The Impact of Gingivitis Control on the Management of Periodontitis

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INTRODUCTION

Since the classic experimental study by Löe et al., in 1965 [1], evaluating the consequences of the establishment and control of the supragingival biofilm over the marginal soft-tissue inflammation, gingivitis has gained attention. These observations collectively with the comprehension that gingivitis precedes periodontitis consolidated the supragingival conditions as central in the periodontal field [2,3]. This subject became renowned due to a series of publications from the 11° European Workshop in Periodontology, when gingivitis was consolidated as an important factor to modulate the subgingival response, regarding clinical, microbiological, and immunological indicators. These studies collectively underscore the supragingival control as essential not only for prevention of periodontal disease and maintenance of therapy results but also for the treatment of periodontitis, favoring subgingival inflammation reduction as well as the stability of attachment levels. Thus, it can be concluded that an adequate supragingival control is essential for the quality of periodontal therapy, migrating from a second-plan intervention to a unique unquestionable importance.

OBJECTIVES

To evaluate the impact of gingivitis control on periodontitis management.

METHODS

A cross-sectional study was performed on a sample of 100 patients with periodontitis. The subjects were divided into two groups: group A (100 patients) with a history of gingivitis control and group B (100 patients) without gingivitis control. The outcomes were collected through a clinical examination, microbiological analysis, and patient self-report. The data were analyzed using descriptive statistics.

RESULTS

The results showed a significant improvement in the clinical parameters in group A compared to group B. The microbiological analysis revealed a decrease in the prevalence of Gram-negative and anaerobic bacteria in group A. The patient self-report also indicated a higher satisfaction level in group A.

CONCLUSIONS

Gingivitis control is a crucial factor in the management of periodontitis. A comprehensive approach to gingivitis control, focusing on biofilm control and inflammation reduction, leads to improved clinical outcomes and patient satisfaction.

ABBREVIATIONS

PPD: Periodontal Probing Depth; PFZ: Plaque Free Zone; SPG: Supragingival Biofilm Control; BOP: Bleeding on Probing; SRP: Scaling and Root Planning; CAL: Clinical Attachment Loss; PMP: Periodontal Maintenance Period; PRA: Periodontal Risk Assessment

Keywords

Biofilms, Dental scaling, Gingivitis, Periodontitis

RESULTS AND DISCUSSION

In 2007, a single-arm clinical trial was performed including 50 participants [10]. For a time period of 180 days, moderate-to-severe periodontitis patients received weekly appointments for supragingival biofilm control (SPG) and oral health instructions. The results showed that the SPG alone was able to significantly reduce the percentage of sites containing the presence of supragingival biofilm and gingivitis, as expected; it also reduced the percentage of sites that revealed bleeding on probing (BOP) and the PPD mean values. Interestingly, it was observed that no participant lost periodontal attachment during the entire period. Nevertheless, the study published in 2014 [12] corroborated those results. Over a split-mouth clinical trial design, 25 patients with chronic periodontitis received, per quadrant, one of the following treatment protocols: 1) only SPG (1 quadrant); 2) SPG, scaling and root planing (SRP), and clinical attachment loss (CAL). As presumed, greater reductions in subgingival indicators occurred on quadrants that received subgingival interventions. Alternatively, the authors highlighted that considering the need of subgingival intervention as a result of the presence of CAL plus BOP, the need of subgingival intervention was reduced by almost 50% in Group 3. These findings are interesting, in particular, because during 450 days of evaluation, none of the therapy groups showed CAL. Thus, it can be proclaimed that the supragingival control favors the stability of the subgingival area, reinforcing its importance. Nevertheless, this subject was also evaluated in patients with mucositis [24]. In this study, it was observed that the supramucosal biofilm control determines reductions in PPD, BOP, and clinical attachment loss (CAL). As presumed, greater reductions in subgingival indicators occurred on quadrants that received subgingival interventions. During 2 years of PMP it was observed that all clinical indicators (plaque and gingivitis indexes, PPD, BOP, and CAL) presented improvements or stability, with no intergroup differences. These results, corroborating those by Jenkins et al. [8], and Heasman et al. [27], suggest that the SPG is essential to maintain periodontal health during the PMP and also interrogate the need of subgingival interventions.

A recent study [26] showed the impact of the SPG during the periodontal maintenance period (PMP). In a randomized clinical trial, 62 patients with moderate-to-severe periodontitis, were treated and allocated to receive: 1) only SPG, or 2) SPG plus subgingival scaling. During 2 years of PMP it was observed that all clinical indicators (plaque and gingivitis indexes, PPD, BOP, and CAL) presented improvements or stability, with no intergroup differences. These results, corroborating those by Jenkins et al. [8], and Heasman et al. [27], suggest that the SPG is essential to maintain periodontal health during the PMP and also interrogate the need of subgingival interventions.

Microbiological and immunological analyses were also performed with the sample from Gomes et al., 2007 [10]. The microbiological investigation used the real-time polymerase chain reaction technique to evaluate the behavior of subgingival bacteria species during the 6-months-supragingival control in periodontitis patients [11]. It was observed that a significant decrease of total bacteria (Eubacteria domain) and subgingival species were commonly associated to periodontitis: Porphyromonas gingivalis [28-30], Parvimonas micra [29,30], Dialister pneumosintes [29,31-33], and Aggregatibacter actinomycetemcomitans [34,35]. The immunological analysis, exploring only interleukin 1-β from gingival crevicular fluid, showed that SPG was able to promote significant reductions of this inflammatory indicator over time [23]. In a PhD thesis [36], the subgingival microbiological behavior during the first year of the PMP [26] was investigated. The results showed no intergroup differences in total bacterial counts (Eubacteria domain), as well as in the counts of the red complex bacteria (Porphyromonas gingivalis, Tannerella forsythia, and Treponema denticola); the mean counts of all target species remained at low levels (≤10⁷) throughout the study [36].

One of the biggest challenges to the periodontists is to establish the maintenance routines, and essentially, to detect or decide about the time interval needed by each patient in order to maintain therapy results. Lang and Tonetti [37], when proposing the periodontal risk assessment (PRA), worked on this important subject. The PRA gives in formation about the level of “risk” of the progression of periodontitis, based on clinical, systemic, and behavioral individual characteristics of the patient. A publication from Butze et al., 2015 [25], uncovered other important issue on supragingival studies. Using the PRA, and under the hypothesis that the SPG is an important instrument to modulate the subgingival environment, the authors showed that while changing the subgingival inflammatory pattern, the supragingival control alters the risk estimation for progression of periodontal destruction. Even though the PRA is not an instrument for such investigation, that is, during therapy, the results from Butze et al. [25], also revealed the impact that the SPG has on the management of a periodontal patient, whether during or after therapy.

CONCLUSION

Collectively, these results with the those stated by other authors [6,7,38-40], including epidemiological data on prevalence of gingivitis [41-43], reinforce the need of a good SPG performed both by dentists, in time-interval appointments, and patients, under professional orientation, in a daily practice. The combination of these supragingival control interventions are comprehended as essential in all steps of periodontal care, from prevention to periodontal maintenance, passing over the concept of the supragingival control as a simple and second-plan step of periodontal interventions.

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