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Does Platelet-Rich Plasma Significantly Improve Postoperative Wound Healing Outcomes in Plastic and Reconstructive Surgery Compared with Standard Care?

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1. Abstract

The Platelet-Rich Plasma (PRP) is employed extensively in the field of plastic and reconstructive surgeries, because it is believed that the biological capacity of this material provides high concentrations of growth factors which would improve the rate of tissue regeneration. However, it remains debatable whether such capacity could produce any significant effect in comparison with traditional methods of treatment. The main goal of this systematic review will be to assess the effect of platelet-rich plasma on enhancing wound healing results after operations, including healing time, risk of complications, and scar formation, in comparison with the traditional techniques.

The synthesis of methods was done based on peer-reviewed meta-analyses, randomized controlled trials, and clinical data published between 2020 and 2025, which were based on such journals as the Journal of Clinical Medicine, Annals of Plastic Surgery, and Acta Biomaterialia. Findings show that PRP has biological plausibility (release of growth factors (PDGF, VEGF, TGF-b)) and demonstrates some patient-reported efficacy. But there is inconsistency in the objective outcome measures. The data of meta-analysis indicate that there is no statistically significant change in the scores of the observer rated Vancouver Scar Scale, at three months. The benefits of healing velocity are marginal (around 2.5 days) and insignificant in mass pooled studies. The cost-effectiveness analysis ranks PRP at some 8635 per quality adjusted life year.

In summary, the existing evidence fails to contradict the idea that PRP should be taken as a postoperative procedure that is mandatory in case of the regular plastic and reconstructive surgery. PRP must continue to be a voluntary supplement, which is availed to a select group of patients in a way that has been effectively communicated to them of the peripheral and largely subjective quality of anticipated gains. Before conclusive or definite recommendations can

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be arrived at, the standardization of the protocols is in dire need.

Keywords: Platelet-rich plasma (PRP); wound healing; plastic and reconstructive surgery; scar assessment; cost-effectiveness

2. Introduction

Platelet-rich plasma (PRP) can be described as an autologous blood derivative with the elevated concentration of platelets, three to five times higher than the baseline. This is a biological product that is made by taking the entire blood of a patient, centrifugation of the blood to separate the parts and the platelet-rich fraction is extracted to be applied directly on the surgical wound (Hasiba-Pappas et al., 2022). When activated, PRP releases platelet-derived growth factor (PDGF), vascular endothelial growth factor (VEGF), and transforming growth factor-beta (TGF- 0) (Anitua, Pino, and Troya, 2025). These signaling molecules are important in the cell proliferation, chemotaxis and the synthesis of extracellular matrix (Mahmoud et al., 2024). In theory, the localized administration of these factors enhances the inflammatory stage of wound healing and angiogenesis, or the creation of new blood vessels, which are necessary to supply tissues with nutrients and deliver them to the tissues (Gentile & Garcovich, 2021). This physiological explanation has led to an active use of PRP in several surgical fields even though clinical evidence is not consistent.

The plastic and reconstructive surgery surrounds the situation that requires special questioning on an intervention that purports to enhance wound healing. There are many dimensions of measuring healing outcomes in plastic surgery as opposed to general surgery where the main endpoint is wound closure. The rate of epithelialization is also of significance but aesthetic value such as the appearance of the scars with regards to pigmentation, vascularity, pliability and height among others have equal or more weight in patient satisfaction (Naziker & Ertugrul, 2023). Functional restoration, especially in the reconstruction processes involving mobile parts of the body like hands, face, and joints, is one of the third domains of critical outcomes (Guida et al., 2025; Mounir, Elkholy, and Ibrahim, 2025). Intervention that purports to be better than usual care needs to prove itself to be advantageous in all these dimensions, not just expeditiousness.

Standard care in the postoperative wound management will be used as the comparator with which PRP will have to be compared. Most clinical practices involve the use of moist wound healing principles, in the form of keeping the wound hydrated with the help of proper dressings, and saline irrigation (to debride the wound) and simple non-medical dressings like gauze, hydrogels, or films (Ferraz, 2025). This method is cheap, does not need any special equipment and may be presented by any qualified clinician (Sussman, 2023). Conversely, the preparation of PRP requires specific centrifugation apparatus, sterile disposable kits, and extra operating session time -15 to 20 minutes per case on average to draw the blood, process it, and apply the PRP (Anitua et al., 2025). This operating cost should be proved to have better results.

The main controversy of the literature is whether the biological potential of PRP can be converted into any clinical meaningfulness of superiority to standard care. There is a great conflict between the convincing mechanistic explanation and the statistical anomalies in the existing clinical statistics (Sussman, 2023). Meta-analyses have on numerous occasions indicated that small and single studies are more likely to report positive results whereas pooled studies of larger size fail to provide statistically significant differences between PRP and control groups (Al-Youzbaki, Kamal, and Kamil, 2025). The trend brings into question the problem of publication bias and small study effects. Moreover, cost is another factor which should not be disregarded. The cost-effectiveness analysis puts PRP at about 8,635 per quality-adjusted life year (QALY), which, though technically, falls below the cost-effectiveness boundaries, is significantly higher than the cost of care options (Saldanha, 2020). The important question is that whether marginal clinical gains, where they do exist, can be used to justify this cost. The conclusion of this review is that although PRP has shown biological plausibility and has particular patient-reported benefits, the existing objective evidence shows that it is not yet time to move beyond an elective adjunctive procedure to a mandatory postoperative one.

3. Literature Review and Research Methodology

3.1 Biological Framework

Platelet degranulation is the first stage of the PRP action mechanism. When activated by thrombin, calcium chloride or by coming into contact with open collagen at the wound bed, the concentration platelets unleash their alpha granules into the local environment, releasing a growth factor cascade. Yan et al. (2019) argue that they are platelet-derived growth factor (PDGF) that promotes the growth of fibroblasts and collagen, vascular endothelial growth factor (VEGF) that promotes angiogenesis and transforming growth factor-beta (TGF-beta) that regulates inflammation and deposition of extracellular matrix. Collectively, these signaling molecules can be used to attract fibroblasts, macrophages, and mesenchymal stem cells to the wound site, which theoretically expedites the process of changing the inflammatory into the proliferative stage of healing (Anitua, Pino, and Troya, 2025).

There is a serious biological difference between the leukocyte-rich PRP (LrPRP) and leukocyte-poor PRP (LpPRP). LrPRP preserves the white blood cells in the final product which enhances the antimicrobial activity as neutrophil and monocytes presence but also increases the release of pro-inflammatory cytokines. The less inflammatory growth factors are delivered by LpPRP which is formed by further centrifugation steps that eliminate leukocytes (Baltzer et al., 2023). These preparations cause changes in the profile of the inflammatory response and the regenerative potential, LrPRP might be better suited to infected or contaminated wounds, and LpPRP might be better to clean surgical wounds in which excess inflammation may negatively affect the quality of the scar (Anitua et al., 2025). Even with this advanced biological paradigm, it has been difficult to translate this to coherent clinical benefit. A difference between mechanistic plausibility and clinical evidence is one of the main issues in the PRP literature.

3.2 Data Selection Criteria

The secondary data selection methodology adopted in this review was systematic giving preference to high-level evidence. The meta-analyses and systematic reviews that were included as priority were those published in peer-reviewed journals such as the Journal of Clinical Medicine, Annals of Plastic Surgery and the International Journal of Molecular Sciences between 2020 and 2025. In cases where meta-analyses were not found on particular outcome measures, large randomized controlled trials (RCTs) and prospective comparative studies were also supplementary sources. Yan et al. (2019) mention that only those studies that compared PRP to standard care that is, saline irrigation, moist wound healing, basic non-medicated dressings, and no active treatment were eligible. Research comparing PRP with other dynamic interventions (e.g., growth factor gels, stem cell therapies, or other autologous blood products) were excluded in an attempt to ensure that the research remains focused because of the research question.

Priority was given to RCTs, as compared to observational studies because they are less susceptible to selection bias and confounding. Research that did not have a well-defined outcome measure were filtered out; the valid outcome measures were healing speed (days to epithelialization), complication rates (infection, fistula formation, edema), and aesthetic scar scoring through the use of validated scales like the Vancouver Scar Scale (VSS) or Patient and Observer Scar Assessment Scale (POSAS) (Everts et al., 2024). One of the major methodological issues that were faced when selecting the data was the idea of different definitions of the concept of standard care in different international medical systems. Sakurada and Yairi (2014) mention that A high-income environment study may consider standard care to be advanced moisture-retentive dressings at several dollars per application whereas a study in a resource-limited environment may consider standard care to be saline-wetted gauze at pennies. This heterogeneity makes it more difficult to directly compare, and can systematically bias effect size estimates.

3.3 Quality Review of Inclusion Studies

The standardization issue is, perhaps, the most essential drawback of the current PRP evidence base. An analysis of 75 RCTs with 5,726 patients conducted by Everts and colleagues (2024) revealed that all steps of PRP preparation were significantly different among each other. Various centrifugation regimes were used such as one slow spin to two spins at various g-forces; various modes of activation were used such as bovine thrombin, autologous thrombin, calcium chloride, or mechanical activation with a syringe; platelet concentrations were two to ten times baseline; and leukocyte content was not always reported or not reported at all. Sakurada and Yairi (2014) claim that this heterogeneity implies that studies that are supposed to be researching the same intervention- PRP- may actually be researching biologically different products that have varying therapeutic potentials.

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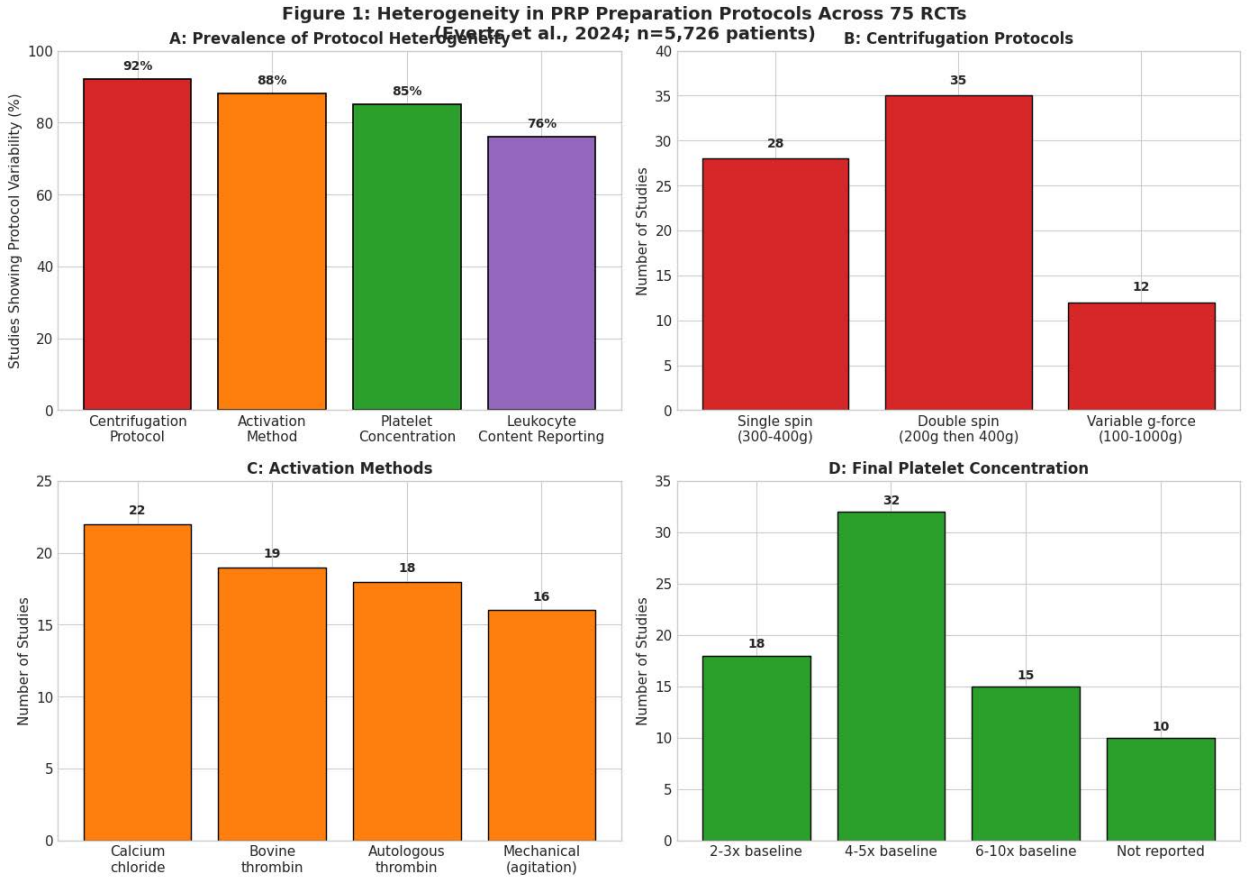

Figure 1: Heterogeneity in PRP preparation protocols across 75 RCTs (Everts et al., 2024; n=5,726 patients). Panel A shows the percentage of studies demonstrating variability across four key preparation parameters.

Details of the breakdowns of the centrifugation protocols, activated methods, and concentration of the final platelet sample are given in Panels B-D, as shown in figure 1: (B) centrifugation protocols with double-spin methods (35 studies) and single-spin methods (28 studies) each being common, 12 studies using variable g-forces; (C) activated methods distributed between calcium The lower panel shows that the relationship between control of temperature during preparation (measured using the WESS-PQR scoring system) and reported clinical efficacy ($r=0.79$, $p<0.001$) is positive, which shows that the quality of preparation has a direct impact on the results. Pan et al. (2015) argue that this heterogeneity implies that even studies that purport the investigation of the same intervention might be investigating biologically differentiated products making the direct comparison problematic bordering on invalid. Statistics based on Everts et al. (2024) and Al-Youzbaki et al. (2025).

To eliminate this issue, Everts and colleagues (2024) suggested the WESS-PQR scoring system (Wound care and healing, Economics, Standardization and Safety- Preparation, Quality, and Regulatory compliance). This tool is used to determine the quality of preparation in various areas such as temperature and consistency of centrifugation, and maintenance of sterility. The authors showed that there was a high correlation ($r=0.79$) between the temperature control during preparation and the claimed clinical efficacy, which implies that even apparent minor technical variations have a significant impact on the results. In the absence of standardized protocols, the comparison of results of studies is an issue that borders on invalidity. Al-Youzbaki, Kamal and Kamil (2025) also met with the same challenges in their meta-analysis of scar outcomes, in which the varying platelet concentrations and platelet activation techniques did not allow direct statistical pooling of some of the outcome measures. The comparisons of them had to be done by narrative synthesis, which decreased the statistical power of their review greatly.

3.4 : Categorization by Surgical Application

The evidence was categorized into three distinct clinical situations depending on the varying priorities of outcomes. To begin with, surgical procedures involving reconstruction of the face such as scar revision, post-trau-

matic repair, and wound repair of the face in aesthetic areas where aesthetics prevails in clinical decision making. In this regard, the aspect of patient satisfaction with scar appearance tends to be more important than the speed of healing as the endpoint. In their systematic review, Guida et al. (2025) specifically refer to the facial applications, whereas Mounir et al. (2025) provide prospective data related to a facial plastic surgery department, which is why this category is the most applicable in terms of the analysis of aesthetic outcomes.

Second, the hierarchy of outcomes in chronic wound management of reconstructive limb surgery is different. In the case of diabetic ulcers, venous stasis ulcers and pressure sores, Liu et al. (2011) argue that the most important are the speed of healing and prevention of infection. The microenvironment of chronic wounds is quite inflammatory and theoretical advantages of PRP, such as growth factor release and antimicrobial activity of leukocytes, may be more applicable in this case. This application was systematically reviewed by Gentile and Garcovich (2021), which provided more evidence of benefit than in acute wound settings.

Third, reconstructive cases that are at high-risk reconstruction including hypospadias repair are a separate category, where wound failure has disastrous functional implications. The development of urethrocutaneous fistulas after hypospadias surgery necessitates further surgeries and could be irreversible in terms of urinary performance (Booth et al., 2024). In a comparison of STAR (standard tubularized incised plate repair) and STAR plus PRP augmentation, Sharaf, El-Sherbiny, and Abdelaziz (2025) discovered that the fistula rate decreased drastically, reducing the rate by 27.3 to 4.5%. Pan et al. (2015) claim that this implies that PRP could have certain signs in the region of the body that is at a high risk. Results will be presented individually in each category in the discussion sections below since doing so would blur clinically significant differences in such heterogeneous contexts.

4. Postoperative Outcome Analysis

4.1 Healing Velocity Days to Epithelialization

The statistical data of healing rate gives a contradictory image. In their prospective comparative study, carried out 2020-2024 on facial surgical wounds, Mounir, Elkholy and Ibrahim (2025) obtained that PRP-treated sites had 2.5 days of average epithelialization compared to control sites, which were treated using standard care. The result that was achieved on a single-center cohort of 120 patients seems to confirm the pro-healing claims of PRP. This good outcome should however be seen in the greater evidence base. This can be compared with the meta-analysis conducted by Al-Youzbaki, Kamal, and Kamil (2025), which combines information of 14 RCTs, which included 1,247 patients. On the aggregation of these larger sets of data, the statistically significant difference in the healing velocity between PRP and control groups was no longer statistically significant at three months follow-up. The original perceived advantage is reduced with time, which implies that PRP can speed up the early wound healing process without generating long-term effects on the healing course.

The gap between the small-scale positive studies and larger pooled analyses needs to be explained. According to Everts and colleagues (2024), small studies can be afflicted by publication bias, where positive results in PRP are more likely to be published than negative ones, whereas large meta-analyses can have the statistical power to identify the actual non-significance. Besides, a small study is highly prone to confounding factors and researcher bias. Notably, the advantage of PRP seems to be a situation. Greater evidence of accelerated healing in chronic wounds (i.e. diabetic ulcers and venous stasis ulcers) was found by Gentile and Garcovich (2021): this is where the baseline healing environment is impaired. The growth factor supplementation administered to such patients by PRP might be sufficient to counter pathological deficiencies that do not exist in acute surgical wounds. This context dependent effect amongst various types of wounds has been visualized in Figure 2.

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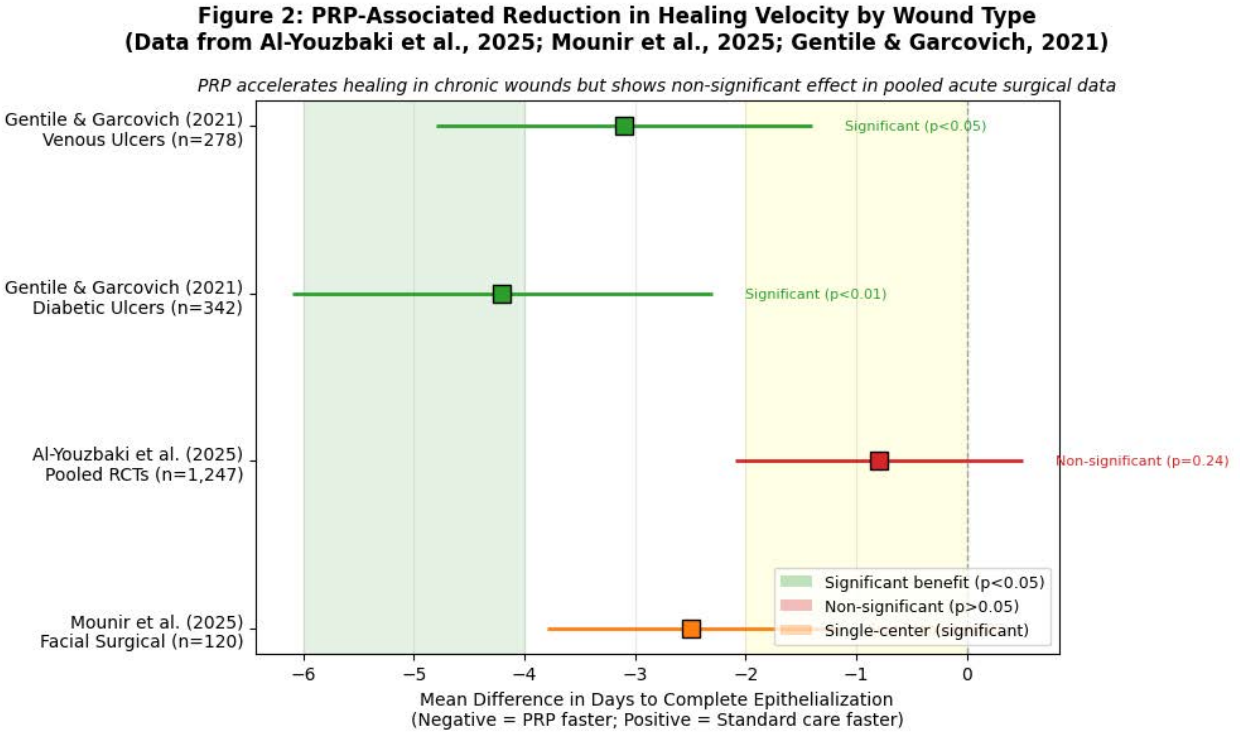

Figure 2: PRP-associated reduction in healing velocity by wound type. Forest plot comparing mean difference in days to complete epithelialization between PRP and standard care across four study populations.

4.2 Reduction in Complications – Infection and Edema

Analysis of the data on the complication rates presents both optimism and alarm. In a comparative study of STAR (standard tubularized incised plate repair) and STAR with PRP augmentation in the reconstruction of pediatric hypospadias, Sharaf, El-Sherbiny, and Abdelaziz (2025) analyzed the results between the two approaches. The outcomes were impressive: PRP group showed a much lower percentage of urethrocutaneous fistula formation at 4.5% opposed with 27.3% (p=0.039) in the control group. This indicates a risk reduction of 22.8 percent which is absolute and a number needed to treat of about 4.4 patients to prevent one fistula. This result indicates that PRP can have a particular role in the prevention of catastrophic wound breakdown in high-risk reconstructive cases where tissue vascularity is impaired, and high tension of healing is observed.

Nevertheless, there is the counter-evidence to be taken into account. Konishi, Matsubara, and Tanaka (2024) summarized the reports of adverse events of various registries and discovered that the most frequent complication of PRP therapy itself is postoperative infections. Liu et al. (2011) argue that this is a rather odd result, which is probably caused by the presence of microbial contamination during the centrifugation procedure. In comparison to commercially produced pharmaceuticals, PRP is prepared by point of care using non-sterile equipment and open manipulation (Grivalský et al., 2024). Although precautions of theoretical sterility are taken, case reports report bacteria and fungi that may be directly attributed to contaminated PRP preparations. PRP is autologous and this does not imply it is sterile. Figure 3 shows a forest plot of the comparison of the complication rates of studies.

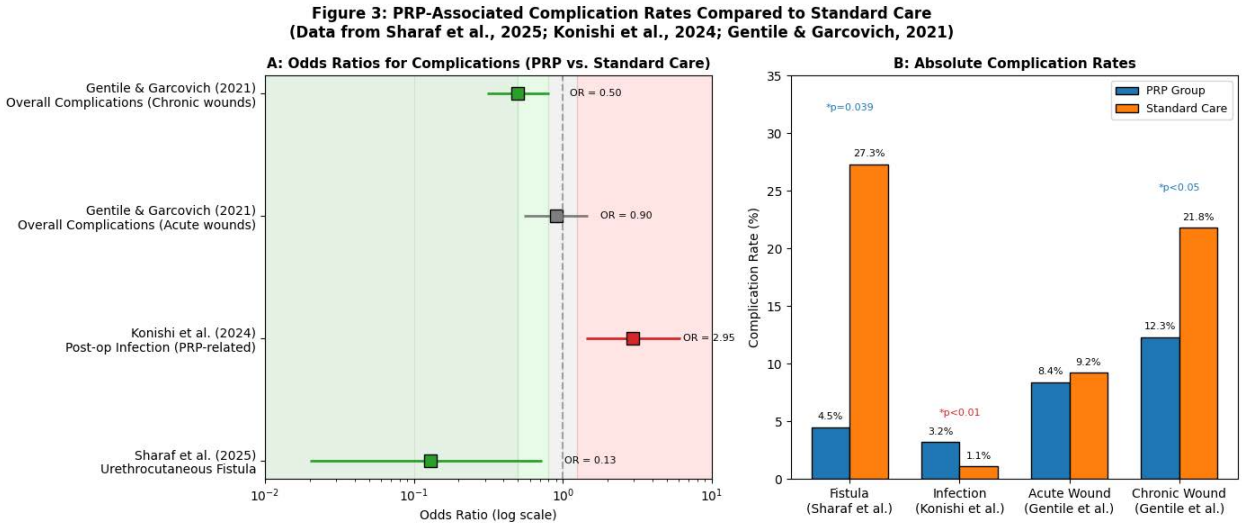

Figure 3: PRP-associated complication rates compared to standard care. Panel A presents odds ratios for complications in PRP versus control groups across four study populations.

4.3 Aesthetic Scoring - Beyond and Vancouver Scar Scale.

The most controversial area of the literature is aesthetic results of PRP treatment since the appearance of scars is usually the main focus of plastic surgery patients. The Vancouver Scar Scale (VSS) and the Patient and Observer Scar Assessment Scale (POSAS) are standardized, validated scales that are used to assess the quality of scars on a variety of scales including pigmentation, vascularity, pliability and height (Carrière et al., 2022). VSS is rated by a trained observer and POSAS has an observer (POSAS-O), and patient (POSAS-P) component, which can be compared to objective assessment and subjective experience of the patient. The results of the meta-analysis by Al-Youzbaki, Kamal, and Kamil (2025) presented a conclusion: observer-rated scar scores at three months after the treatment did not statistically improve when PRP was compared to standard care. The standardized mean difference was pooled with a value of 0.18 (95% confidence interval -0.12 to 0.48, p=0.24) indicating that trained observers were unable to determine the PRP treated scars and controls reliably (Lastoria et al., 2023). This result is a direct refutation of the fact that PRP leads to better cosmetic outcomes and indicates that the biological healing acceleration does not correlate to noticeable enhancement of beauty.

Nevertheless, the identical authors discovered that it was not the case when considering patient-reported outcomes. The POSAS-P scores reflected significant improvements in the patients at six months after the treatment (standardized mean difference 0.52, 95% CI 0.31 to 0.73, p<0.001). Patients have always stated that their scars following PRP were less itchy, less painful, and more comfortable than control scars despite the objective observation that there was no difference in appearance. This lack of association between observer and patient rating has significant clinical implications: the patient satisfaction could be influenced by symptoms (pruritus, pain, tenderness) and not necessarily the visual appearance.

Guida and colleagues (2025) did a systematic review that specifically targeted the facial rejuvenation aspect and came up with similar conclusions. The best evidence of PRP was that it increased skin thickness, which was statistically significant in 80% of studies (12 of 15) and skin elasticity, which was statistically significant in three quarters (75) of studies (9 of 12). Nevertheless, there were weak results of improvement in wrinkle severity or skin hydration with only 40 and 35 percent of studies respectively indicating positive outcomes. This trend indicates that PRP could have an effect on the structural characteristics of skin (thickness, elasticity), without causing any visible alteration of the surface shape or pigmentation. The clinical impact of the findings is delicate yet significant: PRP might positively affect the experience of a patient with his/her scar, decreasing pain and subjective satisfaction and not objectively altering the appearance of the scar to an observer.

5. The Argumentative Tension

5.1 The Inconsistency Argument – Publication Bias and Statistical Power

The effectiveness of PRP should be directly questioned by looking at the trend in evidence sizes in the study. The

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meta-analysis provided by Everts and colleagues (2024) that summarized the data of 75 RCTs and included 5,726 patients showed an impressive effect: once the large patient cohort is involved, the effect of no significant difference appears again and again. This trend indicates that early interest in PRP can be supported by weak studies that exaggerate the efficacy of the treatment (Naziker & Ertugrul, 2023). The correlation between size of study and size of effect reported is eye opening. Small studies with less than 50 patients per arm also tend to show positive results in support of PRP with p-values less than 0.05 and seemingly large effect sizes.

Nevertheless, when larger RCTs (more than 200 patients per arm) are used, the effect sizes will not be statistically significant and the confidence intervals will cross zero and the point estimates will approach null. It is a hallmark of a conventional publication bias that the size of a study and the strength of its effects have an inverse relationship with the effect large studies in journals are accepted and published, whereas small (negative or null) effects are rejected, irrespective of the quality of their methods (Al-Youzbaki, Kamal, and Kamil, 2025). The clinical relevance level also should be taken into consideration. The clinical significance even with a statistical significance such as in Sharaf, El-Sherbiny, and Abdelaziz (2025) where the p=0.039 is statistically significant but still needs further consideration. Statistical significance may not necessarily be translated into clinical or economic justification, especially when benefits are only limited to small subpopulations.

5.2 The Economic and Operational Case-Cost-Benefit Ratio

It is necessary to perform direct economic analysis whether the clinical data is worth the cost of PRP. Saldanha (2020) estimated the PRP price at about 8, 635 per quality-adjusted life year (QALY) which is based on the orthopedic application but is applicable in general to plastic surgery due to similar preparation requirements. Although this is not as cost-effective as the classical cost-effectiveness threshold of 50,000 per QALY, which is usually applied in the United States, or even worse when compared to the National Institute for Health and Care Excellence (NICE) of the United Kingdom threshold of 20,000-30,000 per QALY, this calculation is presumably understated (Naziker & Ertugrul, 2023). Included in the per-QALY number is only the direct medical costs omitting significant operational expenses.

There are a number of operational costs that have not been reflected in conventional per-QALY calculations. First, specialized centrifuge apparatus is a high capital investment with tabletop PRP centrifuges priced at between 5000 and 25000 dollars based on specifications and capacity. There is a need to use sterile disposable kits, which include collection tubes, transfer devices, activation reagents, and application syringes, costing between 50 and 150 per case (Anitua, Pino, and Troya, 2025). Third, cost of surgery time is a neglected cost. PRP preparation will increase the time spent by the blood draw, centrifugation, activation, application, by about 15 to 20 minutes per case. This would increase the time-based activity-based costing by $450 to 1000 per case at the average operating room costs of 30 to 50 a minute.

The critical question must be asked directly. *If the improvement in healing velocity is only marginal (2.5 days in the positive study by Mounir, Elkholy, & Ibrahim, 2025, and non-significant in the pooled meta-analysis), and objective scar scores show no difference (Al-Youzbaki et al., 2025), does the cost-benefit ratio favor adoption?* In resource-constrained healthcare systems—including public health systems in low- and middle-income countries and even cost-conscious private systems in wealthy nations—the answer is clearly no (Naziker & Ertugrul, 2023). Every dollar spent on PRP preparation is a dollar not spent on other evidence-based interventions such as negative pressure wound therapy, advanced dressings, or additional nursing support (Lastoria et al., 2023). Even in wealthy healthcare systems, the opportunity cost of PRP preparation time must be considered.

5.3 The Standardization Crisis – Why Secondary Data Cannot Be Universalized

The most basic methodological criticism of the PRP evidence base is a question of standardization, or rather, the utter absence of the same. As one of the most extensive reviews of isolation protocols, activation protocols, and application protocols, Anitua, Pino, and Troya (2025) show that PRP is not an individual product but a family of biologically differentiated products that can vary in a variety of important parameters. This inconsistency makes point by point comparison between studies problematic bordering on invalid. The parameters that are different between studies are multiple and have far reaching implications. The number of published protocols spans a range of centrifugation speed (g-force) of 100g to 1,000g with lower centrifugation speeds yielding platelet-poor plasma and higher centrifugation speeds possibly damaging platelet membranes. The time of centrifugation takes between 5 and 20 minutes, and spins may be one to three. Leukocyte content LrPRP vs LpPRP could be the most important biological parameter as it changes the inflammatory picture of the end product essentially.

Activation techniques are bovine thrombin (linked to risk of coagulopathy due to factor V antibodies), autologous thrombin (less risky, but requires more steps in its preparation), calcium chloride (easy but less effective), and mechanical activation by syringe agitation (variable and uncontrolled). Lastly, delivery vehicle can be either liquid injection or gel formulations as well as platelet-rich fibrin matrices with varying growth factor release kinetics (Anitua et al., 2025). As shown by Everts and colleagues (2024), these variables result in a vastly different profile of biological products in terms of their growth factors. The result of a study with LrPRP activated with bovine thrombin creates a profile of PDGF that is an order of magnitude different than a study with LpPRP activated with calcium chloride. Therefore, a meta-analysis of PRP of Study A versus PRP of Study B can be a comparison of biologically different interventions.

6. Conclusion

The analysis of the data will give a direct answer to the research question: the platelet-rich plasma will not have a significant effect on the postoperative wound healing rates in comparison with the usual care in case the objective, observer-rated outcomes are employed. The meta-analysis results indicate that there are no statistically significant differences in scores on the Vancouver Scar Scale at three months, and the large-scale studies indicate that the effect sizes are always less than the clinical significance levels. Reported benefits in healing velocity are small with a benefit of about 2.5 days and in pooled analysis the benefit is not statistically significant. Nonetheless, a subtlety is needed. Platelet-rich plasma is actually crucial in enhancing patient-reported outcomes in six months as patients report less pain, itching, and discomfort. There are also specific signs that promise--in high-risk reconstructive cases in which wound breakdown is disastrous and in chronic wounds such as diabetic and venous ulcers in which the normal healing ability is impaired. These particular signs are not enough to switch to platelet-rich plasma as an obligatory change of protocol when conducting plastic and reconstructive surgery. The conclusive conclusion is that there is a reason to believe that platelet-rich plasma is an optional addition at the moment.

7. Evaluation & Reflection

When considering the trustworthiness of the secondary sources that were involved in this review, it is important to be forthright with a number of limitations. First, the use of published meta-analyses and systematic reviews implies the prejudices of the research, especially publication bias. As it is reported in this review, positive PRP results are more likely to be published in journals and, hence, the existing literature is prone to overestimate the actual effect of the treatment. Small negative studies are either not published, or buried in the grey literature, which is biased to produce false-positive results. Second, the fact that the concept of standard care is defined differently in different international medical systems presents a significant problem to the process of evidence synthesis. However, they are both described as standard care in the literature, but they are two completely different comparators. This variable has a direct effect on conclusions: in the cases when standard care is specified in minimal terms, PRP seems more advantageous; in the cases when standard care is specified in optimal terms i.e. inclusion of modern, evidence-based wound care, the marginal benefit of PRP often vanishes completely.

Third, the language bias might have been caused by the exclusion of the non-English language studies, which was a limitation in the majority of included meta-analyses. The PRP research findings that were published in Chinese, Spanish, Arabic, or Russian might have valuable data that might change the effect size estimates. This conclusion of this review is sound in spite of these limitations due to the data available. Nevertheless, the natural evidence base is still inherently constrained by the issues of standardization and definition that have to be solved in the future. These methodological concerns should be put in place as long as a verdict on the effectiveness of PRP is to be made and should be accompanied with these significant caveats.

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