

عنوان مقاله:

In-vitro Evaluation of Microleakage in Root Canal Obturation with Mineral Trioxide Aggregate and Calcium-enriched Mixture Cement Using Fluid Filtration

محل انتشار:

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نویسندگان:

Seyed Amir Mousavi - Assistant Professor of Endodontics, Dental Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

Ali Akhavan - Assistant Professor of Endodontics, Dental Materials Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

Shirin Shahnasari - Assistant Professor of Oral and Maxillofacial Surgery, Dental Implants Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

Fahimeh Razavi - Assistant Professor of Endodontics, Dental Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

خلاصه مقاله:

Introduction: Endodontic treatment failure is caused by the leakage of microorganisms and endotoxins, which leads to pathological lesions. Adequate seal of the root canal is essential to preventing recontamination and ensuring the long-term clinical success rate. Mineral trioxide aggregate (MTA) and calcium-enriched mixture cement (CEM) are common types of cement with adequate sealing capability in endodontics. The present study aimed to compare the microleakage in the root canals filled with ProRoot MTA and CEM cement using fluid filtration. **Methods:** This experimental, in-vitro study was conducted on 46 root canals of extracted mandibular premolars. After preparation and disinfection with 3% sodium hypochlorite, the crowns were resected from the cervical region. The teeth were randomly divided into two experimental groups of 20 based on the tested materials (ProRoot MTA and CEM cement), as well as two negative and positive control groups of three. All the samples were instrumented and obturated using the step-back technique, and fluid filtration was used to evaluate sealing ability and leakage inhibition. Data analysis was performed using the Mann-Whitney U test ($\alpha=0.05$). **Results:** Mean microleakage in the ProRoot MTA and CEM cement was 2 ± 0.79 and 3.02 ± 1.38 $\mu\text{L}/8$ min, respectively. In addition, a significant difference was observed between the two groups in this regard ($P<0.011$). **Conclusion:** According to the results, ProRoot MTA provided significantly less microleakage compared to the CEM cement. Therefore, the sealing ability of ProRoot MTA was higher than the CEM cement, which makes MTA a better material than CEM cement for canal obturation.

کلمات کلیدی:

Calcium-enriched Mixture, fluid filtration, mineral trioxide aggregate

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