

USE OF CHLORHEXIDINE GLUCONATE (PERIOCHIP®) IN THE SURGICAL TREATMENT OF DEFECTS GRADES II AND III OF THE FURCA

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ABSTRACT

Periodontal disease is an infectious condition, characterized by inflammatory and immunologic reactions associated to the local accumulation of bacterial plaque and dental calculus. When pathogenic microorganisms have access to the region of furcation, its complete removal seem to be little probable, mainly due to the anatomical characteristics of multirouted teeth, which leads to difficult a clinical situation. The elimination or adequate suppression of the subgingival pathogens is essential for the periodontal health, be done which can by mechanical curetage and also chemical systems of releasing antimicrobial agents. Chlorhexidine gluconate is an effective antimicrobial agent against a wide specter of buccal microorganisms, being capable of reducing the formation of bacterial plaque and of preventing the occurrence of gingival inflammation. PerioChip® is a small, rectangular chip, rounded at one end, of slow release, for insertion into periodontal pocket. To verify the efficiency of the application of an antimicrobial of local action in an area of difficult access to conventional scaling and root planning, it was evaluated the use of the PerioChip®, associated with the procedure of scaling in open field in patients furcation

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defects of degrees II and III. In this study, evidence was produced that the use of chlorhexidine gluconate PerioChip® did not bring additional benefits to the conventional treatment of furcation involvement.

KEY WORDS: chlorhexidine; furcation defect; periodontal disease

INTRODUCTION

Periodontal disease is an infectious condition with inflammatory and immunologic reactions associated to the local concentration of bacterial plaque and dental calculus (LINDHE et al., 1999). Organized bacterial populations form an apical conglomerate facing the periodontal pouches and provoke destruction of the structures of the periodontium (LISTGARTEN, 1994). When pathogenic microorganisms have access to the region of the furca its complete removal seems to be unprobable (WAERHAUG, 1980; CAFFESSE et al., 1986), due mainly to the anatomical characteristics of the multirooted teeth, which lead to a clinical condition difficult to handle (LINDHE et al., 1999).

The adequate elimination or suppression of the subgingival periodont pathogens is essential to the periodontal health and can be done by mechanical debridment and also by chemical systems of liberation of antimicrobial agents (GENCO et al., 1997). The chemical agents can have access to the periodontal pouch through local or systemic applications. The systemic liberation offers a full exposition of all periodontal tissues to the antimicrobial agent but also exposes it to the risk of adverse reactions in other body regions.

Local antimicrobial therapy involves the direct action of the agent in the subgingival sites minimizing the impact in other sites. Besides that, a local environment can promote high concentration of the agent when compared to the systemic drugs (RAMS, 1996). It can be used particularly by women prone to develop vaginal super infection or by individuals with GI dysfunction or other side effects after the systemic therapy with antibiotics (SLOTS; RAMS, 1990).

Chlorhexidine gluconate is an effective antimicrobial agent against a large spectrum of buccal microorganisms being able to reduce the formation of dental plaque and to prevent the occurrence of gingival inflammation (SIQUEIRA Jr.; UZEDA, 1997; BARROS; FIORINI, 2000; ASTRAZENECA, 2001). This antimicrobial action is associated with an increase in the cell membrane permeability followed by coagulation of cytoplasmatic molecules. The substantivity of chlorhexidine, i.e, the ability of drugs to bond to hard and soft tissues, is influenced by its concentration, its pH and temperature besides the period of contact of the solution with the

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oral structures. This property is associated with its ability to keep effective concentration for long periods (ELEY, 1999).

There are many uses to chlorhexidine such as in toothpaste, mouthwash and irrigation solutions, gel for topic application, slow delivery appliances and varnishes (LINDHE et al., 1999). PerioChip® is an appliance that has a rectangular and rounded end for slow delivery that can be inserted into the periodontal pouch and is indicated as a coadjuvant in root scaling and planing. It contains 2.5 mg of chlorhexidine gluconate in a biodegradable matrix of hydrolyzed gelatin (ASTRAZENECA, 2001). It takes 7 to 10 days the device to delives chlorhexidine as the matrix is degraded. Therefore, it is not necessary to remove the device (CIANCIO, 1999).

Lopes et al. (2002) evaluated the efficiency of PerioChip® associated to root scaling and planning (RSP) in the treatment of chronic periodontitis in smoking patients. The clinical paramenters were probing depth, bleeding to probing, gingival recession and level of insertion. These authors concluded the use of PerioChip® associated to RSP did not show extra advantage if compared to conventional RSP in smoking patients.

Rodrigues et al. (2002) studied the use of PerioChip® in the supportive treatment of the periodontium and concluded that the test group (treated with PerioChip®) and the control group (treated with root scaling and planing) showed results effective in terms of restoring periodontal health.

To evaluate the efficacy of the application of an antimicrobial with local action in an area of difficult access to conventional RSP, the aim of the present study was to evaluate the effect of PerioChip® in patients with defects grades II and II in the furcation, after root scaling and planing in open field.

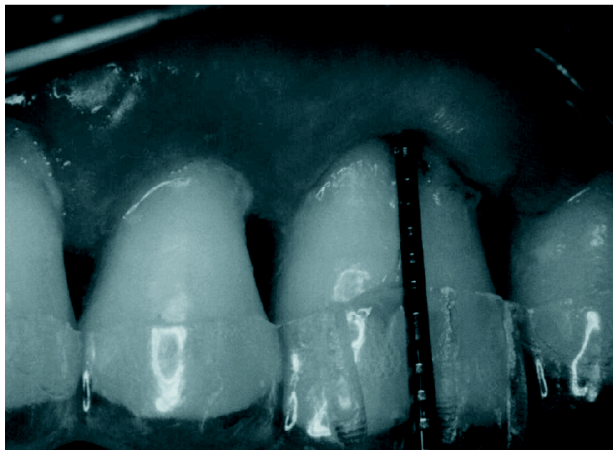
MATERIAL AND METHODS

Twenty-five patients were selected showing defects of grade II and III in the furcation according to Hamp et al. (1975). The exclusion criteria included cases with systemic alteration able to interfere in the results after the treatment such as use of systemic antibiotics. All patients agreed to participate and signed an informed consent term.

Patients arcades were molded with alginate and acrylic resin adaptators were made from plaster models. A polipropilene matrix was made to the individual standardization of X-ray exams and the periodontal probing respectively. The pertinent teeth were examined with periapical X-ray by the parallelism technique with HanShin® positioners and then the clinical exam. In the first session, brushing techniques and dental floss use was

taught to patients. The clinical parameters were:

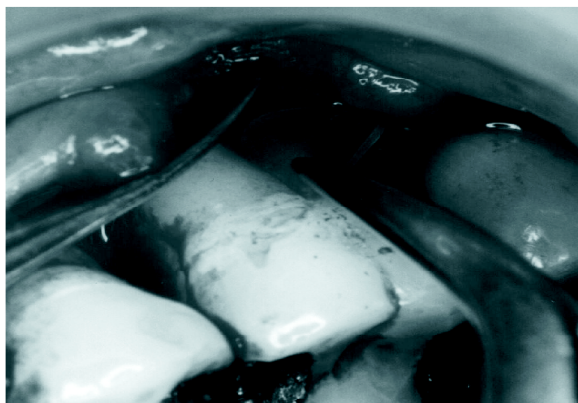
1. probing depth (PD) – using a periodontal probe with probing force defined as 20 g (DB764R, UNC15, Aesculap®) in six previously defined sites (MV, V, DV, ML, L e DL) (FIGURE 1);
2. furcation probing with a Nabers' probe;
3. plaque index based in Silness and Løe (1964);



4. gingival index, based in Løe and Silness (1963);

FIGURE 1 – Initial probing depth measurement.

Patients then were submitted to initial preparation and later on to root scaling and planing in open field with a modified Widman flap including the PerioChip® directly in the area of the furca (FIGURE 2) followed by suture and protection with surgical cement. Follow-up included clinical and radiographic examination and was done at the 60th and 90th



post-operative days (FIGURE 3).

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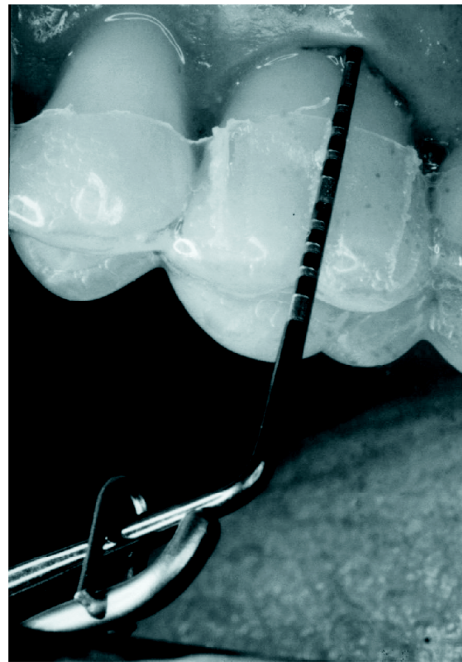


FIGURE 2 – Introduction of the chlorhexidine gluconate device (PerioChip®) in the furca region.
 FIGURE 3 – Probing depth measurement in the 90th post operative day.

Obtained data were submitted to statistical analysis aiming to evaluate the evolution of the variables along the experimental period. Descriptive statistic was used and complemented by RM ANOVA RANKS test for each three variables (NORMAN; STREINER, 1994). All discussions were made at a level of 5% of significance.

RESULTS

Results for probing depth in the three proposed moments of this study (at surgery, 60 and 90 days post-operative) can be seen in TABLE 1:

surface	variance	P value
vestibular	0.44	p>0.05
mesio-vestibular	2.00	p>0.05
disto-vestibular	0.00	p>0.05
lingual	4.65	p>0.05
mesio-lingual	11.37	p<0.01*
disto-lingual	2.60	p>0.05

TABLE 1 – Results for probing depth in the examined surfaces (variance and P values).

Data related to variance of the probing depth in the mesio lingual surface(*) showed statistic significance, in which the depth in the pre-operative moment was superior to that at 60 and 90 days after the procedure.

Probing in the area of the furcation showed a variance of 1.50 ($p>0.05$), which is a non-statistically significant result. The same applies to the gingival index showing a variance of 2.00 ($p>0.05$) and, as mentioned, without statistical significance.

The plaque index showed statistical significance (variance = 9.93 $p>0.05$) once the index obtained at the pre-operative period was greater than that detected at the follow-ups.

The radiographic study of the lesions before the surgical procedure and after 90 days did not show significant variation in what regards bone loss or bone neoformation.

DISCUSSION

Initially, it is important to stress that studies by Rodrigues et al. (2002) and Lopes et al. (2002), using PerioChip® in smokers and supporting cases, respectively, did not show significant better results if compared to the treatment with RAR alone.

The present study showed a marked decrease in the depth of the probing only in the mesio-lingual surfaces after 90 days. The gingival bleeding index did not show significant decrease although the dental plaque index was less than in the pre-operative sessions.

The decrease in the probing depth obtained in some surfaces could be due to elimination of the inflammation through the open field root scaling and planing process. Associated to this fact, it could be added the control of plaque by improvement of teeth brushing by patients. These data are in accordance to those presented by Lopes et al. (2002).

CONCLUSION

Taking into consideration the analysis of the results of the present study it was not observed any additional benefit in the treatment of lesions of the furcation with the use of PerioChip® associated to root scaling and planning in open field.

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