Abstract

Summary: The aim of the present investigation was usage of medicamental paste with antibacterial and regeneration action for temporary placement in the treatment of chronic apical periodontitis.

Materials and method: The medicamental paste for temporary placement of root canals consists of a mixture of metronidazole, Enterosgel (Silm) and Alflutop (Biotehnos S.A., Romania). The paste was used for the treatment of 30 teeth with chronic apical periodontitis. Final obturation of the root canals was performed with gutta percha cones and sealer. The efficiency of the treatment was appreciated after examination on the basis of clinical and radiographic findings.

Results: During the treatment of the 30 teeth, no exacerbations of the pathological process were recorded. Pain after obturation of the root canals was revealed in only 6 (20%) of the treated teeth. No pain, pathologic changes of gingiva, good mastication efficiency in all teeth after treatment were revealed.

Conclusions: The high clinical efficiency of the medicamental paste with antibacterial and regeneration action at the level of temporary root canals placement in the treatment of chronic apical periodontitis was shown.

Keywords: chronic apical periodontitis, medicamental paste for temporary root canals placement, metronidazole, Enterosgel (Silm) and Alflutop (Biotehnos S.A., Romania)

Nowadays, about 78% of the population of Ukraine needs endodontic treatments [1,2]. Analysis of the available data show that, whichever the instruments and materials employed, both in Ukraine and in other countries of the former Soviet Union, the efficiency of the endodontic treatments is extremely low, not exceeding 20% (3,4). Such results are probably determined by an incorrect accomplishment of the main stages of any endodontic treatment, namely: root canal preparation, chemomechanical debridement and obturation of the radicular canals (5-8).

This situation calls for the investigation of some new drugs, capable of stimulating bone and periapical tissue regeneration for the treatment of chronic apical periodontitis.

The aim of the present study was to appreciate the efficiency of a medicamental paste for temporary placement in root canals for the treatment of chronic apical periodontitis, after examination on the basis of clinical and radiographic findings.

MATERIALS AND METHOD

For a temporary placement of the root canal, the authors propose a paste containing an antibacterial medicament, with antibacterial action upon the anaerobic flora – metronidazole; a medicament of detoxifying type for eliminating the exudate from the root canal and periodontal ligament – Enterosgel (Silm); and a drug which stimulates tissue regeneration – Alflutop (Biotehnos).

These materials were used for an ex-temporae preparation of a paste for temporary filling of root canals. The experimental group included 30 teeth with chronic apical periodontitis. The diagnosis was based on clinical and retro-alveolo-dental radiographic examinations. Cleaning and shaping of the root canal were made by «crown-down» preparation. In each case, the apical constriction was enlarged up to maximum 0.3 mm. Further on, the root canal was dried with absorbent paper points or with cotton pellets. The proposed medicamental composition was mixed on a glass platelet up to obtaining a paste with fluid consistency. The paste was placed into the canal with an endodontic file or a lentullo needle. For obtaining the expected therapeutic effect, the paste was introduced in the periodontal ligament space and in the periapical tissue through the open apical foramen. Then, the selected preparations were placed into the root canal and caries cavity was hermetically sealed with a temporary...
filling material (zinc oxide-eugenol cement, for example). The patient was asked to remove the temporary filling, if pain would appear during mastication or on contact with antagonists; the same treatment protocol was repeated after 2-4 days. In such a case, irrigation of the root canals with an antiseptic solution is recommended, after which the canal should be obturated with a temporary paste and caries cavity hermetically sealed with temporary filling material for 2-4 days.

A few days later, in the absence of any pain symptoms, the temporary filling material was removed, the paste from the root canal eliminated, the canal appearing dry. Obturation of the root canals was performed by the use of gutta percha cones with a sealer paste, special care being given to the obturation materials: the root canal filling material should not be extruded beyond the apical limit of the root canal system (over-extended filling).

In each case, the quality of the endodontic obturation was radiologically controlled. Caries cavities were temporarily obturated with zinc oxide-eugenol cement. In the absence of any pain symptoms, permanent coronary restoration with composite was performed some days after root canals obturation.

The efficiency of the treatment was appreciated from clinical data and retroalveolo-dental radiographies. The results were considered positive in the absence of any subjective symptoms, changes of gingiva, as well as in the presence of bone tissue regeneration, revealed by radiographic study.

RESULTS AND DISCUSSION

The 30 teeth with chronic apical periodontitis were successfully treated with a medicamental paste for temporary placement of the root canals. In all clinical cases, no exacerbations of pathological process occurred, and the root canals were completely obturated, without over-extension of the filling material beyond the apical limits – apical constriction (fig.1). The pain sensations experienced after obturation of the root canals were negligible, occurring in 6 (20%) of the treated teeth. Among others, painful sensations in the treated teeth were registered during mastication. All these phenomena disappeared quite rapidly, after 3-4 physiotherapy treatments. Generally, the treated teeth caused no pain, worked efficiently during mastication, while the adjacent gingiva evidenced no pathological changes.

A

B

Fig. 1. Radiographic picture of teeth # 11,12. Diagnosis: chronic granulomatous apical periodontitis: A – before treatment, B – after treatment
During treatments of chronic apical periodontitis, especially useful was the insertion of some biocompatible medicaments into the affected periapical tissues, for stimulating lesion healing and periapical tissues regeneration. There were numerous medicamental compositions developed for this treatment, however, the effective regeneration of the periapical tissues still remains a controversial aspect (9-11, 12-15). Further investigations are necessary for the realization of some new medicamental preparations, capable of stimulating regeneration of both bone and periapical tissues, as well as for their standardized usage in the treatment of chronic apical periodontitis.

In the present study, an alternative medicamental preparation was proposed, based on the promising clinical and radiographic results obtained in its usage as a temporary placement of root canals in the treatment of chronic apical periodontitis.

Enterosgel is a silicium-based medicinal preparation of intestinal adsorbant and selective detoxifying type. Its adsorption action also includes a series of gramm-positive bacteria, candida fungi and bacterial metabolism products. Recently, it has been also recommended for surgical fields, as a dressing, and also for the composition of some irrigant solutions used in the treatment of certain pathologic lesions (16).

Alflutop is a natural chondro-protective product with anti-hialuronydasic, anti-inflammatory, analgesic and stimulative for its regeneration effect at cartilage level. The clinical investigations performed confirmed its therapeutical efficiency in degenerative joint, post-traumatic and rheumatic pathologies (17).

The proposed medicament composition combines the known antimicrobial properties of metronidazole with the detoxifying and regenerative effects of the above-mentioned drugs. The results of latest investigations support the hypothesis that usage of the proposed composition for temporary placement of root canals during the chronic apical periodontitis treatment permits inhibition of the microflora in the root canals and also of the inflammatory processes characteristic to chronic apical periodontitis.

This treatment method permits a subsequent complete obturation of the root canals and a considerably lower irritation of the periapical tissues, as the medicinal preparations employed do not irritate the periodontal tissues. The obtained results demonstrate the efficiency of the clinical usage of the medicamental paste for temporary placement of root canals in the treatment of chronic apical periodontitis.

CONCLUSIONS

Clinical and radiological evaluation of the results obtained by clinical application of the medicental paste for temporary placement of root canals in the treatment of chronic apical periodontitis appears as a promising method, yet further studies are still necessary for its long-term validation.

References


