

Supportive Periodontal Therapy: A Cornerstone in Sustaining Periodontal Health

Dr. Rma Arya

MDS, Department of periodontology, Post Graduate Institute of Dental Sciences, Rohtak, Haryana, India

ABSTRACT

Background: Periodontitis is a chronic, multifactorial inflammatory disease characterized by the destruction of tooth-supporting tissues. While active periodontal therapy (APT) can effectively arrest disease progression, long-term stability hinges on Supportive Periodontal Therapy (SPT), which encompasses regularly scheduled maintenance visits to monitor and control disease recurrence.

Objective: This review aims to provide a comprehensive analysis of the principles, protocols, clinical outcomes and innovations related to SPT, highlighting its critical role in periodontal therapy.

Methods: A review of the contemporary scientific literature was conducted, focusing on clinical trials, systematic reviews and consensus reports relevant to the implementation and efficacy of SPT.

Results: Evidence indicates that SPT significantly improves tooth retention, reduces the incidence of recurrent periodontal pockets, and enhances the long-term prognosis of treated patients. SPT protocols must be individualized based on residual risk factors, including systemic conditions, smoking, plaque control, and disease severity.

Conclusion: SPT is indispensable in managing periodontitis as a chronic condition. Advances in diagnostics, host modulation, and digital tools are poised to enhance its effectiveness through personalized maintenance strategies.

Keywords: Supportive periodontal therapy, maintenance phase, periodontitis, tooth retention, risk assessment, host modulation, recurrence prevention

INTRODUCTION

Periodontal diseases, particularly periodontitis, present as chronic, site-specific infections triggered by dysbiotic microbial communities and sustained by an aberrant host inflammatory response. Active periodontal therapy (APT), which includes scaling and root planing, surgical access procedures, and systemic/local antimicrobial use, can halt active destruction; however, the disease's chronicity necessitates lifelong monitoring and intervention.

Supportive Periodontal Therapy (SPT) refers to a structured, preventive and therapeutic regimen following APT. It is aimed at preserving the health of the periodontium by preventing reinfection, monitoring risk factors and promptly identifying signs of disease recurrence. The inception of SPT recognizes periodontitis as a manageable chronic disease rather than an episodic condition.^{1,2}

Pathophysiological Basis for SPT

SPT is justified by the recognition that periodontal pathogens can recolonize the subgingival environment within weeks after debridement and host susceptibility to inflammation persists due to genetic and environmental modifiers.³ Moreover, unresolved or residual pockets, even after therapy, serve as potential niches for bacterial resurgence, leading to clinical deterioration if not periodically debrided and reassessed.⁴

Host immune dysregulation, particularly elevated levels of proinflammatory cytokines (IL-1 β , TNF- α) and matrix metalloproteinases (MMP-8, MMP-9), has been implicated in disease recurrence. SPT provides an opportunity to modulate these responses via adjunctive therapies and behavioural management.⁵

Clinical Goals and Components of SPT

The objectives of SPT extend beyond mere plaque control and include the following:

- Maintenance of clinical attachment and control of pocket reformation.

- Early detection of recurrence or new disease sites.
- Reinforcement of patient education and motivation.
- Reevaluation of risk profiles, including systemic and environmental factors.

The SPT protocol typically comprises:

1. Systemic and dental history update, including medications and systemic conditions (e.g., diabetes, cardiovascular disease).
2. Comprehensive periodontal examination, involving probing depths, clinical attachment levels, bleeding on probing (BOP), plaque scores, and tooth mobility.
3. Radiographic monitoring, indicated every 12–36 months depending on disease status.
4. Mechanical debridement, primarily supragingival and subgingival scaling.
5. Adjunctive therapy, including localized antimicrobials, host modulation agents, or laser therapy in persistent sites.
6. Personalized oral hygiene reinforcement, incorporating interdental aids, chemotherapeutics, and behavioural counselling.^{6,7,8}

Risk-Based Stratification and Frequency of SPT

The effectiveness of SPT is directly related to its customization based on individual risk. Several models, including the Lang and Tonetti risk assessment tool, stratify patients into low, moderate, and high-risk categories based on:

- Residual probing depths and BOP
- Number of teeth lost due to periodontitis
- Smoking status
- Systemic risk factors (e.g., HbA1c levels)
- Genetic predisposition
- Patient compliance

Accordingly, SPT intervals range from 3-month recalls for high-risk patients to 6–12 months for low-risk, well-controlled individuals.^{9,10}

Clinical Outcomes and Evidence-Based Efficacy

Longitudinal cohort studies have established that adherence to SPT results in superior long-term outcomes compared to non-maintained individuals. Axelsson and Lindhe reported that patients compliant with a 3-month recall protocol exhibited minimal tooth loss over 15 years, while non-compliant patients showed a significantly higher incidence of tooth loss and attachment loss.¹¹

Systematic reviews and meta-analyses support these findings, showing that regular SPT reduces tooth loss by up to 70% and recurrence of periodontitis by over 60% compared to irregular maintenance.^{12,13}

Challenges and Patient Compliance

Despite its proven efficacy, patient compliance with SPT remains a significant challenge. Studies indicate that 30–50% of patients do not adhere to recommended maintenance schedules beyond the first year post-therapy. Key barriers include:

- Lack of understanding of periodontal disease chronicity
- Perceived cost and time burden
- Psychological factors such as dental anxiety

Effective communication, risk visualization tools, and motivational interviewing have been shown to enhance compliance.¹⁴

Innovations in SPT

Several advances are reshaping the future of SPT:

1. Host Modulation Therapy (HMT)

Use of sub-antimicrobial dose doxycycline (20 mg BID) has been shown to inhibit MMP activity, reduce gingival inflammation, and improve clinical outcomes during SPT.¹⁵

2. Salivary Biomarkers and Chairside Diagnostics

Salivary tests for IL-1 β , MMP-8, and active *P. gingivalis* enzymes enable real-time assessment of disease activity, allowing clinicians to adapt SPT strategies more precisely.¹⁶

3. Artificial Intelligence and Digital Monitoring

AI algorithms can stratify risk and predict disease recurrence based on electronic health record data. Additionally, smartphone-based applications enhance remote patient monitoring and oral hygiene adherence.¹⁷

4. Photodynamic Therapy (PDT) and Lasers

Adjunctive use of PDT and diode lasers has been investigated for managing persistent bleeding sites during SPT, especially in refractory or high-risk individuals.¹⁸

CONCLUSION

Supportive Periodontal Therapy is the cornerstone of sustained periodontal health following active therapy. Its implementation must be personalized, risk-based, and dynamic, evolving with advances in biomarker diagnostics, host modulation, and digital tools. Clinicians must prioritize SPT within the broader framework of periodontal care to ensure long-term retention of natural dentition and control of inflammatory burden.

REFERENCES

- [1]. Pihlstrom BL, et al. Periodontal diseases. *Lancet*. 2005;366(9499):1809–1820.
- [2]. American Academy of Periodontology. Parameters of care. *J Periodontol*. 2000;71(5 Suppl):847–883.
- [3]. Socransky SS, Haffajee AD. The bacterial etiology of destructive periodontal disease. *Curr Opin Periodontol*. 1992;4:3–10.
- [4]. Haffajee AD, et al. Clinical parameters as predictors of destructive periodontal disease activity. *J Clin Periodontol*. 1983;10(3):257–265.
- [5]. Offenbacher S. Periodontal diseases: pathogenesis. *Ann Periodontol*. 1996;1(1):821–878.
- [6]. Wilson TG Jr. Compliance and its role in periodontal therapy. *Periodontol 2000*. 1996;12:16–23.
- [7]. Tonetti MS, Jepsen S, Jin L, Otomo-Corgel J. Impact of the global burden of periodontal diseases. *J Clin Periodontol*. 2017;44(5):456–462.
- [8]. Sanz M, et al. Maintenance therapy of the patient treated for periodontal disease. *J Clin Periodontol*. 2005;32(Suppl 6):130–133.
- [9]. Lang NP, Tonetti MS. Periodontal risk assessment (PRA). *Oral Health Prev Dent*. 2003;1(1):7–16.
- [10]. Heitz-Mayfield LJ. How effective is supportive periodontal therapy? *Periodontol 2000*. 2005;37:103–111.
- [11]. Axelsson P, Lindhe J. The significance of maintenance care. *J Clin Periodontol*. 1981;8(4):281–294.
- [12]. Chambrone L, et al. Tooth loss in patients under supportive periodontal therapy. *J Clin Periodontol*. 2010;37(9):789–801.
- [13]. Fardal Ø, et al. Long-term influence of periodontal maintenance therapy. *J Clin Periodontol*. 2004;31(12):1123–1127.
- [14]. Costa FO, et al. Patient compliance during supportive periodontal therapy. *J Periodontol*. 2015;86(4):456–465.
- [15]. Preshaw PM, et al. Subantimicrobial dose doxycycline as an adjunct to SRP. *J Clin Periodontol*. 2004;31(9):697–707.
- [16]. Giannobile WV, et al. Salivary diagnostics for periodontal diseases. *J Am Dent Assoc*. 2009;140(Suppl 2):6S–24S.
- [17]. Krois J, et al. Machine learning for predicting periodontal disease. *J Clin Periodontol*. 2021;48(1):49–59.
- [18]. Aurer A, et al. Photodynamic therapy in peri-implantitis lesions. *Clin Oral Implants Res*. 2005;16(6):623–628.