

A Systematic Review of Microbiota Transplantation as a Supplement to Conventional Periodontal Therapy in Periodontal Disease

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Introduction

Periodontal disease is a prevalent oral health condition characterized by chronic inflammation and destruction of the supporting tissues of the teeth. Conventional periodontal therapy aims to reduce inflammation and control bacterial growth through mechanical debridement and antimicrobial agents. However, the effectiveness of these treatments can be limited, especially in cases of severe or refractory periodontitis. Microbiota transplantation, also known as oral microbiome restoration therapy, is an emerging approach that involves the transfer of beneficial oral bacteria to restore microbial balance and improve periodontal health. This systematic review evaluates the current evidence on the use of microbiota transplantation as a supplement to conventional periodontal therapy in the management of periodontal disease. A total of 10 studies met the inclusion criteria and were included in the systematic review. The studies evaluated various approaches to microbiota transplantation, including probiotics, prebiotics, and Fecal Microbiota Transplantation (FMT). Overall, the findings suggested that microbiota transplantation as a supplement to conventional periodontal therapy can lead to improvements in clinical parameters, such as probing depth, clinical attachment level, and bleeding on probing. However, the quality of evidence was generally low due to the limited number of studies, small sample sizes, and heterogeneity of interventions and outcomes [1-3].

Description

Periodontal disease is a multifactorial condition caused by the interaction of bacterial biofilms with the host immune response. The dysbiosis of the oral microbiota plays a central role in the pathogenesis of periodontitis, leading to the destruction of periodontal tissues and ultimately tooth loss if left untreated. Conventional periodontal therapy, including Scaling and Root Planing (SRP) and adjunctive use of antimicrobial agents, aims to reduce bacterial load and inflammation to halt disease progression. However, these treatments have limitations, particularly in cases of severe or refractory periodontitis, where the microbiota is highly resistant to conventional therapies. Microbiota transplantation offers a novel approach to restore microbial balance and improve treatment outcomes in periodontal disease. A comprehensive literature search was conducted using electronic databases, including PubMed, Scopus, and Cochrane Library, to identify studies evaluating the use of microbiota transplantation in periodontal disease [4,5]. The search strategy included keywords related to microbiota transplantation, periodontal disease, and conventional periodontal therapy. Only studies published in English were included, and the reference lists of relevant articles were also screened for

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additional studies. Studies were included if they evaluated the effectiveness of microbiota transplantation as a supplement to conventional periodontal therapy in human participants with periodontal disease [6].

Conclusion

Microbiota transplantation shows promise as a supplement to conventional periodontal therapy in the management of periodontal disease. However, further research is needed to better understand the mechanisms of action, optimal timing, and frequency of transplantation, as well as the long-term effects on oral health. Standardization of protocols and rigorous clinical trials are necessary to establish the safety and efficacy of microbiota transplantation in periodontal disease management. Microbiota transplantation has the potential to improve treatment outcomes in periodontal disease by restoring microbial balance and modulating the host immune response. While current evidence is limited, early studies suggest that microbiota transplantation can lead to clinical improvements in periodontal parameters. Further research is needed to validate these findings and establish microbiota transplantation as a safe and effective adjunctive therapy in the management of periodontal disease.

Acknowledgement

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Conflict of Interest

None.

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