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Endodontics And Pulp Biology: The Impact Clinically

Editor's Note:

This article is a précis of a presentation given at the Fourth TPEC conference in Port Douglas in September 2004.

Abstract

Endodontists in clinical practice are uniquely situated to lead the effort of transferring translational laboratory and clinical research to their practices.

This paper reviews the investigations presently being conducted around the world. The work presented is an overview of the progress being made to ensure retention of teeth with various forms of pulpal and periradicular diseases.

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Biologic Perspectives To Support Clinical Choices In Root Canal Treatment

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Abstract

Some of the most keenly debated issues in endodontics have revolved around the where to end the root filling, as well as cleaning and shaping and obturation techniques. In some respects, original scientifically-based concepts have been abandoned in favour of clinical techniques that may provide aesthetically pleasing radiographs, but do not necessarily support tissue regeneration around the root apex following obturation. Recently advocated obturation techniques supporting the use of resin-based and bonded materials have not had the same extensive evaluation that gutta-percha, when in contact with the periradicular tissues, has had. Further studies are necessary so that evidence-based data can support the confident use of these innovative materials.

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Treatment Planning Dilemmas Resulting From Failed Root Canal Cases

Editor's Note:

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Abstract

Endodontics is one of the least forgiving branches of dentistry in terms of treatment success or failure. As a result, re-treatment has become a significant part of today's endodontic practice.

In the past, it was felt that surgical treatment with root-end filling would result in the highest degree of success. It has been subsequently demonstrated that microorganisms remaining in the root canal system after treatment were the main aetiological factor in post-treatment disease. Hence, non-surgical orthograde re-treatment has become the treatment of choice. While most authors support this method of re-treatment, some feel the surgical approach is still the best, and others advocate a combination of treatments.

While treatment planning may appear to be straightforward, there are many grey areas in actual practice. This paper attempts to show a number of situations where the treatment planning may not be black and white.

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Apically-Extruded Debris Using The ProTaper System

Abstract

The purpose of this *in vitro* study was to determine the quantity of debris and irrigant extruded apically using the ProTaper system compared to ProFiles and K-Flexofiles.

Thirty-six mesio-buccal root canals of human mandibular molars were selected and divided into three groups of twelve canals. Two groups were instrumented with ProFiles and ProTapers according to the manufacturer's instructions. The other group was instrumented with K-Flexofiles using the step-back technique. A standard amount of irrigant was used for each canal. Apically-extruded debris and irrigant was collected in pre-weighed vials. The mean weight of extruded debris and irrigant for each group was statistically analysed using Student's *t*-test and one-way ANOVA.

All instrumentation techniques produced extruded debris and irrigant. Although the mean amount of extrusion with the step-back technique was higher than the two rotary systems, there was no significant difference between the three groups ($p > 0.05$).

NiTi rotary systems were associated with less apical extrusion, but were not significantly better than hand file instrumentation. All techniques extruded debris.

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Relationship Of Patient Complaints And Signs To Histopathologic Diagnosis Of Pulpal Condition

Abstract

The correlation between the histopathologic examination of pulp biopsy specimens and patients' complaints and signs was investigated. The sensitivity, specificity and reliability of each complaint and sign, and the characteristics of pain that are associated with treatable and untreatable pulp states is proposed. Pulp specimens were obtained from teeth that required endodontic treatment. Clinical data were recorded to identify each patient's complaints. The pulp specimens were processed and the histopathologic diagnoses were categorised and correlated with the patients' complaints. Of the 240 cases, 100 (41.7%) were diagnosed as atrophic pulp or pulpitis; 4 (1.7%) as acute pulpitis; 64 (26.7%) as transitional stage; 56 (23.3%) as chronic pulpitis, and 16 (6.7%) as acute pulpitis superimposed on a chronic pulpitis. Results showed that previous pain ($p < 0.05$), spontaneous pain ($p < 0.01$), and prolonged pain on cold stimuli ($p < 0.05$), were significantly more frequent in the patients with chronic pulpitis compared to those with pulpitis or transitional stage. We concluded that clinicians must consider the sensitivity and specificity of patient complaints and signs in order to perform a diagnosis based upon clinical evidence.

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Diagnosis And Treatment Planning Are Essential Prior To Commencing Endodontic Treatment: Discuss This Statement As It Relates To Clinical Endodontic Management

Abstract

Diagnosis and treatment planning are essential to the practice of endodontics. Diagnosis aims to determine whether pathological involvement of the dental pulp has or is occurring. Treatment planning meanwhile, involves appropriately selecting cases, determining how difficult the treatment may be to perform on a specific individual and sequencing treatment procedures to achieve a healthy and functional dentition. In endodontic management, this may involve establishing whether the tooth is restorable and periodontally sound, the patient is able to tolerate the treatments and the clinician has the skills to perform the required treatment procedures. Careful consideration of these issues must be given prior to commencing treatment.