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Review Article

Full-mouth disinfection-A literature update

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ABSTRACT

Non-surgical periodontal disease therapy has traditionally been performed through a series of sessions by a jaw quadrant or sextant. Reinfection from untreated periodontal pockets, tongue, and tonsils might develop at this time. In contrast, in the full-mouth disinfection (FMD) technique, all teeth's root instrumentation is finished within 24 hours and comprises, Cleaning the tongue and using chlorhexidine on a regular basis.

1. Introduction

One of the most frequent dental disorders is periodontal disease.[1] Periodontitis is a chronic inflammatory illness in which an inflammatory process damages tooth-supporting structures and causes bone lysis, resulting in the formation of periodontal envelopes.[2] As key microbial agents, Aggregatibacter actinomycetemcomitans, Tannerella forsythia, and Porphyromonas gingivalis are known, although many additional microbes are linked to periodontal disease.[3–6] The majority of these bacterial species are not only prevalent in the subgingival plaque microbial flora, but also on mucosal surfaces, the tongue, and tonsils, and are usually detected in saliva.[7–11] Because an individual's predisposition to develop such diseases cannot be clinically altered (except for anti-inflammatories), periodontal treatment will focus on reducing or eliminating periodontal pathogens, thereby preventing their recolonization (primarily through the removal of envelopes) and creating an insufficient environment (with fewer anaerobic conditions) for bacterial pathogens. It's worth noting that contemporary medicines rely on the availability of non-specific plaque, which kills beneficial bacterial species as well.[8–10]

Presence of periodontal pathogens (restoration or colonization after treatment) has been linked to negative periodontal treatment outcomes in several studies.[11–16] Q-SRP, which is administered in numerous sessions, is the most common nonsurgical treatment for periodontitis. Before treatment, the microbiological volume of the subgingival plaque reduces to 0.1 percent after mechanical removal.[8] The periodontal envelopes, on the other hand, are occupied by the same number of bacteria after a week, but with lower pathogenicity.[17,18] Bacteria in the subgingival region, junctional epithelium, and envelope epithelium, as well as bacteria in the dentinal tubules, posterior surface of the tongue, and tonsils, are thought to be possible sources of gingival colonization.[19–21]

Plaque, as well as bacteria in the tongue, oral mucosa, tonsils, and saliva, has been shown to alter the colonization of bacteria in the gingival area after therapy.[21] Based on the foregoing, Quirynen et al[22] proposed a one-stage FMD approach that uses SRP of the entire mouth to eradicate or at least inhibit all periodontal pathogens from the oropharyngeal area (periodontal envelope, saliva, oral mucosa, and tonsils) within 24 hours. Cross-contamination delays bacterial recolonization until the periodontal envelope is repaired in this manner.

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The aforementioned procedure is a relatively new method, and there has been much debate over its effectiveness, rationale, patient and dentist comfort, systemic effects, and cost-effectiveness. As a result, a plethora of clinical and paraclinical research has been done, with widely disparate outcomes, making it impossible to assess the approach in this field. Some investigations found no differences between this method and the traditional Q-SRP method,[22–26] while others highlighted the advantages of the new method.[27,28] Bleeding On Probing, Clinical Attachment Level and Probing Depth are clinical indicators that represent the illness activity, degree of degradation, and progression.[29]

Several studies compared the FMD method to the Q-SRP approach using these parameters. The benefits of FMD were demonstrated in one study as

1. Attachment gain,
2. Decreased envelope depth, and
3. Decreased microbiological propensity.[29,30]

FMD (0.88 mm CAL gain) was similarly beneficial in deep periodontal pockets, according to Apatzidou and Kinane.[31] The majority of investigations have focused on the method's clinical and microbiological aspects; only one study has reported on its immunological effects, indicating a considerable reduction in pro-inflammatory and inflammatory mediators.[31,32] The detection of serum biomarkers is another new and useful tool for diagnosing and determining periodontal disease activity. Interleukin-27 inhibits IL-17, making it an anti-inflammatory cytokine.[33]

1.1. Quirynen disinfection protocolof the entire mouth (FMD)

Quirynen described the FMD approach in 1995, with the goal of scaling and root planning in one or two visits within a 24-hour period. This is done to prevent cross contamination between treated and untreated quadrants. Manual instruments are used to perform FMD, which takes around an hour per quadrant. Following instrumentation, optimum disinfection is achieved by brushing the back of the tongue with a 1 percent chlorhexidine gel for 60 seconds. After that, two one-minute rinses with a 0.2 percent chlorhexidine solution are performed (gargling during the last 10 seconds to reach the tonsils). Following that, a 1 percent chlorhexidine gel is used to provide subgingival irrigation of all periodontal pockets for 10 minutes in three intervals.

Eight days following the intervention, this phase is repeated. Patients are also told to use 0.2 percent chlorhexidine mouthwash twice a day for two weeks. Interdental plaque control with interdental brushes or toothpicks, as well as cleaning the back of the tongue twice a day, are among the oral hygiene recommendations.[34,35]

2. Literature Review

Wang investigated the use of povidone-iodine in the FMD regimen and discovered that antibodies against P. gingivalis and antiactinomyctemcomitans were reduced. Povidone-iodine has been recommended as a viable alternative to chlorhexidine.[36] Antibiotics are used in Various studies[37–39] have looked into the added advantage of using an antibiotic in conjunction with FMD. The most commonly used antibiotics are azithromycin, metronidazole, and amoxicillin. SRP-Q control and an FMD protocol with Azithromycin test groups were studied by Gomi et al. For the first two months after surgery, microbiological values were lower in the test group.[40] Cionca et al looked at using a combination of Amoxicillin and Metronidazole in conjunction with the FMD regimen.

In terms of microbiological impacts, they saw Aggregatibacter actinomycetemcomitans disappear three months after treatment in the experimental group. Porphyromonas gingivalis and Tannerella forsythia were also found to be at lower levels.[41] The effects of Amoxicillin and Metronidazole were observed to last for six months in a similar trial.[37] Preus found substantial changes in his research employing Metronidazole monotherapy; however, the-analyzes are insufficient to advocate the use of metronidazole in patients with severe chronic periodontitis, due to the possibility of side effects for the patient.[38,39] Ultrasonic scalers are used. In addition, the use of ultrasonic scalers rather than manual tools has been investigated in the literature, When compared to traditional treatment, the benefits are limited, however it is completed in a much shorter time.[42,43]

2.1. Clinical outcomes in periodontitis (chronic and aggressive)

Some authors prefer the FMD protocol to the traditional SRP-Q because they found a clinical improvement in pocket depth, clinical attachment levels, and bleeding on probing, claiming that the use of antiseptics like chlorhexidine and reduced chair time is part of the therapy's success.[34,44–46]

Most authors currently agree that periodontal treatment improves clinical attachment level, pocket depth, and bleeding on probing, with improvements in moderate pockets (4-6mm) using the FMD protocol, though there is no significant difference between the FMD protocol and traditional SRP-Q treatment in deeper pockets (> 6mm).[39,47–49] Patients with aggressive periodontitis benefit from periodontal therapy less than those with chronic periodontitis.[50,51] Some writers, however, believe that the use of FMD has a benefit in non-surgical treatment, resulting in a reduction in pocket depth and a higher level of clinical attachment. It should be noted that, in addition to the FMD approach, oral antibiotics are recommended in these patients.

Other researchers evaluate the FMD approach with and without antibiotic medication and conclude that while attachment levels, pocket depth decrease, and bleeding on probing improve, there is no significant difference between the two treatments.[52–54] In addition, in patients with advanced periodontitis, smokers, and non-smokers, a variant of the treatment using ultrasonic scalers is utilized to accomplish full-mouth scaling in a single session without the use of antibiotics. Both groups show positive clinical effects, with a decrease in pocket depth and hemorrhage. When compared to smokers, there is a small improvement in the non-smoking group.[55]

3. Conclusion

The full mouth-disinfection regimen improves periodontal parameters and aids in the long-term maintenance of patients with periodontitis.

4. Conflict of Interest

The authors declare that there is no conflict of interest.

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