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Short Communication

A modified non-surgical periodontal therapy (NSPT) protocol

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1. Introduction

Periodontal disease is primarily treated non-surgically with non-surgical periodontal therapy (NSPT), which treats the microbial biofilm, reduces inflammation, and prevents additional tissue destruction. Although treatment results vary considerably depending on how the operator performs the procedure, anatomic complexities, compliance with oral hygiene instructions from the patient, and the patient's own immune response are the primary reasons for these variations. As a result of these challenges, refined, standardized, and patient-centred approaches to NSPT are critical for maximising predictability and success in the clinical treatment of periodontal disease.

In the past few years, technological advances in adjunctive therapies have greatly enhanced the options available for performing NSPT. Technologies such as low-abrasive air polishing, advanced ultrasonic instrumentation, localised antimicrobial treatments, and photobiomodulation allow periodontal treatment to be completed with smaller instruments with less pain to the patient. This publication provides an updated Modified NSPT Protocol that includes these adjunctive technologies in a streamlined manner so that both biofilm disruption and periodontal healing are optimised.

2. Modified NSPT Protocol

The proposed Modified Non-Surgical Periodontal Therapy (NSPT) Protocol integrates a sequence of evidence-based mechanical, chemical, and behavioural strategies aimed at enhancing biofilm disruption, reducing inflammation, and improving overall periodontal healing. Each step is designed to standardize clinical procedures while accommodating patient-specific needs.

2.1. Comprehensive pre-therapy assessment

A thorough baseline evaluation ensures that therapy is individualized and risk-based. Full-mouth periodontal charting—including probing depths, clinical attachment levels, and bleeding scores—provides a detailed map of disease severity. Radiographic evaluation can help identify patterns of bone loss, furcation involvement, and anatomical difficulties during treatment planning. Along with this evaluation, a separate risk profile assessment will be conducted based on certain risk factors including smoking status, glycemic control of diabetic patients and the estimated salivary biomarker levels if available, which will assist in predicting the anticipated treatment response.

2.2. Biofilm disclosure & patient instruction

To be successful with periodontal care, you will have to actively participate in your treatment program. You can identify areas that do not have enough cleaning after an

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appointment by using two-color disclosing solutions to see where your plaque has been found and how long this plaque has been there. With this information, you can receive personalized instructions on how to clean your teeth more effectively, including proper techniques for brushing and x Cleaning twice a day! Negative photo on your teeth means a poor chance of success from therapy.

2.3. Quadrant-wise ultrasonic debridement with low-abrasive air polishing

The first step to the mechanical debridement process is low-force air polishing utilizing erythritol or glycine powder to break up the biofilm present on the surfaces of teeth as well as in the root concavities and pockets (around 5 mm in depth). The air polishing process removes all microorganisms from the tooth surface (i.e., including the biofilm) allowing for greater visibility during the scaling process and for reduction of bacteria from the tooth before scaling is performed.

After the air polishing procedure has been completed, an ultrasound piezoelectric debridement procedure will be performed on the teeth using extremely slim, minimally invasive tips to gain maximum access to deep periodontal pockets and to complex root anatomy with minimal trauma to the tooth surface.

2.4. Adjunctive subgingival irrigation

The subgingival irrigation process using an Irrigation solution after completing the mechanical debriding will help to further reduce the number of disease-causing bacteria within the gingival pocket. Subgingival agents can be used at this time (i.e., chlorhexidine 0.12%, herbal preparations, or oxidizing agents) to assist in the elimination of any remaining pathogens that may remain and will aid in the promoting of healing and provide an Antimicrobial Effect during the first phase of healing.

2.5. Host-Modulation or local antimicrobials (Case-Dependent)

In situations where there is ongoing inflammation or where individuals are more susceptible to developing an illness, additional measures to change how our bodies react should be considered. At sub-antimicrobial concentrations, doxycycline will limit the inflammatory response produced by our bodies. Antimicrobial delivery devices that can directly target areas of advanced periodontal disease, such as chlorhexidine biochips and minocycline microspheres, should be placed in areas that do not respond to other treatments in order to ensure that antimicrobial substances remain in contact with tissue for long periods of time.

2.6. Photobiomodulation or diode laser for inflammation control

An optional adjunct, photobiomodulation delivered with diode lasers (wavelengths of 810-940 nm), may be beneficial to stimulate healing of periodontal tissues. Benefits of laser treatment include reduced bacterial counts, increased blood flow, and a reduction in gingival inflammation. Appropriate use of laser therapy can improve comfort and speed up the healing process for patients.

2.7. Structured re-evaluation at 4–6 weeks

As part of the modified procedures, a systematic, re-evaluation must occur approximately 4-6 weeks after initial treatment. This re-evaluation should assess key parameters such as pocket depth, bleeding on probing, plaque levels, and overall clinical improvement. The identification of persistent and/or non-responding sites will then permit the appropriate retreatment (revisit these sites), the need for local delivery of antimicrobial agent, or further diagnostic procedures to consider.

3. Clinical Significance

Minimal invasiveness, precision instrumentation, and new adjunctive therapies are key characteristics of this new NSPT protocol. The NSPT protocol utilizes advanced biofilm disruption techniques, along with host modulating strategies to allow for optimal pocket reduction, (bleeding & healing), and all of which will help improve the overall experience of patients. For those at high-risk due to diabetes, smoking, or aggressive biofilm production, the NSPT protocol will work particularly well.

4. Conclusion

In conclusion, this new NSPT provides a structured, evidence-based (scientifically based) model to improve traditional (non-surgical) periodontal treatment. The addition of air polishing, adjunctive antimicrobials, and new, modern laser-assisted techniques will have a tremendous positive impact on improving periodontal outcomes in patients. Future clinical trials will help validate and establish the validity of the NSPT protocol on larger patient (population) groups.

5. Source of Funding

None.

6. Conflict of Interest

None.

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