

CORONAL MICROLEAKAGE OF THREE RESTORATIVE MATERIALS AFTER PULPOTOMY WITH MTA - AN IN VITRO STUDY

Valbona DISHA, Pavli KONGO, Fatbardha ALIAJ, Teuta DILO, Olla CAKAJ, Dervish ELEZI, Elizana PETRELA, Majlinda BUBA

¹ Pediatric Dentistry, Dentistria Preventive, Albanian University

² Rector, Endodontic Department, Albanian University

³ As. prof, Albanian University

⁴ Dep. Physics, Faculty of Natural Sciences, Tirana University

⁵ Dep. Physics, Faculty of Engineering Physics, Polytechnic University of Tirana

⁶ Dep. of Production and Management, Faculty of Mechanical Engineering, UPT

⁷ Faculty of Medicine, University of Tirana, Service of Statistics

⁸ Oncological Service, Mother Teresa University Hospital Center and Medicine Faculty, University of Tirana

Abstract

Pulpotomy is one of the most common procedure, which is applied to children, especially in immature permanent teeth.

Purpose: The aim of this study was to assess the coronal microleakage of three restorative materials after pulpotomy with MTA (mineral trioxide aggregate): IRM (intermediate restorative material) - group A; glassionomer aqua-ionobond - group B and composite resin- group C.

Methods: Fifteen extracted teeth for periodontal reasons that had been stored in formalin 10% are divided randomly in three groups and after pulpotomy with MTA are filled with above materials according respective groups. The specimens were placed in normal saline and stored in an incubator at 37°C for 24 hours to ensure setting of the materials. The teeth were then thermocycled for 150 cycles, dried and sealed with nail varnish, leaving 1 mm around the restorations and immersed in 0.5% methylene blue dye for one week. They were then rinsed, dried and sectioned longitudinal, and microleakage was evaluated using a stereomicroscope (10×).

Results: According to results, the microleakage was 79,9% for group A, 29,3% group B and 11,2% group C. The microleakage was present in every group, (more frequent in group A) with a statistical difference between groups ($p=0.001$).

Conclusions: The temporary material was the most compromising, leading to failure of treatment. For this reason, the permanent restoration may apply immediately since MTA does not necessarily require a moist cotton pellet for setting.

Key words: Coronal microleakage, glassionomer cement, MTA, pulpotomy, thermocycle.

Introduction

Finn (1995) defined pulpotomy as the complete removal of the coronal portion of the dental pulp, followed by placement of a suitable dressing or medicament that will promote healing and preserve vitality of the tooth. One of the most important and difficult aspect in this therapy is definition of pulp status or phase of its inflammation (1). After definition of the diagnosis and the amount of pulp to be removed, then the results are related with quality of the restoration.

Recently are some materials that's find use in pulpotomy for permanent teeth. One of them is MTA (mineral trioxide aggregate), who is using rarely in our clinics in Albania because of its cost.

When the material is hydrated it becomes a colloidal gel that solidifies in approximately 3 hours (2) and recommended for use in vital pulp therapy (3, 4, 5, 6, 7). Arens and Torabinejad (8) have recommended covering MTA with a wet cotton pellet and a layer of IRM (intermediate restorative material) to get a better setting of the material. So, the permanent restoration delayed in the next visit.

Recontamination of the tooth can occur between appointments in some clinical circumstances such as leakage, loss of the temporary filling or fracture and massive restoration. In these situations, the pulp is exposed to the oral cavity, which allows its recontamination by fluids, organic material or microorganisms.

A review of the endodontic literature has indicated there is no general consensus if the application of a moist