement	Control group improvement	p-value
PMA index reduction, % points	31.7 ±6.2	17.3 ±5.8	< 0.05
OHI-S reduction	1.4 ±0.3	0.7 ±0.2	< 0.05
Gingival bleeding reduction	1.5 ±0.4	0.9 ±0.3	< 0.05



Graph 1

Representative Clinical Case

A representative case of severe PHG was observed in patient U.M.M., born in 2002, who presented during her fourth pregnancy at 38 weeks of gestation with marked gingival enlargement, bleeding, and discomfort. Concomitant grade I iron-deficiency anemia was diagnosed. Clinical examination revealed hypertrophic gingival changes affecting multiple maxillary and mandibular tooth regions, together with poor oral status and several severely compromised posterior teeth.

Before PRP therapy, professional oral hygiene was performed. In this case, the initial OHI-S was 3.6 (DI-S = 2.6; CI-S = 1.0), corresponding to unsatisfactory oral hygiene. Because the patient was at 38 weeks of gestation, PRP was not administered during pregnancy. Instead, local PRP therapy was performed in the postpartum period, after delivery, followed by clinical observation. Subsequent examination demonstrated reduction in gingival inflammation, decreased bleeding, and visible improvement in periodontal condition. The logic of this decision was consistent with the need to individualize the timing of intervention in late gestation while preserving the potential benefits of PRP in the recovery period [2,15,16].

4. Discussion

The clinical results obtained in the present study demonstrated a positive therapeutic effect of platelet-rich plasma (PRP) therapy in patients with pregnancy-associated hypertrophic gingivitis. The dynamics of periodontal indices before and after treatment in the main group are presented in **Graph 1**, which illustrates a significant reduction in inflammatory manifestations following PRP therapy.

Inflammatory diseases of the periodontal tissues are considered one of the potential indicators of pregnancy pathology. Chronic infectious foci in the maternal organism may contribute to the development of systemic inflammatory responses and increase the risk of intrauterine infection and premature birth [4]. In this context, pregnancy-associated hypertrophic gingivitis can be regarded not only as a local inflammatory condition but also as a possible marker of complications during pregnancy.

These findings are clinically relevant because PHG is often aggravated by the combined influence of hormonal changes, plaque accumulation, altered host response, and pregnancy-related somatic burden [3,4,10,14]. Conventional local treatment remains essential, but it may not always provide sufficiently rapid regression of inflammatory enlargement in moderate and severe cases. In this context, PRP appears to be a promising adjunct because it combines local regenerative and anti-inflammatory potential with autologous biological safety [6,7,9,11–13,17–20].

The mechanism underlying PRP effectiveness is likely related to the release of platelet-derived growth factors and bioactive mediators that enhance tissue repair, stimulate angiogenesis, and support epithelial healing [6,7,9,12]. In gingival tissues affected by chronic inflammation and edema, these effects may contribute to faster restoration of tissue integrity and reduction of inflammatory signs. Our observations are in line with previous publications reporting beneficial effects of PRP and other platelet concentrates in periodontal regeneration and periodontal defect healing [6–9,17–20].

A strength of the present study is the direct comparison between a PRP-treated group and a control group with similar baseline periodontal characteristics. This design allowed clearer interpretation of treatment-related differences. The study also addresses a clinically underexplored subgroup of periodontal patients, namely pregnant women with hypertrophic gingivitis, for whom the evidence base remains limited [2,15,16].

At the same time, the study has limitations. First, it was a pilot investigation with a relatively small sample size. Second, follow-up duration was limited. Third, the study combined a controlled group comparison with a descriptive clinical case, which is informative clinically but not equivalent to a randomized trial. Therefore, the results should be interpreted as preliminary but clinically promising.

An additional point requiring clarification was the timing of PRP administration. In the broader study protocol, PRP was used during the second trimester and, when necessary, repeated 30 days after delivery [15,16]. However, in the severe case presented in this article, PRP was administered only postpartum because the patient presented at 38 weeks of gestation. This distinction is important and has now been clearly stated to avoid methodological ambiguity.

Given the growing interest in platelet concentrates in dentistry and regenerative therapy, further controlled studies with larger samples, longer follow-up, and standardized treatment timing are warranted [17–20].

5. Conclusions

Adjunctive platelet-rich plasma therapy demonstrated superior clinical effectiveness compared with conventional periodontal treatment alone in patients with pregnancy-associated hypertrophic gingivitis. The use of PRP was associated with greater reductions in PMA index, gingival bleeding, and OHI-S values, indicating a more pronounced resolution of gingival inflammation and improved oral hygiene status.

The study supports the potential role of PRP as a safe and promising adjunctive method in the management of moderate and severe PHG. In the overall study, PRP was administered during the second trimester and, when indicated, again 30 days postpartum; in the presented severe clinical case, PRP was administered postpartum only. Despite the encouraging clinical results, larger controlled studies are needed before firm clinical recommendations can be established.

REFERENCES

[1] Karina K, Christoffel LM, Novariani R, et al. Case report on adjunct intravenous autologous activated platelet-rich plasma therapy in severely ill COVID-19 patients. *Biomedical Research and Therapy*. 2021; 8(10): 4614-4619. doi: 10.15419/bmrat.v8i10.697.

[2] Ali SM, Mohammed Zeiny SMH, AlAtrakji MQM. Effect of PRP on gingival health in pregnant women: immunological aspect. *Research Journal of Pharmacy and Technology*. 2017; 10(11): 3969-3973. doi: 10.5958/0974-360X.2017.00721.1.

[3] Vatamanyuk NV. Gingivitis in pregnant women: comparison of periodontal health during pregnancy and after childbirth. *Young Scientist.* 2015; (8): 82-85.

[4] Karakhalis LY, Ivantsiv NS, Li NV. Periodontal diseases in the pathogenesis of adverse pregnancy outcomes. *Obstetrics and Gynecology.* 2021; 20(1): 21-25. doi: 10.31550/1727-2378-2021-20-1-21-25.

[5] Miklyaev SV. The use of platelet-enriched human blood plasma in the treatment of mild chronic generalized periodontitis. Saratov: Dissertation abstract for the degree of Candidate of Medical Sciences; 2018.

[6] Jalaluddin M, Varma S, Kaleem SM. Use of platelet-rich plasma in the management of periodontal defects. *Journal of Indian Society of Periodontology.* 2017; 21(2): 109-115.

[7] Xu J, Gou L, Zhang P, Li H, Qiu S. Platelet-rich plasma and regenerative dentistry: biological background and clinical applications. *Australian Dental Journal.* 2020; 65(2): 131-142.

[8] Panda S, Ramamoorthi S, Jayakumar ND, et al. Plasma rich in growth factors in periodontal regeneration: a randomized clinical trial. *Brazilian Oral Research.* 2020; 34: e078.

[9] Miron RJ, Fujioka-Kobayashi M, et al. Platelet concentrates in periodontal regeneration: biological background and clinical applications. *Clinical Oral Investigations.* 2020.

[10] Le QA, Akhter R, Coulton KM, et al. Periodontitis and preeclampsia in pregnancy: a systematic review and meta-analysis. *Journal of Clinical Periodontology.* 2021.

[11] Akhmerov RR, Zarudiy RF. Plasmolifting™ in dentistry. Moscow: Meditsinskaya Kniga; 2014.

[12] Akhmerov RR. Platelet-rich plasma technology (Plasmolifting™) in regenerative medicine and dentistry. *Russian Journal of Regenerative Medicine.* 2017; 4(2): 45-52.

[13] Akhmerov RR, Zabolotnykh NV. Application of autologous platelet-rich plasma in periodontal therapy. *Stomatology.*2015; 94(6): 54-58.

[14] Adilova AS. Clinical features of hypertrophic gingivitis in pregnant women with pregnancy pathology. *Medical and Biological Journal of Central Asia.* 2023; 5(2): 45-49.

[15] Adilova AS. Application of platelet-rich plasma in the treatment of periodontal diseases in pregnant women. *Dentistry of Central Asia.* 2024; 6(1): 33-38.

[16] Adilova AS. Clinical evaluation of PRP therapy effectiveness in hypertrophic gingivitis in pregnant patients. *Journal of Medical Sciences of Uzbekistan.* 2024; 3(1): 52-57.

[17] Niemczyk W, Janik K, Żurek J, et al. Platelet-rich plasma and injectable platelet-rich fibrin in the treatment of periodontitis: systematic review. *International Journal of Molecular Sciences.* 2024.

[18] Farshidfar N, Amiri MA, Estrin NE, et al. Platelet-rich plasma versus injectable platelet-rich fibrin: systematic review across medical fields. *Periodontology 2000.* 2025.

[19] Giannelli A, Spagnuolo G. Utilization of platelet-rich plasma in oral surgery: systematic review. *Journal of Clinical Medicine.* 2025.

[20] Silva FF, Chauca-Baja ña L, Caponio VCA, et al. Platelet-rich fibrin in periodontal regeneration: systematic review and meta-analysis. *Odontology.* 2024.