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ARTICLE REVIEW

Active periodontal maintenance therapy to preserve dentition in patients treated for periodontitis

Terapia de mantenimiento periodontal activa para conservar la dentición en pacientes tratados por periodontitis

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ABSTRACT

Introduction: active periodontal maintenance therapy seeks to limit the inflammatory response by mechanically removing bacterial deposits.
Objective: to determine the effectiveness of active periodontal maintenance therapy to preserve dentition in patients treated for periodontitis.
Methods: a concise search was carried out on the published literature based on a period of time between the months of June and September 2023 with the implementation of internet websites, such as Pubmed, Scielo, Scoopus, Elsevier. Information was limited in articles published in English and Spanish. The articles were analyzed by their titles, year of publication between 2018 and 2023.
Results: active periodontal maintenance therapy (SPT) is defined as a comprehensive treatment depending on the individual risk of each patient, its main objective is to minimize the recurrence of the evolution of periodontal disease in patients previously treated for periodontitis, minimize tooth loss and the appearance of other diseases associated with the periodontium. Its application is a critical factor for the success of the treatment; Thus, the use of continuous treatment with periodic intervals is based on actions to control bacterial plaque, favoring the repair of periodontal tissues during dentition.
Conclusions: active periodontal maintenance therapy is an essential part of the treatment by allowing periodontal stability to be maintained. The data collected show that patients can benefit from each periodontal follow-up visit, since they obtain personalized and precise evaluations.

Keywords: Periodontitis; Alveolar Bone Loss; Periodontics.

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RESUMEN

Introducción: la terapia de mantenimiento periodontal activa busca limitar la respuesta inflamatoria mediante la eliminación mecánica de los depósitos bacterianos.
Objetivo: determinar la eficacia de la terapia de mantenimiento periodontal activa para conservar la dentición en pacientes tratados por periodontitis.
Métodos: se realizó una búsqueda concisa sobre la literatura publicada en base a un periodo de tiempo entre los meses de junio y septiembre de 2023 con la implementación de sitios web de internet, tales como *Pubmed, Scielo, Scoopus, Elsevier*. Se limitó la información en artículos publicados en el idioma inglés y español. Los artículos fueron analizados por medio de sus títulos, año de publicación entre 2018 a 2023.
Resultados: la terapia de mantenimiento periodontal activa (SPT) se define como un tratamiento integral dependiente del riesgo individual de cada paciente, tiene como objetivo principal el minimizar la recurrencia de la evolución de enfermedad periodontal en pacientes tratados previamente por periodontitis, minimizar la pérdida de dientes y la aparición de otras enfermedades asociadas al periodonto. Su aplicación es un factor crítico para el éxito del tratamiento; así, el empleo de un tratamiento continuo con intervalos periódicos se basa en acciones para el control de placa bacteriana favoreciendo la reparación de los tejidos periodontales durante la dentición.
Conclusiones: la terapia de mantenimiento periodontal activa forma parte esencial del tratamiento al permitir mantener estabilidad periodontal, los datos recopilados evidencian que los pacientes pueden beneficiarse en cada visita de seguimiento periodontal, puesto que obtiene evaluaciones personalizadas y precisas.

Palabras clave: Periodontitis; Pérdida Ósea Periodontal; Medicina Periodontal.

INTRODUCTION

Periodontitis is a multifactorial chronic inflammatory disease associated with the accumulation of biofilms that progressively lead to the irreversible destruction of periodontal tissues. It has positioned itself as the sixth most common disease worldwide with a prevalence in the adult population of 11 %.

In a susceptible host, the presence of proinflammatory cytokines, gram-negative periodontal pathogens known as the red complex, which include: Porphyromonas gingivalis, Tannerella para sythia, Treponema denticola, are evident. Its presence has been described in patients with periodontitis and deep periodontal pockets due to the existing imbalance between pathogenic bacteria, influence of local and environmental factors and the host's inflammatory immune response. Diagnostic features include: gingival inflammation, gingival discoloration, loss of attachment level, probing depth, mobility, bleeding, tooth migration, and radiographic evidence of alveolar bone decline.[1,2]

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In ancient times it was believed that the progression of this pathology was constant, that is, in high-risk individuals there was a loss of interproximal insertion between 0,1 and 1,0 mm, unlike moderate individuals with a loss of between 0,05 to 0,5 mm.[3] Currently, scientific evidence shows us that the period of progression of periodontitis is established in acute episodes of destruction in individual sites for a short time, followed by long stages of remission of the disease. In this way, the effective treatment to reduce the depth of the pockets and progressive loss of attachment is subgingival debridement in conjunction with plaque control, in addition to the implementation of a regular active therapy that allows maintaining its results.[2,4]

Active periodontal maintenance therapy (SPT) is defined as a comprehensive treatment depending on the individual risk of each patient, its main objective is to minimize the recurrence of the evolution of periodontal disease in patients previously treated for periodontitis, minimize tooth loss and the appearance of other diseases associated with the periodontium. Its application is a critical factor for the success of the treatment; Thus, the use of continuous treatment with periodic intervals is based on actions to control bacterial plaque, favoring the repair of periodontal tissues during teething and even in subsequent care by replacing them in case of loss.[1,5]

Among the general considerations, it is mentioned that periodontal maintenance therapy is the opportunity to stratify patients based on their individual risk, which should include: medical history, intraoral and extraoral soft tissue examination, dental examination , x-rays, periodontal reassessment, implant evaluation, removal of supra and subgingival biofilm, surgical interventions and the effectiveness of plaque control in which the patient is instructed to apply a correct brushing technique. The intervals of each procedure will depend on the individual risk of each patient, but therapies have been analyzed in ranges between 3,6 and 12 months of follow-up. In patients with a high-risk profile it is recommended to undergo control intervals every 3 months, in moderate risk, evaluation is indicated every six months. For all profiles, a comprehensive evaluation is recommended at least once a year.[6,7]

By analyzing the individual profile of each patient, it is determined that the risk of progression of periodontal disease is also established by systemic and local factors and the individuals' adherence to controls. The frequency of each appointment will depend on the severity with which each case occurred; poor compliance with active periodontal therapy leads to recurrent periodontitis along with subsequent tooth loss. While proper compliance with SPT recommendations allows patients to retain their teeth longer.[8,9]

Maintenance of SPT result

It has been suggested that to prevent the likelihood of reinfection caused by periodontal pathogens, pretreatment at the subgingival level should be implemented. Repeated instrumentation and continuous plaque removal maintains an impact on the reduction of periodontal pockets ≥4 mm and even ≥6 mm depending on the patient's level of adherence.[10] The application of active periodontal therapy, followed by weekly check-ups over a period of 6 months, has shown a significant reduction in probing depth and periodontal pockets. Likewise, at a microbiological level, a significant decrease in subgingival bacteria such as Porphyromonas gingivalis is revealed.[11]

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During each SPT session it is necessary to re-instruct the patient and motivate him for effective plaque control, which in turn includes mechanical plaque removal by the professional. With its successful application, the dentition can be maintained for a long time, but tooth loss is an event that can occur with low probability depending on the degree of the disease, such as generalized periodontitis and uncontrolled factors, among which stand out environmental, failing that.[12]

Periodontal and Dental Evaluation

The active periodontal therapy already mentioned above requires establishing oral hygiene appointments that evaluate oral hygiene indices, instructions to the patient about their hygiene and plaque control at the supragingival level, motivation, professional mechanical cleaning through subgingival debridement of plaque. The patient's periodontal and dental status is analyzed in ranges of three to six months in which individual plaque control is allowed, in addition to complete mouth disinfection.[13]

Periodontal risk analysis and SPT adherence

The evaluation of the probing depth is measured in four sites (mesio-vestibular, vestibular, disto-vestibular, palatal), if not subject to the recommended periods, it is recommended to evaluate it at least once a year.[14]

The percentage of sites that bleed and the number of sites with probing depth ≥5 are calculated. In cases, re-instrumentation of parts with the presence of pockets is necessary. The number of missing teeth, portion of alveolar bone lost in relation to the root of each tooth and age of the individual are taken into account. Sometimes, it is necessary to ask about treatment-modifying factors such as smoking; if applicable, ask about the number of cigarettes consumed per day and assign them to a high risk.[14,15]

The adherence of patients to treatment within the established time range of six months has been classified into various degrees of adherence, thus showing different intervals:

- Patients with complete compliance. (26 weeks)
- Partially adherent patients. (13 weeks)
- Patients with insufficient adherence. (Less than 13 weeks)
- Non-adherent patients. (≤ 1 time a year)

In this way, the level of adherence has been compared to the individual risk of each patient.[16]

METHODS

A concise search was carried out on the published literature associated with active periodontal maintenance therapy to preserve dentition in patients treated for periodontitis. The search was carried out based on a period of time between the months of June and September 2023 with the implementation of internet websites, such as Pubmed, Scielo, Scoopus, Elsevier.

Information was limited in articles published in English and Spanish. We use several search methods such as the use of keywords: (Periodontitis OR Periodontal bone loss OR follow-up care.) AND ("Periodontal medicine OR Aftercare"). The bibliographic references were analyzed with the implementation of Zotero software, whose objective was to eliminate cloned sources according to the data search. The articles were analyzed by their titles, year of publication between 2018 and 2023, keywords and abstract in order to obtain an accurate review of the sources and extract the necessary information effectively.

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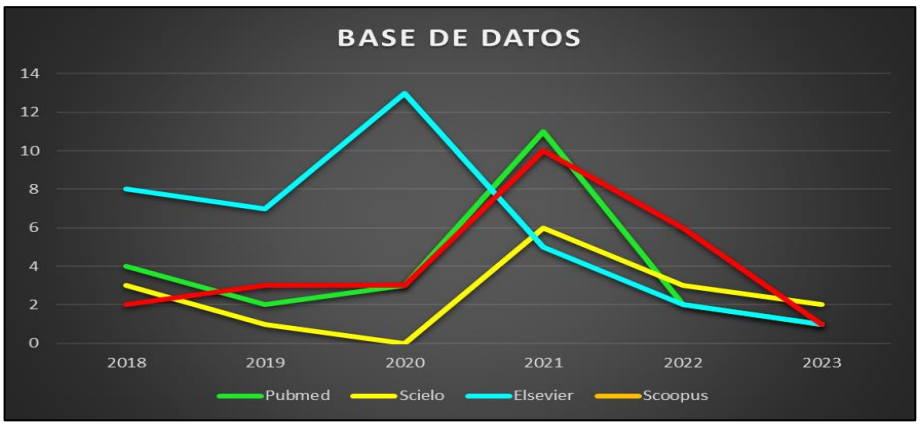
Of a total of 30 articles initially selected, 5 of these were excluded for having presented outdated information or not synchronized with the object of study.

Inclusion Criteria.

- Selected articles were incorporated between the years 2018 to 2023.
- Articles in English and Spanish were selected.
- Research that includes concise information on periodontal maintenance therapies where the dentition of patients treated with periodontitis is preserved was covered.
- Reliable research sources were selected for data collection such as: Pubmed, Scielo, Elsevier, Scoopus, Cochrane.

Exclusion criteria.

- Articles with a database from years after 2018 due to containing outdated information.
- Undergraduate thesis.
- Articles in languages other than English and Spanish.
- Information from dubious sources available on Internet websites.



Graph I. Frequency of articles by year and database.

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Table 1. Published articles of patients with periodontitis with periodontitis.

Author	Item Type	Patients With Periodontitis	Degree Of Periodontitis	F. Risk	Methodology	Treatment	Results
Melchiors P. et at, 2019) [17]	Randomized clinical trial	72	Mild - Severe	Smoking	Analysis and follow-up of 2 years.	Prophylaxis, Oral hygiene with cleaning, subgingival instrumentation.	Thanks to the treatments implemented, patients had better maintenance of their periodontium, preserving their teeth.
(Ramseier C. et at. 2018) [18]	Meta-Analysis	1000	Mild, moderate and advanced	Smoking Bad hygiene	Analysis and follow-up of 7 years.	Root probing and scaling, prophylaxis.	A total of 883 patients were identified who reduced their dentin loss by 53%.
(Kwon T.et at., 2021) [19]	**Goal -** Analysis	100	Moderate	Smoking, diabetes, occlusal trauma, etc.	7-month follow-up analysis.	Scaling and root planing	45% improvement in periodontal tissues with periodontal maintenance therapy.

DISCUSSION

Melchiors P et al.,[17] by examining seventy-two patients who suffered from periodontitis, following them for two years, in which a non-surgical periodontal maintenance therapy was applied that was based on prophylaxis, coronal scaling and oral hygiene instructions for several months, around 57 patients who were disciplined in following the orders of their treatment presented a great improvement based on their periodontal health, reducing the risk of tooth loss by 45 % despite suffering damage to their periodontal tissues due to periodontitis, it must be emphasized. that there were several environmental and systemic factors that were involved in the possible failure of the treatment if these were not controlled, which happened with the remaining 15 patients who were not successful in the treatment.

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Ramseier C et al.,[18] by examining a thousand patients of which 883 were successful in the implementation of non-surgical periodontal maintenance therapy, who were examined according to their age, sex and whether they had any bad habits or systemic diseases, in addition, they were followed up for around of seven years with the implementation of the treatment and successfully showed over the course of five years that there was no prevalence of tooth loss, but the same case did not occur in patients who suffered from bad smoking habits or not continuing with the treatment regimen.

Kwon T et al.,[19] According to their article, they followed up 100 patients for seven months who were subjected to the same periodontal therapy procedure, with recurring visits to see the weekly status of their oral hygiene, since being patients who suffered from periodontitis, they need to have discipline. older in the care of their oral hygiene, showed a success according to the treatment and it was shown that with good treatment and continuous check-ups, the periodontal health of the patients improves in a range of 67 % and the risk of tooth loss was reduced by a 36 %, however, also had their medical history checked, smoking habits, the presence of residual sites with deep probing depths, updated and obtained radiographs as necessary, once demonstrating that there are several factors that influence treatment failure if these are not controlled, however, it is shown that periodontal maintenance therapy and long-term follow-up are also crucial for treatment success and long-term retention of teeth.

The objective of this review was to evaluate the updated scientific information on the implementation of active periodontal maintenance therapy to preserve dentition in patients treated for periodontitis, focusing on the effectiveness of active periodontal maintenance therapy to preserve dentition in patients treated for periodontitis and the analysis of risk factors that affect the success of treatment.[20]

Periodontitis is a multifactorial chronic inflammatory disease which is associated with the accumulation of biofilms that contribute to the development of the destruction of periodontal tissues. It is recognized as the sixth most common disease worldwide with a prevalence in the adult population of 11 %. In a susceptible host, the presence of several bacteria that influence the progress of periodontal disease is evident, which are Porphyromonas gingivalis, Tannerella para sythia, Treponema denticola, and according to the evidence of several studies, their presence is observed in patients with periodontitis and pockets. deep periodontal diseases due to the imbalance between pathogenic bacteria. [21]

In turn, there are specific factors that contribute to complications such as: environmental or systemic that, when not controlled or treated, negatively influence the implementation of periodontal therapy to preserve the patients' dentition.

According to the results of the studies analyzed by different authors, they point out that patients with a history of periodontal disease need the implementation of periodontal maintenance on a regular and mandatory basis over a period of at least two to six months, in order to achieve the elimination of factors. that aggravate periodontal disease, severely affecting the periodontal tissues and as a chronic consequence the loss of teeth, but at the same time, also having a focus on the different factors to consider that also influence the disease, therefore , the medical history must be implemented in each patient to diagnose if they have any systemic disease that aggravates the situation such as diabetes, heart or respiratory problems or suffer from an infectious disease, however, also identify bad habits that usually occur recurrently in patients such as the habit of smoking, drinking excessive alcohol or having poor hygiene habits that contribute to the accumulation of dental biofilm.[23,23]

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This is why it is pointed out that to obtain the success of non-surgical periodontal therapy in patients with a history of periodontitis, a regular recovery interval is needed, in which timely detection and intervention is carried out on the factors contributing to the periodontal disease. reactivation of periodontal disease in patients who were previously treated for periodontitis, since by not stopping the intervention of these factors, the presence of tooth loss could be observed in patients who did not comply with the discipline and follow-up of periodontal treatment or therapy, Unlike patients who were monitored and had recurring check-up appointments, a high reduction in tooth loss was observed. [24]

CONCLUSIONS

Non-surgical periodontal treatment is effective in reducing probing depth and inflammation, however, it is always required to follow it with regular active periodontal therapy that includes supragingival cleaning, subgingival re-instrumentation followed by patient instruction on maintenance of hygiene. oral. Active periodontal therapy constitutes a tool for the treatment of periodontitis and the search to preserve the dentition for longer periods of time in cases in which the patient adheres to the exposed treatment.

Conflict of interest statement
The authors declare that there are no conflicts of interest.

Author contributions
All authors participated in conceptualization, data curation, formal analysis, research, methodology, supervision, writing-original draft, writing-review and editing.

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