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Supportive Periodontal Therapy: A Review

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Abstract: ***Supportive Periodontal Therapy (SPT) is a critical aspect of long-term periodontal management, aimed at maintaining the health and stability of periodontal tissues following initial therapy. This review article comprehensively explores the principles, significance, and evolving approaches in Supportive Periodontal Therapy. Emphasizing the necessity of ongoing patient education, motivation, and collaboration between dental professionals and patients, the article delves into the various components of SPT, including regular clinical assessments, professional prophylaxis, and reinforcement of oral hygiene practices. Current literature on risk assessment, personalized treatment plans, and the integration of technological advancements in periodontal maintenance are critically examined. The article also addresses the impact of systemic factors, such as smoking and systemic diseases, on the outcomes of SPT. Emerging trends in periodontal maintenance, such as tele-dentistry and patient-centered care models, are explored to shed light on the future of supportive periodontal therapy. By synthesizing evidence-based practices and contemporary perspectives, this review aims to guide clinicians in optimizing the effectiveness of Supportive Periodontal Therapy, ultimately contributing to the long-term success of periodontal treatment and the overall well-being of patients.***

Keywords: Periodontal Maintenance, Supportive Periodontal Therapy, Long-term Periodontal Care, Periodontal Recall

1. Introduction

Periodontal disease is a major public health concern worldwide. According to the Global Burden of Disease Study, periodontal disease affects over 743 million people worldwide and is the sixth most prevalent disease globally. Periodontitis is a common chronic inflammatory disease affecting the supporting structures of teeth, including the gingiva, periodontal ligament, cementum, and alveolar bone. It is caused by the bacterial colonization of dental plaque biofilm, which triggers a host immune response leading to the destruction of the periodontium. If left untreated, periodontitis can result in tooth loss and systemic health complications, such as cardiovascular disease, diabetes, and preterm birth.[0-[3]

The primary goal of periodontal therapy is to eliminate the bacterial biofilm and control the inflammation to halt the disease progression and maintain periodontal health. The initial treatment, called periodontal therapy, includes scaling and root planing (SRP) to remove the calculus and bacterial deposits from the root surfaces and promote healing of the gingival tissues.[4]

Supportive Periodontal Therapy (SPT) plays a critical role in managing periodontal disease. SPT is a continuous, lifelong program of monitoring and supportive care provided to individuals who have completed active periodontal therapy (APT). SPT aims to maintain the results achieved from APT by preventing disease recurrence, slowing down disease progression, and preserving the dentition.[3]

SPT involves several components, including professional supragingival and subgingival biofilm removal, assessment of periodontal health status, and oral hygiene instructions. The frequency of SPT visits varies depending on the individual's risk factors and periodontal health status. Generally, SPT is performed every three to six months. SPT plays a critical role in the management of periodontal disease and expresses the essential need for corrective measures to support patient's own efforts to control the periodontal infections and to avoid re-infection.[5],[6]

2. Objective

The goals of supportive periodontal therapy can be categorized into periodontal objectives, therapeutic objectives, and general objectives. Periodontal objectives include preserving bone, maintaining stable clinical attachment levels, reinforcing proper home care, and ensuring a healthy and functional oral environment.[7]

Therapeutic objectives in supportive periodontal therapy aim to prevent the progression and recurrence of periodontal disease, reduce the incidence of tooth loss, and identify and treat other oral diseases or conditions. [7]

It is important to note that if subgingival biofilm is left behind during scaling, it can regrow within the periodontal pockets. The regrowth of subgingival biofilm is a slow process and may not cause immediate clinical signs of inflammation. Inadequate control of subgingival biofilm can lead to continued loss of attachment even without visible gingival inflammation. Therefore, regular recall visits and consistent oral hygiene practices are crucial for long-term stability of treatment outcomes.[8]

Risk Assessment

Supportive periodontal treatment involves monitoring and reducing etiological factors of periodontal diseases. Successful maintenance therapy requires recognizing risk factors that may trigger a return to active treatment. This includes continuous multi-level risk assessment and subject risk assessment.[7]

The risk assessment for recurrence of periodontitis is a complex process that requires the evaluation of multiple clinical conditions, with no single parameter taking precedence. Instead, a comprehensive assessment of all risk factors and indicators is essential. A functional diagram has

been devised to aid this evaluation, encompassing the following aspects: percentage of bleeding on probing, prevalence of residual pockets larger than 4 mm, tooth loss out of a total of 28 teeth, loss of periodontal support relative to the patient's age, systemic and genetic conditions, and environmental factors like cigarette smoking. By considering these various factors simultaneously, clinicians can achieve a more accurate and comprehensive understanding of the patient's risk for periodontitis recurrence and tailor appropriate preventive strategies.[10]

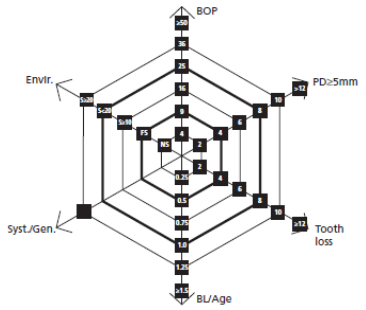


Figure 1: Functional diagram to evaluate the patient's risk for recurrence of periodontitis.

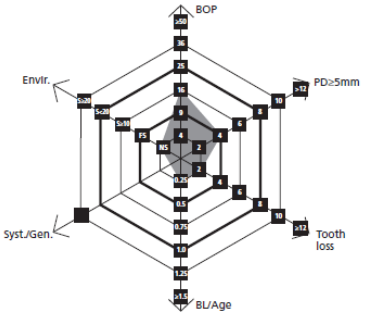


Figure 2: Functional diagram of a low-risk maintenance patient

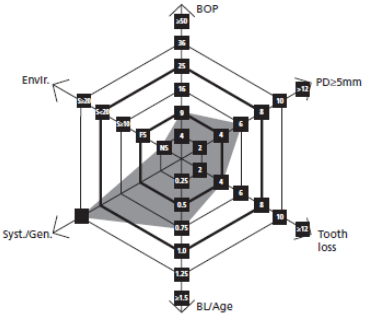


Figure 3: Functional diagram of a medium- risk maintenance patient

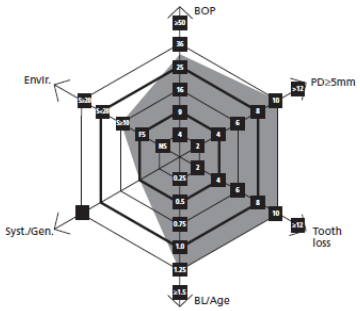


Figure 4: Functional diagram of a high risk maintenance patient.

The first year after periodontal therapy is crucial for establishing a recall pattern and reinforcing oral hygiene techniques in patients. It may take several months to accurately evaluate the outcomes of periodontal surgical procedures, leading to potential retreatment of areas with suboptimal results. Early stage treatment of overlooked etiologic factors is also common in first-year patients. Thus, the recall interval for these patients should not exceed 3 months. Different maintenance patient categories have suggested recall intervals based on their periodontal conditions. Patient improvement or relapse can lead to changes in classification and disease severity is determined by the arch with the worse condition.[11],[13]

Merin classification	Characteristics	Recall interval
First year	First year patient; routine therapy and uneventful healing	3 months
	First year patients; difficult case with complicated prosthesis, furcation involvement, poor crown-to-root ratios, or questionable, patient co-operation	1-2 months
Class A	Excellent results well maintained for 1 vear or longer Patient displays good oral hygiene, minimal calculus, no occlusal problems, no complicated prostheses, no remaining pockets, and no teeth with less than 50% alveolar bone remaining	6 months to 1 year
Class B	Generally good results maintained reasonably well for 1 year or more, but patient displays some of the following Factors; 1) Inconsistent or poor oral hygiene 2) Heavy calculus form 3) Systemic disease predisposes to periodontal breakdown 4) Some remaining pockets 5) Occlusal problems 6) Complicated prosthesis 7) Ongoing orthadontic therapy 8) Dental caries 9) Teeth with less than 50% alveolar bone 10)Smoking 11)Family history 12)More than 20% pockets bleeds on probing	3-4 months (decide recall interval based on numbers and severity of negative factors)
Class C	Generally poor results after periodontal theray or several negative factors from the following list. 1) Inconsistent on poor oral hygiene 2) Heavy calculus formation 3) Systemic diseases that 4) Predisposes to 2periodontal breakdown 5) Many remaining pockets 5, Occlusal problems 6) Complicated prosthesis 7) Recurrent dental caries	1-3 months (decide on a recall interval based on the number and severity of negative factors; consider retreating some areas or extracting severely involved teeth)

	8) Many teeth with less than 50% alveolar bone 9) Periodontal surgery indicated but not performed for medical, psychological or financial reasons 10) Condition too far advanced to be 11) improved by periodontal surgery 12) Smoking 13) Positive family history 14) More than 20% of pockets bleeds on probing	

The dental professional's role in supportive periodontal therapy

Periodontal maintenance therapy involves,

1) Debridement
2) Subgingival Irrigation
3) Air Polishing
4) Mouth Rinsing
5) Systemic Antibiotic Therapy
6) Maintenance Care Appointments

1) Debridement: Debridement includes mechanical debridement and the use of antiseptic agents by dental professionals. Supragingival calculus formation in patients can be effectively addressed with ultrasonic debridement, which is faster than manual methods. Additionally, 10% povidone-iodine antiseptic, such as Betadine (Moore Medical Corp), diluted with nine parts water, can be used as an irrigant during the procedure. [5-17]

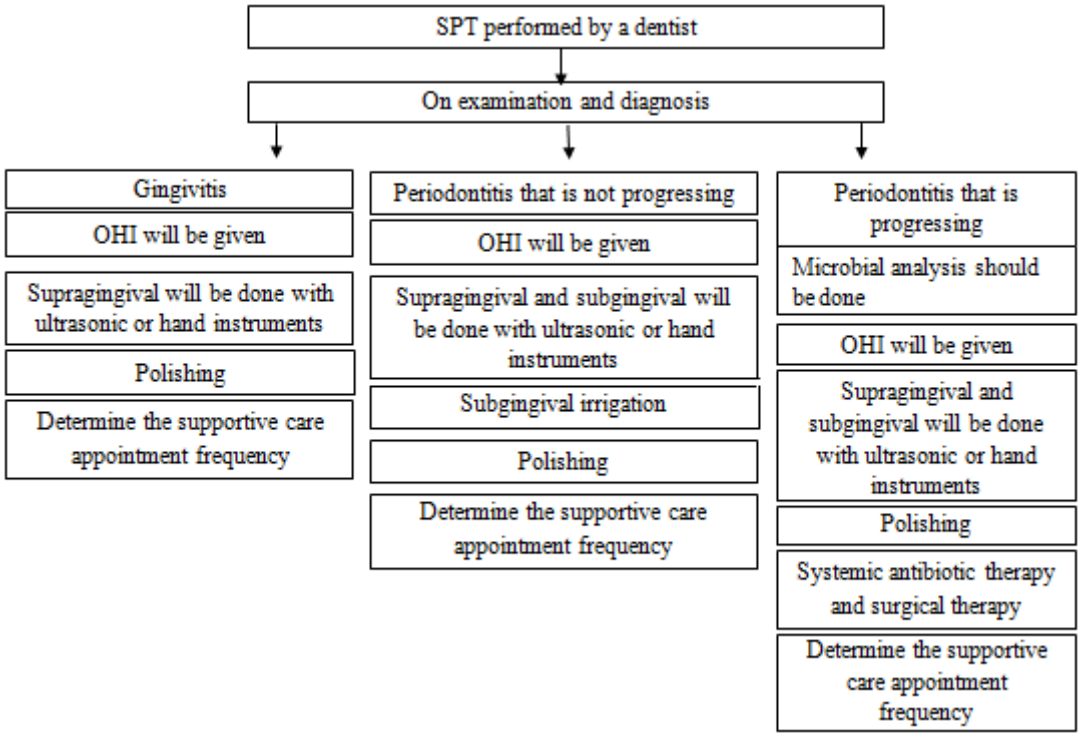
2) Subgingival Irrigation: Subgingival applications of various chemotherapeutic agents have been used as an adjunct to non-surgical periodontal treatment and preventive periodontal therapy. [17,18]

3) Air Polishing: In untreated periodontitis lesions with probing depths of 5-7 mm supragingival air polishing directed at 90° angle to each tooth surface for 10 seconds has been shown to significantly reduce the mean proportion of sub gingival cultivable pathogenic bacteria (from 26% to 5%) and motile morphotypes (from 13% to 2%) to the total bacterial count (Rams and Slots 1994). [19]

4) Mouth Rinsing : Chlorhexidine rising 10-15 ml of 0.12 to 0.2% solutions for 30 seconds twice daily is recommended to reduce supragingival plaque and combat periodontal pathogens in the entire oropharyngeal cavity.[19]

5) Systemic Antibiotic Therapy : Early approach to systemic antibiotics in periodontal treatment included mainly single drug therapies with tetracyclines, penicillins, metronidazole or clindamycin. Valuable combination therapies include metronidazole-amoxicillin (250-375 mg of each 3x daily for 8 days) for A. actinomycetemcomitans and various anaerobic periodontal infections, and metronidazole-ciprofloxacin (500 mg of each 2x daily for 8 days) for mixed anaerobic and enteric rod/pseudomonas periodontal infections.[20]

6) Maintenance Care Appointments : The frequency of maintenance care appointments varies depending on patient's periodontal needs and possible financial constraints.



Practical methods of evaluating periodontal disease status

1) Periodontal Probing
2) Bleeding on Probing
3) Radiographic Examination
4) Microbiological Examination

5) In Office Diagnostic Tests

Maintenance Program SPT Recall Hours Divided Into Three Parts;

The recall hour should be tailored to address individual patient needs. For patients with multiple teeth in both arches, the recall visit typically lasts around 1 hour and consists of three parts. Firstly, the patient's oral health is examined and re-evaluated. Secondly, necessary motivation, re-instructions, and maintenance treatment are provided. Lastly, the third part involves scheduling the patient for the next recall appointment, additional periodontal treatment (polishing), or restorative dental procedures (fluoride application) [20]

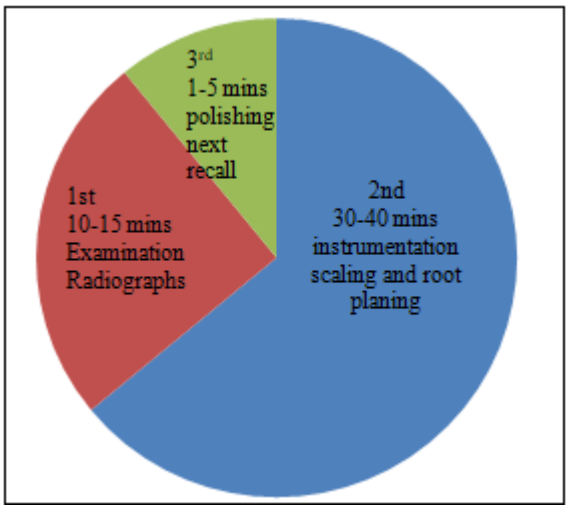


Figure 5: Maintenance program SPT (recall hours)

Supportive Periodontal Therapy (SPT) is an essential component of daily dental practice to maintain the periodontal health of patients. The recall hour for SPT is divided into four sections: Examination, Re-evaluation, and Diagnosis (ERD); Motivation, Re-instruction, and Instrumentation (MRI); Treatment of Re-infected Sites (TRS); and Polishing, Fluoride Application, and Determination of Recall Interval (PFD).

During ERD, a comprehensive evaluation of the patient's general health, including any changes in health status and medications, is recorded. The dental examination involves assessing oral hygiene, plaque levels, bleeding on probing indicating inflammation, pocket probing depth, clinical attachment level, re-infected sites with pus, existing dental restorations, and carious lesions

In the MRI section, patients are informed about their diagnostic results. Positive reinforcement is used for patients with good oral hygiene, while those with poor scores are motivated through an individualized approach.

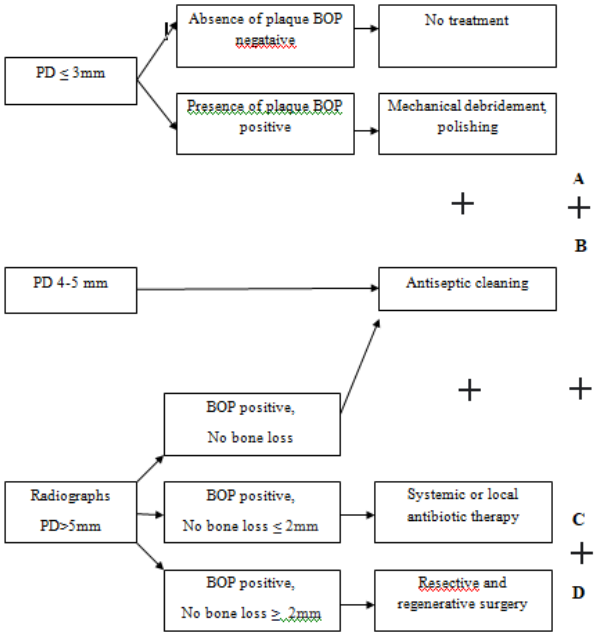
TRS involves treating re-infected sites, especially furcation sites or those with difficult access. Neglecting to treat these sites properly can result in continued loss of attachment.

The PFD section concludes the recall hour with polishing the dentition to remove remaining soft deposits and stains. Determining future SPT visits is based on the patient's risk assessment.

In summary, Supportive Periodontal Therapy in daily practice involves a thorough evaluation of patients' general and oral health, motivational approaches to reinforce good oral hygiene, targeted instrumentation of sites with inflammation, and appropriate treatment of re-infected sites. Polishing and fluoride application are also included, and the frequency of future SPT visits is determined based on the patient's risk assessment.[21]

Guidelines for follow-up of implant treated patients

The maintenance of dental implants requires frequent recall visits during the first year after placement, focusing on good oral hygiene routines and evaluating peri-implant mucositis or peri-implantitis. Probing should be gentle (not exceeding 0.15 N) to avoid tissue disruption. Baseline radiographs are taken 1 year after loading and annually thereafter. Implant debridement should use safe instruments like plastic or carbon-tipped ultrasonic scalers. Polishing should aim to remove plaque without altering the titanium surface. Subgingival irrigation with chemotherapeutic agents can be beneficial. Oral hygiene education is essential for proper home care. Chlorhexidine gluconate is effective in reducing plaque. The cumulative interceptive supportive therapy (CIST) protocol involves a combination of anti-infective therapies for peri-implantitis treatment, based on clinical and radiographic diagnosis. [22]



Steps for Follow-up of Implant Treated Patients

Compliance

The success of patient compliance in dental care can be enhanced through various strategies. Simplifying the required behavior and accommodating patient suggestions are crucial factors. Effective communication, appointment reminders, and keeping records of compliance are essential. Providing written information about the disease process and the patient's role in treatment improves compliance. Positive reinforcement and identifying potential non-compliers are effective approaches. Additionally, the active involvement of dentists in encouraging compliance is beneficial.

The average patient struggles to change oral hygiene habits, often leading to non-compliance even after receiving oral hygiene instruction. Glavind et al. (1983) found that providing positive feedback to adults resulted in improved plaque and bleeding scores compared to controls; however, discontinuing feedback led to a decline in performance. Schwartz (1962) reported that 2/3rd of patients drop out of recommended oral hygiene regimens within 3 months, emphasizing the importance of effective communication and demonstrating desired skills for successful self-care. Dr. Wilson et al. (1984) observed only 16% compliance with suggested supportive periodontal treatment intervals, with 34% never returning for maintenance. Johnsson et al. (1984) found that patients with moderate periodontitis who did not fully comply with maintenance schedules still showed improved plaque and bleeding scores due to improved oral hygiene after scaling and root planning.

In summary, Regular periodontal maintenance, including professional monitoring, debridement, fluoridation, and home care, is crucial for the sustained success of periodontal therapy. Supportive periodontal therapy aids in controlling inflammatory periodontal diseases, and its effectiveness lies in patient compliance and collaboration with the dental team. Periodontal maintenance is essential for patients with systemic conditions impacted by oral infections. Successful maintenance reduces the risk of oral diseases and systemic complications, promoting long-term dental and implant health. Dental hygienists and therapists play a key role in educating patients and providing safe implant maintenance. Maintenance intervals should be customized based on individual patient evaluation and disease status, ensuring preservation of dentition in health and function.[22]

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Author Profile

Meet Dr Karthik Dhinoja, a dedicated dental professional on a journey to master periodontology. His dedication extends beyond clinics and lectures. Dr. Karthik Dhinoja has compiled valuable periodontal health insights to help the patients and peers.