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THE CLINICAL-BIOLOGICAL EFFECTS OF PERIODONTAL CURETTAGE IN DENTAL PRACTICE

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Abstract

Periodontal curettage is one of the basic procedures in marginal periodontium surgery. It is performed during the initial treatment phase of periodontal diseases, which occurs after emergency treatment (when appropriate) of acute complications of chronic marginal periodontal diseases. Periodontal curettage may be divided according to the area where it is performed in: gingival periodontal curettage, subgingival periodontal curettage. Gingival periodontal curettage is performed in the gingival groove and in the false gingival pockets, without usually exceeding the junctional epithelium insertion area. The main objective of subgingival periodontal curettage is to restore gingival health by removing from the root surface the factors that can cause gingival inflammation. The personal study was performed on two groups which included 82 patients. When analyzing the results, we relied on the justified assumption of the study that each case in the large framework of periodontal diseases represents a particular clinical-radiological and etiological reality as concerns its frequency and evolution (especially in terms of complications). The social origin and the cultural background play a very important role in the development of this relationship, which is at its best when both the doctor and the patient are closer from these points of view.

Keywords*: periodontal curettage; periodontium surgery; false gingival pockets; inflammation*

Introduction

The periodontium includes all the tissues that contribute to the fixation of the tooth in the dental alveolus, which is why it has also been called the 'tooth support system' [1-3]. The periodontium is the set of tissues that support and fix the tooth in the maxillary structures. From a topographical point of view, the periodontium has two distinct areas: the marginal periodontium and the apical periodontium, each with its specific pathology (Figs. 1 and 2).

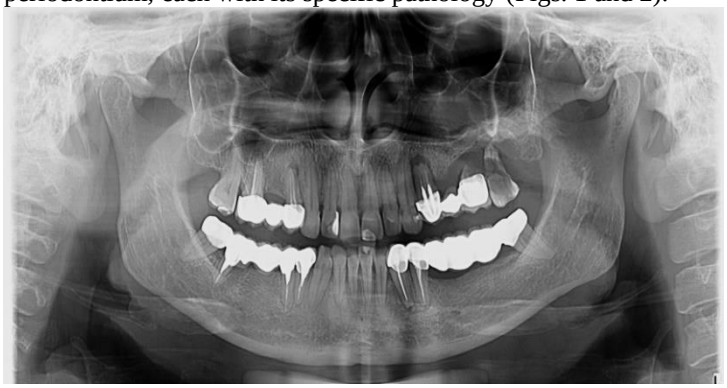

Fig. 1. Paraclinical aspects of periodontal pathology

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From a topographical point of view, marginal periodontium includes two sets of components: the lining periodontium consisting of gingival fibromucosa and supraalveolar ligaments; the supporting periodontium composed of root cementum, alveolar bone and desmodontium [4-6].

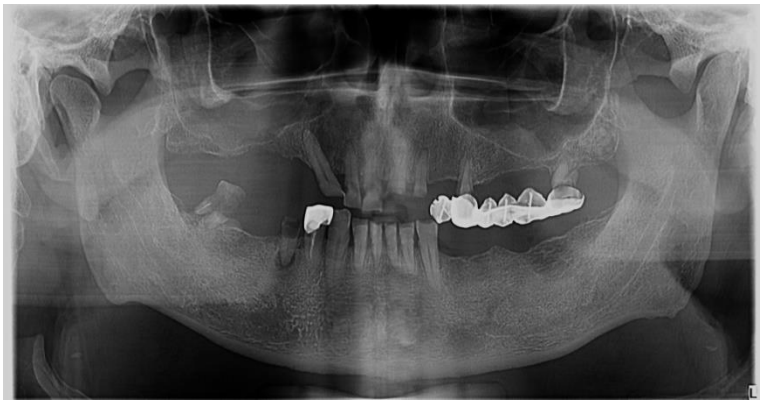

Fig. 2. Paraclinical aspect of bone atrophy

Periodontal disease is a mixed infection, caused by the microbiota of the bacterial plaque and its toxic products, and in this sense it should be noted that it is not a single bacterium or a single product that is responsible for tissue damage, but several bacteria, which act either synergistically or in different stages of the evolution of the periodontal disease. It is no less true, however, that the prevalence of one or another of the species may lead to one form or another of periodontal disease [Fig.3].

Fig. 3. Clinical aspects of periodontal diseases

Bacterial plaque is a bacterial aggregation adhering to the surface of the teeth, which cannot be removed by water jet or mere rinsing. It may also occur on other hard surfaces located in the oral cavity, such as fixed or removable gnathoprosthetic devices, orthodontic devices, fillings, implants. Some bacterial products do not have a direct toxic activity on the host tissue, but activate specific or nonspecific inflammatory reactions, which in addition to antibacterial action also have adverse effects on the body's own structures.

Periodontal curettage is one of the basic procedures in marginal periodontium surgery. It is performed during the initial treatment phase of periodontal diseases, which occurs after emergency treatment (when appropriate) of acute complications of chronic marginal periodontal diseases. Periodontal curettage may be divided according to the area where it is performed in: gingival periodontal curettage, subgingival periodontal curettage. Gingival periodontal curettage is performed in the gingival groove and in the false gingival pockets, without usually exceeding the junctional epithelium insertion area [7-9].

The main objective of subgingival periodontal curettage is to restore gingival health by removing from the root surface the factors that can cause gingival inflammation [10, 11].

Gingival periodontal curettage is indicated in: small periodontal pockets (3-4 mm deep); very deep periodontal pockets - in addition to soft part and root curettage, the aim is to reduce the risk of more extensive surgery; deep periodontal pockets, on one or two of the root sides located in accessible areas or which become accessible by means of a small papillary flap; to reduce the risk of exacerbation by overinfection of periodontal pockets and the occurrence of marginal periodontal abscess; as a definitive treatment of marginal periodontal abscess in single-root teeth; in apico-gingival fistulas; to postpone extractions in patients with general conditions where extensive periodontal surgery cannot be performed; in recurrences after other surgeries[12-15].

Subgingival periodontal curettage is done using periodontal curettes which are the most effective tools in subgingival scaling, root smoothing and curettage of granulation tissue in periodontal pockets. Due to their shape, their small width and reduced thickness, they can easily penetrate periodontal pockets, intermediate and interradicular spaces. Their safety in terms of lack of gingival-dental injury is superior to any other periodontal instruments [16-18].

There are two main types of curettes: *universal curettes* (for supragingival or gingival groove scaling in healthy people, without periodontal pockets, gingival retractions or uncovered furcations and actual periodontal pockets, having a concomitant action from both edges on both the soft gum wall, and on the root wall of the pocket); *special curettes* - specific to certain surfaces, which are mainly Gracey curettes [19, 20].

Gracey curettes are indicated for: gingival groove scaling; subgingival scaling in periodontal pockets; fine scaling of small deposits after removal of subgingival tartar with other instruments; root curettage - root surface leveling by removing necrotic cement; curettage of the granulation tissue on the soft pocket wall [18-21].

Method

The personal study was performed on two groups which included 82 patients.

Results and Discussions

The 82 cases were divided into two groups. Group I consisted of 58 patients -70.73% - who were initially trained to perform proper dental hygiene and who underwent supragingival scaling. Periodontal probing was performed using periodontal probes, both before and after periodontal curettage (after observing the necessary healing time after subgingival periodontal curettage).

Subgingival periodontal curettage was performed either by the closed field method or by the open field method; Gracey curettes were used; the subgingival curettage technique was applied:

a) Closed curettage - is performed without gingival detachments, the interdental papilla being left in position above the alveolar limbus and being pulled the instrument to access the periodontal pockets; after anesthesia, root curettage and curettage of the soft parts of the pocket and granulation tissue is performed using the technique described for each of these interventions;

it is a method with low efficiency, being performed in low visibility conditions and can only be applied on shallow pockets in accessible areas [22-24].
b) Open curettage - is a method of choice: after anesthesia, an intrasulcular incision is made with the scalpel (preferably with a 15 blade) of the interdental papillae to the tooth or alveolar bone, then the inflamed and necrotic underlying epithelial and connective tissue is removed. This creates small papillary flaps that allow access; in the case of hyperplastic papillae and of functionally impaired stasis papillae having a red-purple color, the incision is made close to their base from the vestibular and oral sides (with a scalpel or plasty scissors); the papilla is removed almost entirely with the underlying diseased tissues; this method allows proper access to the periodontal pockets and hence a curettage in better visibility conditions[25,26].
The following operations are performed in the periodontal pockets: curettage of the granulation tissue until the bleeding stops (the granulation tissue on the inner side of the small papillary flaps is cured or removed with mucosal plasty scissors); root curettage to obtain a flat and smooth root; curettage of soft alveolar bone to healthy bone. After the bleeding has stopped, cleanse with saline or 0.12% chlorhexidine solution and check the contents of the pocket.

Group II - the statistical analysis conducted on a group of 24 patients - 29.27% adults, with more or less advanced forms of deep chronic marginal periodontal disease, revealed that initial therapy, consisting of scaling, root surfacing, and closed field curettage and topical antiseptics applied as irrigations and gels, has had satisfactory results.

Patients were rehabilitated by initial scaling of the lower front teeth, and, where appropriate, by sequential quadrant scaling. Then, we performed root surfacing, sometimes associated with professional air-flow cleaning.

Patients were also trained in current brushing techniques and additional cleaning methods (dental floss, interdental brushes, anti-plaque agents).

The study was conducted over a three-month period, during which time the treated patients were followed in outpatient facilities. One should note that the patients included in the research were relatively healthy, with no forms of systemic disease, which would interfere with their periodontal disease. Thus, we achieved the retraction of the periodontal inflammatory phenomena and a 1-2 mm attachment gain. This was revealed by periodontal pocket probing during the preservation stage [27].

The post-operative check-up revealed that the inflammatory phenomena had improved, and after the 2-month outpatient follow-up performed every week, we achieved the same 1-2 mm attachment gain, largely also due to the receptivity of the patients, who had learned and accurately applied the hygiene measures.

The study enabled us to conclude that both antiseptics used, chlorhexidine and betadine, both in the form of irrigation and gel, used in conjunction with mechanical therapy, have improved the results of periodontal therapy. Yet, we did not find any significant differences between them. Subgingival periodontal curettage is certainly one of the basic procedures in the treatment of marginal periodontium affected by periodontal disease, which, by removing the irritating factors occurring at this level, creates an environment conducive to periodontal health restoration.

Properties of chlorhexidine: it is a positively charged molecule that adheres to the biological membranes of negatively charged bacteria; it has a nonspecific action and penetrates the cell, destroying its walls. Bacterial death occurs due to the destruction of its cytoplasm; no bacterial resistance to chlorhexidine was demonstrated even after two years of use [28-30].

*Advantages of chlorhexidine***:** broad range of action on pathogens associated with periodontal disease; minimal bacterial resistance; minimal unwanted side effects (does not cause tooth pigmentation); gingival irrigation and the use of chlorhexidine mouthwashes strengthen the effects of scaling and root smoothing; allergy, although possible, is extremely rare.

Action mechanism: chlorhexidine is adsorbed on the surface of teeth and oral tissues and is then slowly released into active form. Cationic chlorhexidine molecules bind to anionic

compounds, such as: free sulfates, carboxyl and phosphate groups, salivary glycoproteins, thus reducing the adsorption on the tooth surface of the proteins needed to form the acquired film. The molecules are released slowly, within 8-12 hours, but low concentrations could be observed even after 24 hours. Due to its strongly cationic nature, chlorhexidine has high affinity for the bacterial cell wall, the surface structure of which it modifies, thus disrupting the osmotic balance, which ultimately leads to the destruction of the bacterium.

Conclusions

The evolution of periodontal disease is episodic and asynchronous: acute episodes of tissue destruction (exacerbation, active lesion) that alternate with periods of relative latency (inactive lesions) in several teeth, in a single tooth or even in a root surface (each pocket has its own evolution).

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