COMPARATIVE STUDY BETWEEN APICECTOMY AND CONSERVATIVE ENDODONTIC TREATMENT IN MOLAR TEETH WITH PERIAPICAL PATHOLOGY

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ABSTRACT

To choose between conventional and surgical treatment is sometimes a dilemma faced by many clinicians. Modern endodontic therapy can achieve success predictably. Molar surgery is not so simple and the alternative methods have to be well evaluated and recommended. The purpose of this work was to compare the clinical and radiographic outcomes of nonsurgical treatment with those of endodontic surgery to determine what modalities offer more favourable outcomes into molars in a period of 4 years follow up. The modern endodontic therapy using ultrasound irrigation showed that healing process occurred in 95% of the treated molars compared to apicectomy or traditional endodontic therapy where only 89% or 86% of the molars presented no sign of relapse after 4 years.

Key words: endodontic surgery, manual/rotary instrumentation, ultrasounds irrigation, apical periodontitis

INTRODUCTION

Apical periodontitis can be treated by several methods: orthograde treatment / retreatment, apical surgery, intentional replantation, hemisection / radicular amputation, or ultimately, extraction of the tooth. Evidence based dentistry recommends selection of alternate treatment options on the basis of the best available evidence [1]. Approximately 80% of endodontic periradicular lesions can heal satisfactorily after proper root canal therapy [2]. The size of the periapical lesions (>5mm) is a negative factor for the prognosis in endodontic treatment [3].

Surgical treatment for molar teeth with periapical lesions is one of the most challenge therapies for both surgeon and patients, due to the high frequency of possible complications. It is highly recommended a correct analysis of the health status of the patient, regional conditions, long term tooth prognosis, personal experience of the surgeon and the possibility of an alternative conservative therapy. The informed consent of the patient is mandatory regarding the risk/ benefice ratio4.

Aim of the study

The purpose of this work was to compare the clinical and radiographic outcomes of nonsurgical treatment with those of endodontic surgery to determine which modalities offer more favourable outcomes to the molars in a period of 4 years follow up.

MATERIALS AND METHODS

We performed a retrospective study and evaluated the effectiveness of apical surgery

versus manual/ rotary instrumentation and the manual/rotary /ultrasounds for mandibular and maxillary molars after 4 years for 3 patient groups (with 3 different methods) who were treated for apical periodontitis.

We selected for the study only patients with apical lesions between 5 and 8 mm without any previous treatment and without any risk factors as short roots or furcation lesions or tooth severe mobility.

The first group (1) consisted of 23 surgically treated molars, the second (2) and the third group (3) presented molar teeth treated by a dentist using two different endodontic methods.

Surgical techniques of molar apicectomy: The patients in the first group were anesthetized with 2% lidocaine with 1: 80000 epinephrine; sulcular or mucogingival incisions were performed depending on the clinical case. The tissue was reflected toward the apical area with a periosteal elevator and a retractor was placed to hold the flap. Osteotomies were performed via buccal on mandibular molars and via buccal and/or palatal side at the maxillary molars with Lindemann burs under irrigation with a saline solution and after apicectomy the periradicular curettage was done. The root canal was filled with gutta-percha and ZOE cement when was necessary and also possibly a retrograde cavities was done and filled with IMR. After saline irrigation and a last bone curettage, the wound site was closed and sutured with 4x0 monofilament sutures, and a postoperative radiograph was taken. The patients were instructed regarding postoperative care, sutures were removed 7 days postoperatively. Patients were recalled after 4 years to assess clinical and radiographic signs of healing.

The second (2) and the third (3) group of patients have the same selected criteria (apical periodontitis of the molars not previously treated, with lesions between 5 and 8 mm, affecting one or both or all three roots)were treated by the same dentist in a dental office with 2 different methods:

All 19 patients from the second group (2) were treated endodontic only manual and rotary instrumentation and for the third group (3) of 24 patients we used ultrasound irrigation. The following materials were used for endodontic treatment: 3%NaOCl solution, EDTA gel or solution, Calcium Hydroxide paste/saline. The instrumentation of the root canal was performed using the following method: first we increased the preparation of the mesial root canal manual/rotary until it reached the size 30/35 and 40/45 for distal root canal. For the irrigations it was used the 3% NaOCl solution after each instrumentation, EDTA gel or solution. Intracanal medication was Calcium Hydroxid paste which was replaced every 10 days. For the teeth of the third study group (3) the canal instrumentation was supplemented with ultrasounds irrigation in repeated series of 20 seconds each [2-3].

Assessment: The criteria for successful outcomes were done after 4 years and included for all patients the absence of clinical signs and/or symptoms and radiographic evidence of complete or partial healing. The criteria for failure included any clinical signs or symptoms and radiographic evidence of unsatisfactory healing.

RESULTS AND DISCUSSIONS

The first group taken into study consisted of 23 molar teeth with periapical lesions treated by apicectomy. 43% were maxillary molars and 57% were mandibular ones. For 22% the surgical procedure was performed only on one root, in 60% of the total molars two roots were involved and 18% of the maxillary molars all three roots were surgically treated.

Most of the patients in group 1 were women (65%) from urban area (86%). The

mean age of the patients in group 1 was 34 years.

After 4 years follow up, 11% of the patients surgically treated presented with failure of the applied treatment represented by tooth mobility (44%), relapse of the periapical lesion (32%) and pain (22%). In 89% patients from group 1 we considered to be complete healing after 4 years, based on the absence of clinical and radiological pathologic changes.

The total number of patients treated by means of endodontic therapy was 43, 19 women (45%) and 24 men (55%), mean age 45. The following criteria were considered for the assessment of treated molars: the radiological image of the periapical area, the degree of tooth mobility and pain.

In group 2, where the endodontic treatment was performed using traditional endodontic procedures, we reported 86% rate of success after 4 years. In group 3, where the endodontic treatment involved ultrasound irrigation, we found a favourable response in 95% of the treated molars.

In conclusion, where ever is possible, the best therapy for molar periapical lesions is the modern endodontic therapy, with a failure rate of 5%, followed by apicectomy, failure rate of 11% and traditional endodontic treatment.

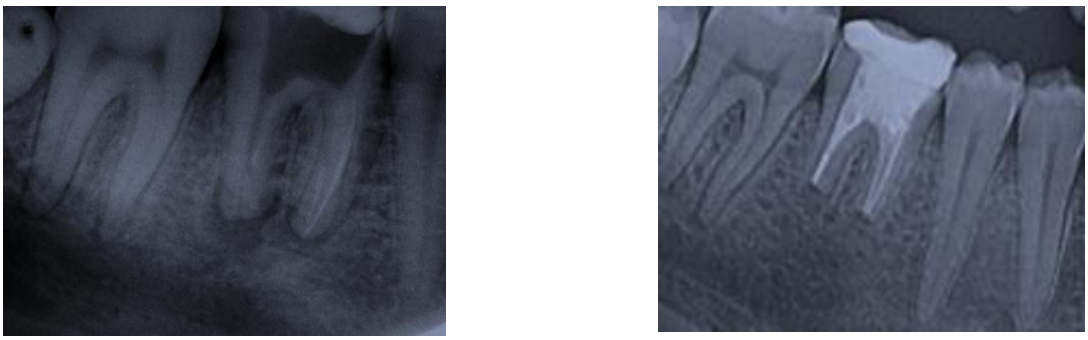

Fig. 1. Bone healing after apicectomy 46

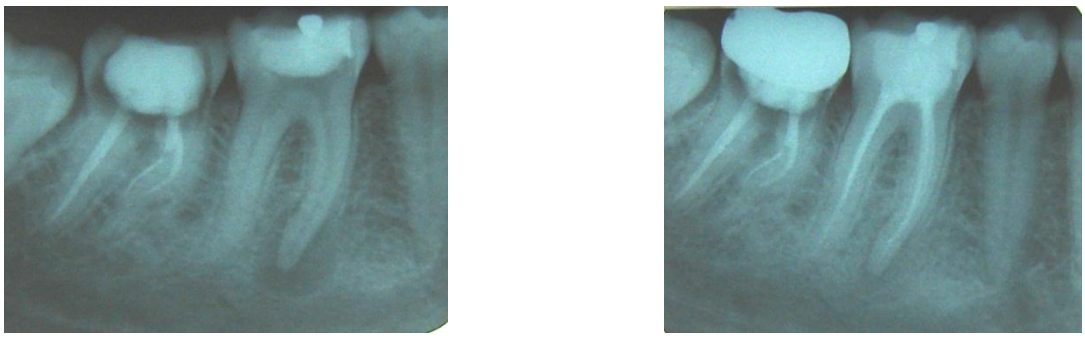

Fig. 2. Bone healing after modern endodontic treatment 46

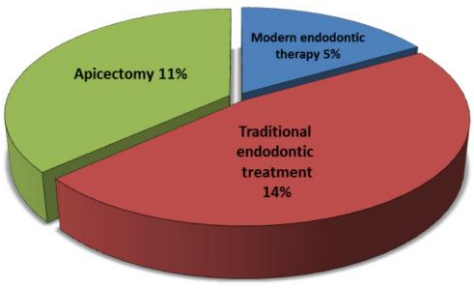

Fig. 3. The failure rate for discussed methods of treatment

CONCLUSIONS

The apicectomy is an alternative and ultimate solution for failures of the endodontic therapy. The ultrasound endodontic method registered the highest degree of success in the periapical pathology, compared to traditional root canal treatment.

Further research will be continued using larger study groups in order to confirm the reliability of our present findings.

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