A Clinical, Radiological And Microbiological Evaluation Of Root-filled Teeth With Post-treatment Disease In A Kenyan Population

Background: A number of studies on root-treated teeth in various populations have shown a prevalence rate of post-treatment disease of between 15 to 56.1%, with microbial infection being the main cause.

Objective: The aim of this study was to identify microorganisms isolated from root-treated teeth with post-treatment disease, as well as clinical and radiological features associated with such teeth, in two institutions providing dental health care in Nairobi.

Study design: This was a descriptive cross-sectional study.

Subjects and Methodology: Forty five patients presenting with post-treatment disease at the UNSDS and KNH participated in the study among whom thirty eight had microbial sampling carried out. The dental institutions were selected through convenient sampling. All the patients who presented to these institutions and satisfied the inclusion criteria during the period of study were included in the sample. An interviewer-administered semi-structured questionnaire was used to collect demographic data, the presenting complaint and the date when the endodontic treatment was carried out. Intra-oral clinical examination was done to identify the affected tooth, assess signs and symptoms of post-treatment disease and the state of the coronal restoration. Intra-oral periapical views were taken using the paralleling technique. The radiographs were used to assess the integrity of the coronal restoration, presence of periradicular radiolucency, missed canals and the quality and extent of the root filling. Microbial sample collection was carried out using strict asepsis. After removal of the root canal filling, intra-canal swabs were taken and microorganisms were identified using PCR. The data obtained were analysed using the Statistical Package for Social Sciences (SPSS) programme.

Results: Thirty one patients (68.9%) presented with pain as the only complaint, six (13.3%) had pain and swelling, one (2.6%) had pain, swelling and a sinus tract, one (2.6%) had a sinus tract while six (13.3%) had no symptoms. Posterior teeth with post-treatment disease were found to have been more thirty two (71.1%) than anterior teeth. Forty (88.9%) of the filled canals had associated periradicular radiolucency, twenty four (53.3%) had root filling short of the apex by more than 2mm, while fifteen (33.3%) had voids within the root filling. Microorganisms were present in all the samples collected. The most frequently detected microbes were Porphyromonas gingivalis, Prevotella nigrescens and Candida albicans. There was no association between post-treatment disease and the quality of root filling or any of the microorganisms.

Conclusion: Pain is the most common symptom in patients with post treatment disease. Most of the teeth evaluated had periradicular radiolucency and inadequate root-fillings. Although microorganisms were identified in all the teeth investigated, only P. Intermedia was found to have a statistically significant association with pain and swelling.

Recommendations: There is need to improve on the technical aspects of endodontic treatment in the various dental institutions. More studies are needed to
determine whether there is indeed an association between post-treatment disease and the quality of root filling as well as various intra-canal microorganisms.