

REVIEW

Platelet-rich fibrin and photobiomodulation in postoperative recovery after third molar extraction: a narrative review

Fibrina rica en plaquetas y fotobiomodulación en la recuperación postoperatoria tras la exodoncia de terceros molares: revisión narrativa

Paula Yasmín León Velalcázar¹

¹ Dentist Independent. Quito, Ecuador. <https://orcid.org/0009-0004-5331-1782>

Correspondence: drapyleonv@gmail.com

Received: 25/04/2026

Accepted: 27/06/2026

ABSTRACT

Introduction: Third molar extraction is one of the most frequent procedures in oral surgery and may be associated with postoperative complications such as pain, edema, trismus, and secondary infections. To improve postoperative recovery, adjuvant therapies such as platelet-rich fibrin (PRF) and photobiomodulation (PBM) have been proposed. **Objective:** To describe and analyze the available scientific evidence on the effects of PRF and PBM on postoperative recovery following third molar extraction. **Materials and methods:** A narrative review was conducted through searches in PubMed, ScienceDirect, SciELO, LILACS, and Google Scholar. Original articles published in Spanish and English between January 2021 and April 2026 that evaluated PRF and/or PBM in patients undergoing third molar extraction were included. The information was selected, organized, and analyzed through a narrative synthesis according to the intervention and the main clinical outcomes. **Results:** A total of 32 articles were included, most of them randomized clinical trials. Studies evaluating PRF frequently reported favorable outcomes, particularly in pain reduction and healing, although findings related to edema and trismus were variable. Studies evaluating PBM showed benefits mainly in pain control and some healing parameters, with heterogeneous results for edema and trismus. Evidence on the combined application of PRF and PBM was limited, with only one study identified. **Conclusion:** PRF and PBM may contribute favorably to postoperative recovery following third molar extraction, particularly in pain control and healing. However, the heterogeneity of the protocols and methodological differences limit the possibility of establishing consistent effects. Studies with standardized protocols are required to determine more precisely their clinical benefit and the potential effect of their combined application. **Keywords:** Third Molar; Platelet-Rich Fibrin; Low-Level Light Therapy; Postoperative Pain; Wound Healing.

RESUMEN

Introducción: La exodoncia de terceros molares es uno de los procedimientos más frecuentes en cirugía oral y puede asociarse con complicaciones postoperatorias como dolor, edema, trismo e infecciones secundarias. Para mejorar la recuperación postoperatoria, se han propuesto terapias adyuvantes como la fibrina rica en plaquetas (PRF) y la fotobiomodulación (PBM). **Objetivo:** Describir y analizar la evidencia científica disponible sobre los efectos de la PRF y la PBM en la recuperación postoperatoria tras la exodoncia de terceros molares. **Materiales y métodos:** Se realizó una revisión narrativa mediante búsquedas en PubMed, ScienceDirect, SciELO, LILACS y Google Scholar. Se incluyeron artículos originales publicados en español e inglés entre enero de 2021 y abril de 2026, que evaluaron PRF y/o PBM en pacientes sometidos a exodoncia de terceros molares. La información fue seleccionada, organizada y analizada mediante una síntesis narrativa según la intervención y los principales desenlaces clínicos. **Resultados:** Se incluyeron 32 artículos, en su mayoría ensayos clínicos aleatorizados. Los estudios que evaluaron PRF describieron resultados frecuentemente favorables, principalmente en la reducción del dolor y la cicatrización, aunque los efectos sobre edema y trismo fueron variables. Los estudios que evaluaron PBM evidenciaron beneficios principalmente en el control del dolor y algunos parámetros de cicatrización, con resultados heterogéneos para edema y trismo. La evidencia sobre la aplicación combinada de PRF y PBM fue limitada, con un único estudio identificado. **Conclusión:** La PRF y la PBM podrían contribuir favorablemente a la recuperación postoperatoria tras la exodoncia de terceros molares, particularmente en el control del dolor y la cicatrización. Sin embargo, la heterogeneidad de los protocolos y las diferencias metodológicas limitan la posibilidad de establecer

efectos consistentes. Se requieren estudios con protocolos estandarizados para determinar con mayor precisión su beneficio clínico y el posible efecto de su aplicación combinada.

Palabras clave: Tercer molar; Fibrina rica en plaquetas; Terapia por luz de baja intensidad; Dolor postoperatorio; Cicatrización de heridas.

INTRODUCTION

Third molars erupt between 17 and 21 years of age, and their extraction is primarily indicated due to pain, impaction, caries, or root resorption of the second molars. This procedure is one of the most frequent interventions in oral surgery and is associated with postoperative complications due to frequent bony impaction and surgical complexity ⁽¹⁻⁴⁾.

The most common complications include pain, edema, trismus, and secondary infections, which may compromise functional recovery, quality of life, and the resumption of daily activities. Their conventional management includes local anesthesia, nonsteroidal anti-inflammatory drugs, and corticosteroids aimed at controlling pain and inflammation ^(1,5).

To optimize postoperative recovery, various therapeutic strategies have been proposed, including surgical modifications and adjunctive therapies such as cryotherapy, antibiotics, wound drainage, ozone therapy, and laser therapy. However, the available evidence shows variable results, limiting their standardization in dental practice ^(3,5).

In this context, platelet-rich fibrin (PRF) has been considered a naturally derived autologous biomaterial with regenerative potential due to its content of growth factors, cytokines, and leukocytes, which have been associated with processes involved in tissue repair and wound healing. This second-generation platelet concentrate is characterized by its preparation without anticoagulants or additives, allowing its use as a minimally invasive alternative in regenerative procedures ⁽⁶⁾.

PRF concentrates have different formulations. Leukocyte- and platelet-rich fibrin (L-PRF) contains a fibrin matrix with cellular components that promote the release of regenerative mediators; advanced platelet-rich fibrin (A-PRF) is a modification of conventional PRF designed to preserve a greater number of cells and enhance the release of growth factors; whereas injectable platelet-rich fibrin (i-PRF) is a liquid preparation that allows application by infiltration and maintains its ability to provide growth factors and cytokines to the treated tissue ⁽⁶⁾. Complementarily, photobiomodulation (PBM) has been proposed as an adjunctive therapy in oral surgery due to its ability to modulate inflammation, reduce pain, and promote tissue repair through the application of laser or LED light in the visible and infrared spectrum ⁽⁷⁾.

Although previous reviews have evaluated the effects of PRF or PBM on recovery following third molar extraction, and their potential combined use has also been investigated, differences persist in the types of PRF concentrates used, photobiomodulation application parameters, and criteria employed to assess clinical outcomes. This variability makes an integrated and comparative interpretation of the available findings difficult. Therefore, a narrative review is warranted to organize and jointly analyze the literature on PRF and PBM, and to structure the findings according to the main clinical outcomes, such as pain, edema, trismus, and healing, while considering differences among PRF modalities and photobiomodulation application parameters. Reviewing studies published between January 2021 and April 2026 allows for the incorporation of recent evidence and provides an updated perspective on these interventions, without attempting to establish a quantitative pooled estimate of their effects.

The objective of this narrative review was to describe and analyze the available scientific evidence on the effects associated with the use of PRF and PBM in postoperative recovery following third molar extraction, considering clinical outcomes related to pain, edema, trismus, soft-tissue healing, and postoperative complications, based on literature published between January 2021 and April 2026.

MATERIALS AND METHODS

Study Design and Type of Research

A qualitative, descriptive narrative literature review was conducted to identify, organize, and analyze the available scientific evidence on the use of platelet-rich fibrin (PRF) and photobiomodulation (PBM) in postoperative recovery following third molar extraction. The study aimed to integrate and describe the main findings reported in the available literature, considering the effects on pain, edema, trismus, healing, and postoperative complications.

Methods

A documentary-bibliographic and analytical-synthetic approach was used. The documentary-bibliographic method enabled the collection of information through the search, selection, and review of scientific publications related to the use of PRF and PBM in patients undergoing third molar extraction.

The analytical-synthetic method was used to examine the findings of the selected studies, identify their main characteristics, and organize the information to provide a descriptive synthesis of the available evidence.

Search Strategy

The technique used was a literature review based on searches of scientific literature in PubMed, ScienceDirect, SciELO, LILACS, and Google Scholar. The search was conducted between February and April 2026, and publications from January 2021 to April 2026 were considered in Spanish and English. Terms related to third molars, extraction, platelet-rich fibrin, and photobiomodulation were used to identify relevant publications. MeSH and DeCS controlled vocabulary terms were used when available, supplemented by free-text terms and combined using the Boolean operators AND and OR. The search terms were adapted to the characteristics of each information source.

Google Scholar was used as a complementary source to expand the search for potentially relevant literature. Due to the large number of results retrieved from this platform, the first five pages of results ranked by relevance were manually reviewed. This procedure may have limited the retrieval of additional publications that were not included among the initially reviewed results.

The selection and review of publications were performed by a single researcher. The identified studies were initially screened based on their titles and abstracts and subsequently through full-text review of those considered potentially relevant, according to the established selection criteria.

Information from the selected studies was organized according to author and year of publication, study design, sample size, intervention evaluated, clinical variables, and main findings. Bibliographic records were managed using Zotero.

The information obtained was analyzed descriptively and organized according to the type of intervention and the main clinical outcomes: postoperative pain, facial edema, trismus or mouth opening, tissue healing, and postoperative complications. The available evidence on the combined use of PRF and PBM was also described separately. No formal risk-of-bias assessment was performed using specific tools; therefore, the methodological limitations identified in the studies were considered descriptively during interpretation of the findings. Due to differences among the studies regarding PRF modalities, preparation protocols, PBM application parameters, sample characteristics, assessment methods, and follow-up periods, the findings were integrated through a narrative synthesis aimed at describing the trends and differences observed across the studies.

Literature Selection

A total of 138 records were identified, and following application of the established criteria, 32 articles were selected for the narrative synthesis.

Inclusion Criteria

Original scientific articles published between January 2021 and April 2026, in Spanish or English, were included if they evaluated the use of platelet-rich fibrin (PRF) and/or photobiomodulation (PBM) in patients undergoing third molar extraction and reported outcomes related to postoperative recovery, particularly pain, edema, trismus, healing, or postoperative complications.

Exclusion Criteria

Literature reviews, systematic reviews, meta-analyses, case reports, conference abstracts, theses, animal studies, retracted publications, articles without full-text access, duplicates, and publications that did not address the interventions or outcomes of interest were excluded.

LITERATURE REVIEW

General Characteristics of the Reviewed Literature

The literature review identified 138 records through the information sources consulted. After applying the established selection criteria, 32 scientific articles published between January 2021 and April 2026 were included in the narrative analysis.

The reviewed studies had sample sizes ranging from 20 to 180 participants. Most were randomized clinical trials, some of which used a split-mouth design, evaluating the effects of platelet-rich fibrin (PRF), photobiomodulation (PBM), or both interventions on postoperative recovery following third molar extraction.

The PRF modalities identified included leukocyte- and platelet-rich fibrin (L-PRF), advanced platelet-rich fibrin (A-PRF), and injectable platelet-rich fibrin (i-PRF). Likewise, studies evaluating PBM used different therapeutic protocols, with variations in wavelength, power, energy density, number of applications, and irradiation modality.

The main outcomes evaluated were postoperative pain, facial edema, trismus or mouth opening, healing, and postoperative complications. Due to differences among the studies in terms of interventions, therapeutic protocols, sample characteristics, assessment methods, and follow-up periods, the results were organized and analyzed through a narrative synthesis, without performing a pooled quantitative estimate of the effects. The individual characteristics of the reviewed studies are presented in Table 1.

Table 1. Characteristics of the Included Studies

Author (Year)	Study Design	Sample	Clinical Variables	Main Findings
Gururaj et al. ⁽¹⁾ (2022)	Randomized clinical trial	26	Healing, postoperative pain	The authors reported a significant improvement in healing and a reduction in pain following mandibular third molar extraction in the group treated with PBM.
Erismen et al. ⁽⁵⁾ (2025)	Randomized clinical trial	60	Pain, inflammation, trismus	The study observed significant improvements in pain, inflammation, and trismus in the groups receiving combined PRF and PBM and PBM alone. Inflammation also showed a significant reduction in the group treated with PRF alone.
Starzyńska et al. ⁽⁸⁾ (2021)	Prospective randomized controlled clinical trial	50	Pain, analgesic consumption, trismus, edema, hematoma, bleeding time, alveolar osteitis, fever, and complications	The authors found that advanced platelet-rich fibrin (A-PRF) was associated with a significant reduction in pain, analgesic consumption, trismus, edema, hematoma, and bleeding time during the early postoperative period, with no significant differences in alveolar osteitis, fever, or late complications.
Torres da Silva et al. ⁽⁹⁾ (2021)	Randomized, double-blind, split-mouth clinical trial	20	Pain, healing	The study results showed reduced pain and improved clinical healing in the group treated with leukocyte- and platelet-rich fibrin (L-PRF).
Öhrnell et al. ⁽¹⁰⁾ (2025)	Prospective randomized controlled clinical trial	90	Dry socket, postoperative pain	The study reported a significant reduction in postoperative pain in the PRF-treated group. The incidence of dry socket was lower in this group, although the difference was not statistically significant.
Moraes et al. ⁽¹¹⁾ (2024)	Randomized, triple-blind, split-mouth clinical trial	34	Postoperative pain, healing, alveolar volume	The authors observed reduced postoperative pain and improved healing and preservation of alveolar volume in the group treated with L-PRF.
Bahadur et al. ⁽¹²⁾ (2025)	Prospective randomized clinical trial	30	Pain, edema, mouth opening, bone healing, complications	The PRF-treated group showed significant improvements in pain, edema, mouth opening, and bone healing, as well as a lower frequency of complications such as dry socket, dehiscence, and paresthesia.
Iftikhar et al. ⁽¹³⁾ (2024)	Randomized, triple-blind, split-mouth clinical trial	64	Pain, edema, early postoperative sensitivity	The authors reported significant improvements in pain, edema, and early postoperative sensitivity following PRF application.
Aliberti et al. ⁽¹⁴⁾ (2025)	Randomized, double-blind clinical trial	56	Edema, postoperative pain, healing	The study demonstrated a reduction in postoperative edema and pain, as well as faster healing, in the group treated with injectable platelet-rich fibrin (i-PRF) infiltration.
Zwittnig et al. ⁽¹⁵⁾ (2024)	Prospective randomized, split-mouth clinical trial	29	Edema, pain, analgesic consumption, mouth opening	The authors observed that PRF did not produce a significant reduction in edema, whereas favorable changes were observed in pain, analgesic consumption, and mouth opening.
Mathialagan et al. ⁽¹⁶⁾ (2024)	Prospective randomized, double-blind clinical trial	30	Pain, healing	The authors reported that A-PRF did not show significant differences in pain; however, a significant improvement in wound healing was observed.
Starch-Jensen et al. ⁽¹⁷⁾ (2026)	Single-blind randomized clinical trial	80	Healing	The authors did not observe clinically significant improvements in healing with A-PRF compared with conventional healing.
Momeni et al. ⁽¹⁸⁾ (2021)	Randomized, double-blind, split-mouth clinical trial	25	Edema, trismus, pain	The study showed no significant differences in edema or trismus with intraoral PBM at 940 nm, although a reduction in pain was observed.

Author (Year)	Study Design	Sample	Clinical Variables	Main Findings
Camolesi et al. (19) (2025)	Randomized, double-blind, split-mouth clinical trial	83	Pain, edema, trismus	The authors demonstrated a significant reduction in pain, edema, and trismus following mandibular third molar extraction in the group treated with PBM using a Ga-Al-As laser (808 nm).
Rujano et al. (20) (2026)	Randomized, double-blind, placebo-controlled, split-mouth clinical trial	39	Pain, healing	The authors reported a significant reduction in pain and improved healing with PBM using a 980-nm laser.
Isolan et al. (21) (2021)	Randomized clinical trial	44	Pain	The study reported a significant reduction in postoperative pain in the group treated with PBM.
Pereira et al. (22) (2024)	Randomized, double-blind, split-mouth clinical trial	20	Postoperative healing	The study showed similar clinical outcomes for postoperative healing between intraoral and extraoral PBM applications.
Uzeda et al. (23) (2025)	Randomized, controlled, double-blind clinical trial	30	Pain, trismus, edema	The study found no significant differences in the evaluated variables following extraction with laser therapy at 660 and 808 nm.
Yüksek et al. (24) (2021)	Randomized, double-blind clinical trial	40	Pain, edema, trismus	No significant differences were observed among the different wavelengths or between single and repeated PBM applications.
Şen et al. (25) (2025)	Prospective study	36	Pain, edema, trismus	The authors reported no significant benefits of laser-LED PBM on pain, edema, or trismus.
Sekerci et al. (26) (2025)	Double-blind, randomized, split-mouth clinical trial	20	Pain, edema, trismus	The study showed no statistically significant differences in the evaluated variables following PBM application.
Giovannacci et al. (27) (2025)	Prospective, multicenter, randomized, triple-blind clinical trial	79	Pain, edema, trismus	The authors observed no significant differences in pain, edema, or trismus following PBM application, although the trends favored the treated group.
Vargas et al. (28) (2024)	Randomized controlled clinical trial	31	Pain, edema	The study showed a favorable trend toward reduced pain and edema with PBM, although the differences were not statistically significant.
Shruthi et al. (29) (2022)	Randomized controlled clinical trial	44	Pain, edema, trismus	The authors reported reductions in postoperative pain, facial edema, and trismus in the group treated with PRF.
Konuk et al. (30) (2022)	Prospective randomized, split-mouth clinical trial	30	Edema	The PRF-treated group presented lower edema at all evaluated time points, although the differences were not statistically significant.
Barone et al. (31) (2025)	Randomized, split-mouth clinical trial	32	Edema, pain, trismus	The study showed a favorable trend toward reduced postoperative edema with PRF; however, no statistically significant differences were observed in edema, pain, or trismus.
Momeni et al. (32) (2022)	Randomized, placebo-controlled, split-mouth clinical trial	25	Pain, analgesic consumption, edema, trismus	The authors observed a significant reduction in pain and analgesic consumption with a 940-nm diode laser applied extraorally, with no differences in edema or trismus.
Trybek et al. (33) (2021)	Comparative clinical trial with convenience allocation	90	Pain, body temperature, trismus, edema	The authors observed greater pain intensity, body temperature, and trismus in the control group compared with the study group. PRF application did not show significant differences in edema.
Yuan et al. (34) (2025)	Prospective randomized controlled clinical trial	120	Healing, pain, edema, trismus	The authors reported improved healing and reduced postoperative pain, edema, and trismus with the combination of collagen and PBM.
Karşıcı et al. (35) (2025)	Randomized, double-blind, split-mouth clinical trial	28	Pain, edema, trismus	The study showed no statistically significant differences in the evaluated variables following PBM application before mandibular third molar extraction.
Asif et al. (36) (2023)	Comparative clinical trial	180	Alveolar osteitis	The study demonstrated a lower incidence of alveolar osteitis in the PRF-treated group.
Starch-Jensen et al. (37) (2026)	Single-blind randomized clinical trial	80	Mouth opening, healing, quality of life	The authors observed no clinical benefits or differences in quality of life with A-PRF application compared with conventional healing.

Source: Prepared by the authors based on the studies included in the narrative review

*EFFECTS ON POSTOPERATIVE PAIN**Platelet-Rich Fibrin*

The studies that analyzed the application of PRF for postoperative pain control described an overall trend toward more favorable clinical outcomes in patients treated with this concentrate. Several investigations reported lower pain intensity and/or reduced analgesic consumption during the postoperative period, although the magnitude and timing of this benefit varied across studies. In other investigations, differences between PRF and the comparison groups were less evident, reflecting some variability in the clinical response^(8-16, 29, 31, 33).

The variability in findings may be related to differences in the type of PRF used, concentrate preparation protocols, sample characteristics, instruments used to assess pain, and follow-up periods. These differences make direct comparisons between studies difficult and should be considered when interpreting the results. Overall, the findings suggest a possible reduction in postoperative pain and analgesic consumption in certain clinical contexts, particularly with leukocyte- and platelet-rich fibrin (L-PRF), advanced platelet-rich fibrin (A-PRF), and injectable platelet-rich fibrin (i-PRF). However, the variability observed across investigations prevents the establishment of a uniform effect magnitude or the assertion of consistent superiority of one PRF modality over another.

Photobiomodulation

Studies evaluating PBM as a strategy for postoperative pain control following third molar extraction showed variable results. Several investigations reported reductions in pain and/or analgesic consumption compared with control groups, whereas other studies did not observe statistically significant differences between interventions^(1, 5, 18-21, 25-28, 32, 34, 35). Likewise, some studies demonstrated clinical benefits related to pain without establishing clear differences among the various wavelengths or application protocols evaluated⁽²²⁻²⁴⁾.

The variability in findings may be related to the heterogeneity of therapeutic protocols, including differences in wavelength, power, energy density, number of sessions, timing of application, and irradiation modality (intraoral or extraoral). Similarly, differences in the instruments used to assess pain, sample characteristics, and follow-up periods may limit direct comparisons between studies. Overall, the reviewed literature indicates that PBM has been associated with favorable postoperative pain outcomes under certain protocols. However, the response was not homogeneous across investigations, and differences in intervention protocols make it difficult to determine whether a therapeutic regimen consistently produces greater clinical benefit.

*EFFECTS ON FACIAL EDEMA**Platelet-Rich Fibrin*

The response of postoperative facial edema following PRF application was not uniform across the reviewed studies. Some investigations described a reduction in inflammation or edema during the postoperative period, whereas in others the difference between groups was smaller or could not be clearly demonstrated. In certain studies, the favorable response to PRF was also accompanied by improvements in other clinical parameters, such as pain or mouth opening^(8, 12-15, 29-31, 33).

The observed differences may be related to the type of concentrate used, preparation and application protocols, extraction complexity, anatomical characteristics of the third molar, and methods used to quantify edema. The timing of measurements may also influence the interpretation of the response due to the natural progression of inflammation during the first few days after surgery. Overall, the available studies indicate a possible reduction in edema with PRF in certain clinical settings, although this trend is not consistently reproduced. Therefore, the narrative evidence suggests a possible benefit, but does not allow a consistent response to be established regardless of the protocol used.

Photobiomodulation

Regarding postoperative facial edema, studies evaluating PBM following third molar extraction reported heterogeneous findings. Some investigations observed a reduction in edema or inflammatory response after the intervention, whereas others did not identify statistically significant differences compared with the comparison groups. Favorable outcomes were also reported with certain protocols, although these findings did not demonstrate conclusive differences among the interventions^(18, 19, 24-28, 32, 34, 35).

These results may be influenced by differences among the PBM protocols used, particularly with regard to wavelength, power, energy density, irradiation modality (intraoral or extraoral), number of applications, and timing of the intervention. In addition, differences in sample characteristics, methods used to assess edema, and follow-up periods make direct comparison of results difficult. Furthermore, one study evaluated PBM in combination with collagen; therefore, the observed effects cannot be attributed exclusively to photobiomodulation⁽³⁴⁾.

Considering the reviewed studies as a whole, PBM may have a favorable effect on facial edema following third molar extraction under certain protocols. However, variability in therapeutic parameters and methodological conditions limits the ability to determine the magnitude and reproducibility of the effect specifically attributable to PBM.

EFFECTS ON TRISMUS

Platelet-Rich Fibrin

Regarding postoperative trismus, studies evaluating PRF showed variable results, with a trend toward more favorable recovery of mouth opening in some investigations. Reduced functional limitation or faster recovery was described at certain follow-up time points; however, in other studies, differences between groups were less evident. In addition, some studies reported favorable changes primarily in other outcomes, such as postoperative pain ^(8, 12, 15, 31, 33, 37).

Interpretation of these findings should consider the diversity of concentrates used, preparation protocols, participant characteristics, surgical complexity, and methods used to measure mouth opening. Different assessment time points may also influence the identification of changes, particularly during the first few days after surgery. Overall, the reviewed literature suggests a possible association between PRF use and more favorable recovery of mouth opening in certain studies. However, the results are not sufficiently consistent to consider this pattern a constant effect of PRF on postoperative trismus.

Photobiomodulation

Regarding recovery of mouth opening, studies evaluating PBM following third molar extraction reported diverse findings. Some investigations described less limitation of mouth opening or more favorable recovery during the first few postoperative days, whereas others did not demonstrate clear differences between the comparison groups. Likewise, favorable results were observed with certain application protocols, although these findings were not consistent across the different interventions evaluated ^(18, 19, 23–27, 32, 34, 35).

Differences among the results may be related to variability in PBM protocols, particularly wavelength, energy parameters, irradiation modality (intraoral or extraoral), number of sessions, and timing of application. Similarly, the methods used to measure mouth opening and the different follow-up periods may influence the observed results and make direct comparison between investigations difficult. Overall, the reviewed studies suggest that PBM has been associated in some studies with more favorable recovery of mouth opening and reduced functional limitation associated with trismus in certain clinical settings. Nevertheless, heterogeneity in therapeutic protocols, sample characteristics, and methodological conditions limits the ability to determine the magnitude and reproducibility of the observed response.

EFFECTS ON TISSUE HEALING

Platelet-Rich Fibrin

Healing following third molar extraction showed a favorable trend in several studies that used PRF. Improvements in clinical parameters related to tissue repair were described and, in some studies, a lower frequency of local complications such as wound dehiscence was reported. Other studies evaluated outcomes related to the progression of the surgical site, such as alveolar osteitis, and described favorable results with the use of PRF ^(9, 11, 12, 14, 36). In contrast, some investigations did not identify clear differences in healing progression during follow-up ^(8, 10, 17, 37).

These findings should be interpreted considering that the studies did not use a single method to assess tissue repair. Differences were observed in the type of platelet concentrate, preparation and application protocols, clinical characteristics of the participants, and criteria used to assess healing. Likewise, surgical complexity, the degree of tissue manipulation, and local wound conditions may modify the progression of the repair process. Overall, the reviewed literature describes a trend toward more favorable surgical-site outcomes with PRF in some studies, both in healing parameters and in certain postoperative complications.

However, because these outcomes were assessed using different criteria and do not necessarily represent the same dimension of tissue repair, the results should be interpreted as heterogeneous narrative evidence rather than as evidence of a uniform effect of PRF on healing.

Photobiomodulation

Soft-tissue healing was evaluated in a limited number of investigations incorporating PBM following third molar extraction. These studies described favorable progression of tissue repair, including improvements in clinical parameters related to healing. Favorable outcomes were also observed when comparing different PBM application modalities, although these findings do not establish that one specific protocol is superior to another ^(1, 20, 22, 34).

The observed effect should be interpreted considering that the studies did not use uniform therapeutic protocols. Differences in wavelength, power, energy density, number of applications, and timing of irradiation may modify the biological response obtained. Likewise, assessment of healing using different clinical criteria and at different follow-up time points limits the possibility of making direct comparisons. In particular, one of the analyzed studies combined PBM with collagen; therefore, the more favorable healing observed in that case could be related to the combined effect of both interventions rather than to PBM alone ⁽³⁴⁾.

Therefore, the available findings indicate that PBM may be associated with favorable progression of certain tissue repair parameters following third molar extraction. However, the limited number of studies and the variability in interventions and assessment methods require this potential benefit to be interpreted with caution.

COMBINED USE OF PLATELET-RICH FIBRIN AND PHOTOBIOMODULATION

The combination of PRF and photobiomodulation was evaluated in only one of the studies included in the review. In this investigation, the combined application of both interventions was associated with favorable outcomes for some postoperative parameters, particularly pain, edema, and trismus ⁽⁵⁾.

However, because only one study was available, these results do not allow determination of whether the combination of PRF and PBM provides an additional benefit compared with the use of either intervention alone. It is also not possible to establish the existence of a synergistic effect between the two therapies based on the available evidence. Consequently, the combined use of PRF and PBM represents a potentially relevant strategy that requires further investigation. Studies with comparative groups are needed to independently evaluate PRF, PBM, and their combined application under standardized therapeutic protocols.

DISCUSSION

The findings of this narrative review suggest that both PRF and PBM may contribute favorably to postoperative recovery following third molar extraction, primarily through pain reduction and improved soft-tissue healing. However, the magnitude and consistency of the observed effects varied across the included studies, reflecting the clinical and methodological heterogeneity of the available literature ^(1, 5, 8-37).

In the reviewed studies, favorable outcomes associated with PRF were frequently observed for certain endpoints, particularly pain and healing, whereas findings related to PBM showed greater variability across the protocols evaluated. This pattern may be related to the biological characteristics of PRF, as it constitutes a three-dimensional autologous matrix rich in platelets, leukocytes, and growth factors such as VEGF, PDGF, and TGF- β , which participate in processes such as angiogenesis, cell migration, and tissue remodeling.

Nevertheless, the variability observed among studies may be influenced by differences in concentrate preparation protocols, such as centrifugation speed and duration, the type of PRF used (L-PRF, A-PRF, or i-PRF), clot manipulation, and timing of application following extraction ^(8-17, 29-31, 33, 36, 37). In addition, some studies descriptively presented limitations in the reporting of randomization, allocation concealment, blinding, or follow-up.

Therefore, the greater frequency of favorable results observed with PRF does not necessarily imply that its effects are uniform across studies. Findings from investigations in which methodological limitations were descriptively identified should be interpreted cautiously, particularly when substantial differences exist in study design and outcome assessment.

The results obtained are consistent with previous systematic reviews that have reported favorable effects of platelet concentrates on postoperative recovery following third molar extraction, particularly in reducing pain and improving tissue repair, as well as decreasing complications such as alveolar osteitis ⁽³⁸⁻⁴⁰⁾. Similar to the findings of the present review, pain was one of the outcomes that showed the most consistently favorable results among the included studies.

Likewise, several studies reported favorable findings regarding healing. However, for outcomes such as edema and trismus, the magnitude of the effects was more variable across studies. These differences may be related to the characteristics of the protocols used and the clinical criteria employed to assess outcomes, which limits direct comparison and generalizability of the findings.

Nevertheless, interpretation of these results should not be based solely on the proportion of studies reporting statistically significant differences. The direction and consistency of findings should be considered together with sample size, intervention characteristics,

measurement methods, and methodological limitations identified in the studies. Therefore, the presence of favorable results in a greater number of investigations does not necessarily imply a larger effect magnitude or that the effect occurs uniformly across different clinical settings.

On the other hand, although PBM demonstrated benefits in several studies, particularly for pain control and healing, its results were more heterogeneous. This variability may be related to differences in application protocols, including wavelength, power, energy density, number of sessions, and timing of irradiation, which makes comparisons between studies and clinical standardization of the technique difficult. In addition, differences in tissue penetration depth according to the wavelength used may influence the magnitude of the observed biological response ^(1, 18–28, 32, 34, 35).

Likewise, some studies presented limitations in reporting methodological aspects such as randomization, allocation concealment, blinding, and follow-up, which should be considered when interpreting the favorable results observed with PBM. Consequently, the frequency of favorable findings should not be interpreted as evidence of a uniform effect, particularly when differences and descriptively identified methodological limitations exist among studies.

These findings are partially consistent with previous systematic reviews and meta-analyses of PBM in third molar surgery, which have reported favorable effects primarily on postoperative pain reduction and, in some cases, edema ^(41–43). Consistent with the present review, pain was the outcome showing the most consistently favorable results. Likewise, favorable findings were observed for soft-tissue healing, although this outcome has been less extensively evaluated in the literature.

In contrast, findings related to edema and, particularly, trismus were more inconsistent across the included studies, which is consistent with previous reviews that have not demonstrated conclusive benefits for these outcomes. Variability in dosimetric parameters, including wavelength, power, energy density, number of sessions, and timing of application, has been identified as one of the main factors limiting the comparability and interpretation of the available evidence ^(41–43). Similarly, interpretation of PBM results should consider that statistical significance alone does not constitute a measure of clinical relevance. Differences in sample size, dosimetric parameters, assessment methods, and methodological characteristics of the studies may influence the direction and consistency of the observed results.

From a clinical perspective, PRF also offers practical advantages because its application is performed during the same surgical procedure, whereas PBM requires specific equipment and, in some protocols, additional treatment sessions. Therefore, although both therapies have potential as complementary strategies, treatment selection should consider the available scientific evidence, existing clinical resources, and patient characteristics. A relevant finding of this review was the limited evidence regarding the combined use of PRF and PBM. The only study identified reported favorable results for several postoperative parameters; however, the available evidence remains insufficient to establish conclusions regarding a possible synergistic effect between the two therapies ⁽⁵⁾.

The main limitations of this review include the heterogeneity of therapeutic protocols, differences in outcome measurement instruments, and variable follow-up periods. Although several studies assessed common outcomes, differences in interventions, therapeutic protocols, measurement methods, and follow-up periods limited the possibility of making direct comparisons between results, even among investigations evaluating similar outcomes. Likewise, the inclusion of studies with different methodological characteristics should be considered when interpreting the findings.

Another limitation was the absence of a prospectively registered protocol, which may limit transparency in the review process. Likewise, the identification, selection, extraction, and organization of information were performed by a single researcher, without independent review by a second evaluator. This characteristic may increase the risk of selection or extraction errors and should be considered when interpreting the results.

Overall, the findings suggest that PRF and PBM may represent useful strategies for promoting postoperative recovery following third molar extraction. However, the findings should be interpreted cautiously due to the existing heterogeneity ^(1, 8–37). Clinical studies using standardized methodologies are needed to more precisely establish the magnitude of the clinical effect of each therapy and the potential benefit of their combined application.

CONCLUSIONS

The available evidence suggests that platelet-rich fibrin (PRF) and photobiomodulation (PBM) may contribute to postoperative recovery following third molar extraction. In the reviewed studies, findings related to PRF were frequently favorable, particularly regarding pain

reduction and healing, whereas studies on PBM showed heterogeneous results. Nevertheless, these findings should be interpreted cautiously due to variability in therapeutic protocols, study characteristics, and methodological aspects that may limit interpretation of the results.

The available evidence does not allow a conclusive comparison of the consistency or magnitude of effects between the two interventions. Clinical studies with standardized protocols and rigorous methodological designs are required to more clearly determine their clinical benefits and the potential effects of their combined application.

REFERENCES

1. Gururaj SB, Shankar SM, Parveen F, Chidambar CK, Bhushan K, Prabhudev CM. Assessment of Healing and Pain Response at Mandibular Third Molar Extraction Sites with and Without Pre- and PostOperative Photobiomodulation at Red and Near-Infrared Wavelengths: A Clinical Study. *Journal of Pharmacy and Bioallied Sciences*. 2022; 14(Suppl 1):S470. doi: 10.4103/jpbs.jpbs_675_21. https://journals.lww.com/jpbs/fulltext/2022/14001/Assessment_of_Healing_and_Pain_Response_at.114.aspx
2. Largo AAR, Guillén MKG, Matamoros CLR, Ruiz EDM, Rodríguez SJ. Complicaciones Relacionadas a la Exodoncia. Revisión Bibliográfica. *Ciencia Latina Revista Científica Multidisciplinar*. 2023; 7(6):8758–72. doi:10.37811/cl_rcm.v7i6.9539. <https://ciencialatina.org/index.php/cienciala/article/view/9539>
3. Ye L, He Y, Ma W, Zhou F, Liu J. Effect of platelet-rich fibrin on the recovery after third molar surgery: A systematic review and meta-analysis. *Journal of Cranio-Maxillofacial Surgery*. 2024; 52(10):1095–108. doi:10.1016/j.jcms.2024.06.022. <https://www.sciencedirect.com/science/article/pii/S1010518224002051>
4. Mena Alencastro SA, Rockenbach Binz Ordóñez MC, Mena Alencastro SA, Rockenbach Binz Ordóñez MC. Complicaciones en la extracción de terceros molares mandibulares incluidos, retenidos e impactados. Revisión de la literatura. *Odontología Vital*. 2023;(38):17–25. http://www.scielo.sa.cr/scielo.php?script=sci_abstract&pid=S1659-07752023000100017&lng=en&nrm=iso&tlng=es
5. Erismen Agan B, Uyanik LO, Donmezer CM. Comparison of the postoperative effect of low laser therapy and platelet rich fibrin on mandibular third molar surgery: a randomized study. *BMC Oral Health*. 2025; 25(1):427. doi:10.1186/s12903-025-05828-3 <https://pubmed.ncbi.nlm.nih.gov/40134000/>
6. Jamjoom AG. From Healing to Regeneration: A Comprehensive Review of the Efficacy of Platelet-Rich Fibrin in Periodontal Plastic Surgery Procedures. *Cureus*. 2024 Sep 12;16(9):e69287. doi: 10.7759/cureus.69287. <https://pmc.ncbi.nlm.nih.gov/articles/PMC11392565/>
7. Hernández-López A, Lorena-Olvera M, Maldonado-Guereca MDJ, Gómez Palacio-Gastélum M, Vargas-Chávez N. Fotobiomodulación como coadyuvante en la reducción del dolor postoperatorio en la cirugía de terceros molares. Revisión sistemática. *Rev Odont Mex*. 2024;26(4). doi:10.22201/fo.1870199xp.2022.26.4.83318 <https://revistas.unam.mx/index.php/rom/article/view/83318>
8. Starzyńska A, Kaczoruk-Wieremczuk M, Lopez MA, Passarelli PC, Adamska P. The Growth Factors in Advanced Platelet-Rich Fibrin (A-PRF) Reduce Postoperative Complications after Mandibular Third Molar Odontectomy. *International Journal of Environmental Research and Public Health*. 2021;18(24):13343. doi:10.3390/ijerph182413343 <https://www.mdpi.com/1660-4601/18/24/13343>
9. Torres da Silva M, de Almeida Barros Mourão CF, Mello-Machado RC, Montemezzi P, de Lima Barbosa R, Sartoretto SC, et al. Effects of Leukocyte-Platelet-Rich Fibrin (L-PRF) on Pain, Soft Tissue Healing, Growth Factors, and Cytokines after Third Molar Extraction: A Randomized, Split-Mouth, Double-Blinded Clinical Trial. *Applied Sciences*. 2021;11(4):1666. doi:10.3390/app11041666 <https://www.mdpi.com/2076-3417/11/4/1666>
10. Öhrnell Malekzadeh B, Öhrnell LO, Widmark G, Beigi RM, Ivanoff CJ. Effects of platelet-rich fibrin on outcomes following mandibular third molar removal: a randomized controlled clinical trial. *International Journal of Oral and Maxillofacial Surgery*. 2025;54(11):1131–7. doi:10.1016/j.ijom.2025.06.007 <https://www.sciencedirect.com/science/article/pii/S090150272501327X>
11. Moraes RP, Costa FWG, Silva PG de B, Carvalho FSR, Paz JERM, Matos GC, et al. Impact of L-PRF on pain and healing outcomes in lower third molar surgery: a randomized split-mouth trial. *Braz Oral Res*. 2024;38:e089. doi:10.1590/1807-3107bor-2024.vol38.0089 <https://pubmed.ncbi.nlm.nih.gov/39292127/>
12. Bahadur R, AA, Salam S, Kulkarni V, D NK, Karande V, et al. Effect of platelet-rich fibrin in enhancing healing after impacted mandibular third molar extractions: A randomized controlled trial. *Bioinformation*. 2025;21(11):4167–72. doi:10.6026/973206300214167 <https://pmc.ncbi.nlm.nih.gov/articles/PMC12880118/>
13. Iftikhar I, Singh S, Bhardwaj A, Kaur M, Shrivastava PK, Monga N, et al. Role of platelet-rich fibrin in soft and hard tissue healing after impacted third molar surgery: A triple-blind split-mouth randomized controlled clinical trial. *J Dent Res Dent Clin Dent Prospects*. 2024;18(4):284–90. doi:10.34172/joddd.41122 <https://pmc.ncbi.nlm.nih.gov/articles/PMC11786011/>

14. Aliberti A, Mariniello M, Bergaminelli M, Dolce P, Gargiulo D, Sammartino G, et al. Using injectable Platelet-Rich fibrin to improve recovery after impacted lower third molar extraction: a randomized controlled clinical trial. *Clin Oral Investig.* 2025;29(10):467. doi:10.1007/s00784-025-06563-3 <https://pubmed.ncbi.nlm.nih.gov/40971054/>
15. Zwitter K, Kirnbauer B, Truschnegg A, Jakse N, Wolf A, Sokolowski A, et al. Effectiveness of platelet-rich fibrin in third molar extractions: a randomized controlled split-mouth study. *Clin Oral Investig.* 2024;28(11):615. doi:10.1007/s00784-024-06002-9 <https://pubmed.ncbi.nlm.nih.gov/39467892/>
16. Mathialagan Kalai Selvam L, M A, Lakshmanan S, Kumar SP. Effectiveness of Advanced Platelet-Rich Fibrin on Postoperative Sequelae for Impacted Mandibular Third Molar Surgery: A Prospective Study. *Cureus.* 2024. doi:10.7759/cureus.52297 <https://www.cureus.com/articles/204159-effectiveness-of-advanced-platelet-rich-fibrin-on-postoperative-sequelae-for-impacted-mandibular-third-molar-surgery-a-prospective-study>
17. Starch-Jensen T, Giordano R, Alsadi DM, Bruun NH, Arendt-Nielsen L. Patient perceptions of recovery following surgical removal of an impacted mandibular third molar and application of advanced platelet-rich fibrin: a prospective randomized controlled clinical trial. *International Journal of Oral and Maxillofacial Surgery.* 2026;55(3):373–84. doi:10.1016/j.ijom.2025.10.002 <https://www.sciencedirect.com/science/article/pii/S0901502725014699>
18. Momeni E, Barati H, Arbabi MR, Jalali B, Moosavi MS. Low-level laser therapy using laser diode 940 nm in the mandibular impacted third molar surgery: double-blind randomized clinical trial. *BMC Oral Health.* 2021;21(1):77. doi:10.1186/s12903-021-01434-1 <https://pubmed.ncbi.nlm.nih.gov/33602198/>
19. Camolesi GCV, El Kattan AS, Lopez-Lopez J, Blanco-Carrión A, García-García A, Gándara-Vila P, et al. Pain, Oedema and Trismus Responses Following Photobiomodulation Therapy Immediately After Lower Third Molar Extraction: Results of a Randomized, Double-Blind and Split Mouth Clinical Trial. *J Evid Based Dent Pract.* 2025;25(1):102080. doi:10.1016/j.jebdp.2024.102080 <https://pubmed.ncbi.nlm.nih.gov/39947773/>
20. Rujano-Salinas J, Pérez A, Ramirez A, Moreno-Garces, Bernotti A, Machado D, et al. Photobiomodulation as an adjuvant for pain relief and healing pre-orthodontic mandibular third molar surgery: double-blinded randomized clinical trial. *Saudi Dent J.* 2026;38(2):6. doi:10.1007/s44445-025-00098-9 <https://doi.org/10.1007/s44445-025-00098-9>
21. Isolan CP, Kinalski M de A, Leão OA de A, Post LK, Isolan TMP, dos Santos MBF. Photobiomodulation therapy reduces postoperative pain after third molar extractions: A randomized clinical trial. *Med Oral Patol Oral Cir Bucal.* 2021;26(3):e341–8. doi:10.4317/medoral.24228 <https://pmc.ncbi.nlm.nih.gov/articles/PMC8141316/>
22. Pereira DA, Bonatto MS, Santos S de S, Mendes PGJ, Sales E Pessoa R, de Oliveira GJPL. Comparison of different dual-wavelength photobiomodulation protocols application in third molar extractions. A split-mouth randomized controlled trial. *Photodiagnosis Photodyn Ther.* 2024;46:104054. doi:10.1016/j.pdpdt.2024.104054 <https://pubmed.ncbi.nlm.nih.gov/38503387/>
23. Uzeda MJ, Silva AM, Costa LN, Brito FS, Fernandes GV, Resende RF. Evaluating the effectiveness of low-level laser therapy in patients undergoing lower third molar extraction: A double-blinded randomized controlled trial. *Med Oral Patol Oral Cir Bucal.* 2025;30(1):e129–34. doi:10.4317/medoral.26894 <https://www.medicinaoral.com/medoralfree01/aop/26894.pdf>
24. Yüksek MN, Eroğlu CN. Clinical evaluation of single and repeated sessions of photobiomodulation with two different therapeutic wavelengths for reducing postoperative sequelae after impacted mandibular third molar surgery: a randomized, double-blind clinical study. *J Appl Oral Sci.* 2021;29:e20210383. doi:10.1590/1678-7757-2021-0383 <https://pubmed.ncbi.nlm.nih.gov/34787280/>
25. Şen E, Balel Y. Does Laser-LED Photobiomodulation Therapy Alleviate Swelling, Pain, and Trismus Following Impacted Third Molar Extraction? *Cumhuriyet Dental Journal.* 2025;28(1):115–21. doi:10.7126/cumudj.1615267 <http://dergipark.org.tr/en/doi/10.7126/cumudj.1615267>
26. Sekerci E, Schiefersteiner M, Wiedemeier D, Valdec S. Is Low-Level Laser Treatment Effective in Reducing Pain, Swelling, and Trismus After Removing Impacted Maxillary and Mandibular Third Molars? *J Oral Maxillofac Surg.* 2025;874–84. <https://dx.doi.org/10.1016/j.joms.2025.03.017>
27. Giovannacci I, Romeo U, Spadari F, Biasotto M, Pentenero M, Pedrazzi G, et al. An Italian multicenter triple-blind randomized controlled trial on photobiomodulation after third molar extraction (BIOTOTT). A study of Italian society for laser in dentistry (SILO). *Med Oral Patol Oral Cir Bucal.* 2026;31(2):e363–72. doi:10.4317/medoral.27834 <https://pmc.ncbi.nlm.nih.gov/articles/PMC12983389/>
28. Vargas A, Perales A, Villafañe A, Manresa C, Villarroel-Dorrego M. Photobiomodulation as an adjuvant in the management of edema and postoperative pain in patients undergoing superior and inferior third molar extraction. Randomized controlled clinical trial. *Rev Esp Cirug Oral y Maxilofac.* 2024; 46(1): 28-35. http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1130-05582024000100005&lng=es
29. Shruthi TM, Shetty AD, Akash KS, Ahmed F, Shetty N, Singarapu R. Evaluation of effects of platelet-rich fibrin on treatment outcomes after impacted mandibular third molar surgery: A randomized controlled clinical study. *National Journal of Maxillofacial Surgery.*

- 2022;13(Suppl 1):S46. doi:10.4103/njms.NJMS_16_20
https://journals.lww.com/njms/fulltext/2022/13001/evaluation_of_effects_of_platelet_rich_fibrin_on.7.aspx
30. Konuk B, Senturk MF. Three-Dimensional evaluation of the effect of platelet-rich fibrin on edema in lower impacted third molar surgery performed with piezosurgery. *Niger J Clin Pract.* 2022;25(7):1107–14. doi:10.4103/njcp.njcp_1700_21
<https://pubmed.ncbi.nlm.nih.gov/35859473/>
 31. Barone S, Bennardo F, Salvati M, Antonelli A, Giudice A. Evaluation of the usefulness of platelet-rich fibrin (PRF) in mandibular third molar surgery with 3D facial swelling analysis: a split-mouth randomized clinical trial. *Head Face Med.* 2025;21(1):8. doi:10.1186/s13005-025-00482-0 <https://link.springer.com/content/pdf/10.1186/s13005-025-00482-0.pdf>
 32. Momeni E, Kazemi F, Sanaei-Rad P. Extraoral low-level laser therapy can decrease pain but not edema and trismus after surgical extraction of impacted mandibular third molars: a randomized, placebo-controlled clinical trial. *BMC Oral Health.* 2022;417–417. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9490913>
 33. Trybek G, Rydlińska J, Aniko-Włodarczyk M, Jaroń A. Effect of Platelet-Rich Fibrin Application on Non-Infectious Complications after Surgical Extraction of Impacted Mandibular Third Molars. *Int J Environ Res Public Health.* 2021;18(16):8249. doi:10.3390/ijerph18168249 <https://pubmed.ncbi.nlm.nih.gov/34443998/>
 34. Yuan Z, Xu Z, Wan X, Zhang T. Er:YAG and Nd:YAG-based low-level laser therapy (LLLT) with medical collagen improve third-molar extraction wound healing: a randomized controlled trial. *Lasers Med Sci.* 2025;40(1):512. doi:10.1007/s10103-025-04763-7
<https://link.springer.com/content/pdf/10.1007/s10103-025-04763-7.pdf>
 35. Karsici S, Balaban E. The effect of preoperative low-level laser therapy on pain, swelling, and trismus associated with mandibular third molar extraction. *BMC Oral Health.* 2025;306–306. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11866568>
 36. Asif M, Ullah A, Mujtaba H, Umer MF, Khurshid Z. Comparative Study of Frequency of Alveolar Osteitis, with and without using Platelet-Rich Fibrin in Mandibular Third Molar Surgery. *International Journal of Dentistry.* 2023;2023(1):2256113. doi:10.1155/2023/2256113
<https://onlinelibrary.wiley.com/doi/abs/10.1155/2023/2256113>
 37. Starch-Jensen T, Giordano R, Alsadi DM, Bruun NH, Arendt-Nielsen L. Long-term Assessment of Oral Health-Related Quality of Life Following Surgical Removal of Mandibular Third Molar with Advanced Platelet-rich Fibrin: a Single-blinded Randomized Controlled Trial. *J Oral Maxillofac Res.* 2026;17(1):e1. doi:10.5037/jomr.2026.17101
<https://www.ejomr.org/JOMR/archives/2026/1/e1/v17n1e1ht.htm>
 38. Ruiz EMM, Alvarado EAM, Guzmán EER, Martínez TML. Efectividad del plasma rico en fibrina en extracciones de terceros molares. Revisión sistemática. *Revista Ciencias de la Salud y Educación Médica.* 2022;4(5):16–21. <https://revistas.unan.edu.ni/index.php/Salud/es/article/view/4295/6671>
 39. Xiang X, Shi P, Zhang P, Shen J, Kang J. Impact of platelet-rich fibrin on mandibular third molar surgery recovery: a systematic review and meta-analysis. *BMC Oral Health.* 2019 Jul 25;19(1):163. doi: 10.1186/s12903-019-0824-3. <https://pubmed.ncbi.nlm.nih.gov/31345203/>
 40. Zhu J, Zhang S, Yuan X, He T, Liu H, Wang J, Xu B. Effect of platelet-rich fibrin on the control of alveolar osteitis, pain, trismus, soft tissue healing, and swelling following mandibular third molar surgery: an updated systematic review and meta-analysis. *Int J Oral Maxillofac Surg.* 2021 Mar;50(3):398–406. doi: 10.1016/j.ijom.2020.08.014. <https://pubmed.ncbi.nlm.nih.gov/32950350/>
 41. Hernández-López Angélica, Lorena-Olvera Mayra, Maldonado-Guereca Manuel de Jesús, Gómez Palacio-Gastélum Marcelo, Vargas-Chávez Nohé. Fotobiomodulación como coadyuvante en la reducción del dolor postoperatorio en la cirugía de terceros molares. Revisión sistemática. *Rev. Odont. Mex;* 26(4): 32-39. http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1870-199X2022000400032&lng=es.
 42. Duarte de Oliveira FJ, Brasil GMLC, Araújo Soares GP, Fernandes Paiva DF, de Assis de Souza Júnior F. Use of low-level laser therapy to reduce postoperative pain, edema, and trismus following third molar surgery: A systematic review and meta-analysis. *J Craniomaxillofac Surg.* 2021 Nov;49(11):1088–1096. doi: 10.1016/j.jcms.2021.06.006. <https://pubmed.ncbi.nlm.nih.gov/34217567/>
 43. Camolesi GCV, Silva FFVE, Aulestia-Viera PV, Marichalar-Mendía X, Gándara-Vila P, Pérez-Sayáns M. Is the photobiomodulation therapy effective in controlling post-surgical side effects after the extraction of mandibular third molars? A systematic review and meta-analysis. *J Evid Based Dent Pract.* 2024 Jun;24(2):101983. doi: 10.1016/j.jebdp.2024.101983. <https://pubmed.ncbi.nlm.nih.gov/38821660/>

DECLARATION OF CONTRIBUTIONS

“Conceptualization and design: Paula León; Literature review: Paula León; Methodology and validation: Paula León; Formal analysis: Paula León; Investigation and data collection: Paula León; Resources: Paula León; Data analysis and interpretation: Paula León; Writing – original draft preparation: Paula León; Writing – review and editing: Paula León; Supervision: Paula León; Project administration: Paula León; Funding acquisition: Not applicable.”

CONFLICTS OF INTEREST

The authors declare that there were no conflicts of interest during the conduct of the research. The manuscript was submitted exclusively to the Scientific Journal "Especialidades Odontológicas UG" for review and publication.

FUNDING

The authors declare that the research was conducted using their own funds.

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HOW TO CITE:

León Velalcázar P. Platelet-rich fibrin and photobiomodulation in postoperative recovery after third molar extraction: a narrative review. *Revista Científica Especialidades Odontológicas UG.* 2026:9(2):51-63