

The Healing Power Within: Exploring the Role of PRP in Medicine and Aesthetics

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Key points:

- Regenerative effects of PRP
- PRP in assisted reproductive technology (ART)
- PRP in aesthetic dermatology
- PRP in acne scar management
- Comparative efficacy with other treatments
- Safety profile and contraindications

Introduction

Platelet-rich plasma (PRP) has emerged as promising adjunctive therapy in assisted reproductive technology (ART), particularly for patients with thin endometrium—a condition that significantly limits implantation success. PRP is an autologous blood-derived concentrate rich in growth factors and cytokines known to promote tissue regeneration, angiogenesis, and cellular proliferation. These biological effects are believed to enhance endometrial receptivity and vascularity. While conventional treatments such as estrogen and G-CSF have been used to improve endometrial thickness, their results remain suboptimal. In contrast, intrauterine infusion of PRP has demonstrated encouraging outcomes. Clinical studies, including one from 2011, have reported improvements in endometrial quality and increased pregnancy rates. More recent trials, such as a 2021 study involving patients with repeated IVF failures, further support the therapeutic potential of PRP in overcoming implantation resistance ¹.

PRP in Aesthetic Dermatology:

Platelet-rich plasma (PRP) has gained prominence in aesthetic medicine due to its regenerative properties. PRP contains approximately 578 distinct proteins, including vital growth factors such as platelet-derived growth factor (PDGF), vascular endothelial growth factor (VEGF), epidermal growth factor (EGF), and transforming growth factor-beta (TGF- β), which play crucial roles in cell proliferation, angiogenesis, collagen synthesis, and skin regeneration

Growth Factor	Function
PDGF	Stimulates fibroblasts and smooth muscle cells; promotes angiogenesis and collagen production
TGF- β	Enhances collagen synthesis
VEGF	Promotes new blood vessel formation (angiogenesis)
EGF	Facilitates cell growth, differentiation, angiogenesis, and collagen production
Cytokines (IL-4, IL-8, IL-13, IL-17)	Stimulate fibroblasts and increase collagen production

Table 1 : Biological Roles of PRP Components. ⁶

These biomolecules collectively contribute to skin rejuvenation and hyaluronic acid production, making PRP a favorable option for improving skin tone, texture, and signs of early aging.

Safety Profile and Contraindications

PRP is considered a safe, autologous treatment for dermatological applications. However, it is contraindicated in patients with:

- Platelet dysfunction syndrome
- Critical thrombocytopenia
- Hemodynamic instability or sepsis
- Unrealistic expectations ⁶

Relative contraindications include heavy smoking, chronic alcohol or drug abuse, chronic liver disease, and severe systemic illnesses or malignancies (especially hematological), Hemoglobin <10 g/dL or platelets <100,000/ μ L. ⁶

PRP in Acne Scar Management: PRP has shown potential in reconstructing atrophic acne scars by upregulating collagen and protein synthesis through its growth factor action. Histological studies reveal enhanced collagen bundle formation and a thicker epidermal layer after PRP injections ⁵



Figure 1. (A) Study side (right side of the face) before treatment (platelet-rich plasma (PRP) with subcision). (B) Improvement in acne scars on the study side after 4 sittings

of PRP with subcision. (C) Control side (left side of the face) before subcision. (D) Minimal improvement in grade of acne scars after 4 sittings of subcision on the control side.⁷

However, in a randomized comparative study, it was reported that fractional CO₂ laser and micro needling monotherapies were more effective than PRP monotherapy in treating post-acne scars³. Thus, the efficacy of PRP as a standalone treatment remains controversial, and it is often best used as an adjunctive therapy rather than a primary intervention. ⁵

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