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Modern Silers In The Treatment Of Apical Periodontitis

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Abstract: To get practical expertise treating permanent teeth's apical periodontitis with new silers.Root canal obturation using a novel siler based on epoxy resin and bioceramic siler has been used to treat chronic apical periodontitis in permanent teeth.

Keywords: Root canal obturation, sealer, novel materials, endodontic therapy.

Introduction: We can say that modern sealers are easy to use and provide excellent clinical outcomes because of our experience utilizing them in endodontic treatment of permanent teeth.

One of the most challenging areas of therapeutic dentistry is endodontics. Numerous nosological forms of pulp and apical periodontal diseases, the complexity and variability of the root canal system's anatomy, different approaches to mechanical and medical intervention in the endodontium, root canal obturation techniques and systems, and post-endodontic restoration techniques are all results of significant challenges in endodontic treatment. In order to prevent tissue fluid from periapical tissues from entering the canal, the root canal system must be filled, connection between the root canal and the crown portion of the tooth cavity must be eliminated, and germs must be isolated. For filling, siler and filler (gutta-percha is now chosen) are utilized. The filling of dentinal tubules and microspaces, the smoothing of canal wall imperfections, and the provision of gutta-percha pin sliding are all thought to constitute sillier functions. Currently, silers are classified as follows: resin-based (“AH Plus,” “Acroseal,” “EndoRez”); mineral trioxide aggregate (MTA) and its base (“MTA-Fillapex,” “Aureoseal”); silicone-based (“RoekoSeal,” “GuttaFlow”); glass ionomer cements (“Ketac Endo,” “Endosil”); zinc-oxide-eugenol cements (“Roth," “Kerr PCS", “Endomethasone N,” “Apexit”); based on dentin adhesives (“Epiphany”); and bioceramic ("Sure-Seal Root”). Currently, silers

based on organic resins are the most often used in clinical practice. Biocompatibility, excellent germetism, low viscosity, and comfortable working time are some of its benefits. This group of silers' drawbacks include post-filling pain during effusion (dynamic verification of the working length is required), sensitivity to oxidant traces in the canal (the final instillant should not be hydrogen peroxide), and sensitivity to moisture (the canal should be completely dry before filling). One of the most recent innovations in this category is the epoxy resin-based sealer known as "BJM Root Canal sealer" (BJM). This material is special because of its immobilized antibacterial technology, or IABT. The method is based on adding "Biosafe HM4100" molecules (quaternary ammonium compound) to the siler (BioSafe Inc., USA). These positively charged molecules work by electrostatically interacting with negatively charged bacterial cells, changing the permeability of their membranes and ultimately causing their death. High radiopacity, excellent wetting and flowability (greater than many other epoxy-based sealers!), long-term stability owing to good hermeticity and moderate flexibility, which prevents breaking of the cured material, and minimal shrinkage are some of the key characteristics of BJM Root Canal sealer. The following steps of using BJM Root Canal sealer in the cold gutta-percha technique can be distinguished: - drying the root canal (after mechanical and medical treatment); - introducing the siler (for example, on a paper pin); - introducing gutta-percha pins moistened with siler (and their condensation). The fact that this siler works with various kinds of heated and thermoplasticized gutta-percha further highlights its versatility.

A clinical instance One In order to discuss the possibilities of therapeutic treatment for tooth 3.6, patient M. came in for consultation. The tooth had previously had caries treatment, according to the anamnesis. The patient sought treatment from a general dentist after losing a filling, and the dentist was instructed to pull tooth 3.6. clinical image. Tooth 3.6 has a deep carious cavity on its chewing surface and a piece of an old filling on its distal surface. Percussion and probing along the bottom of the carious cavity don't hurt. The mucous membrane in tooth 3.6's projection remains the same. The radiograph shows a deep carious cavity in tooth 3.6 that is interacting with the tooth cavity and a piece of a filling. One can see the root canal lumen. There are indistinctly contoured foci of bone tissue degradation in the vicinity of apices, measuring 0.4 x 0.5 and 0.6 x 0.7 cm (Fig. 1). The diagnosis is: tooth 3.6 with chronic apical periodontitis. The following actions were included in the treatment plan that was suggested to the patient for tooth 3.6.

Apexlocation and primary mechanical and medical root canal therapy, followed by a two-week aqueous calcium hydroxide filling.

repeated apexlocation and mechanical and medical root canal treatments, followed by gutta-percha pin filling using "BJM Root Canal sealer." filled with photocomposite material after a delay.

dynamic follow-up for three, six, and twelve months. After obtaining the patient's informed permission for the aforementioned plan, items 1-2 were carried out. Four months following filling, the patient returned for a control examination. Other than post-restoration soreness, she had no complaints. Clinical examination revealed that tooth 3.6's restoration was tight, the tooth's percussion was painless, and the tooth's projection showed no mucosal response. On the radiograph, periapical tissues showed evidence of healing and a reduction in the extent of foci of destruction; root canals were densely packed with contrast over their entire length. One year after filling, the subsequent control examination was conducted. The patient had no complaints, and tooth 3.6's condition remained unaltered upon visual and tactile assessment. The radiograph revealed a little enlargement of the periodontal space around the tooth's mesial root's tip.

A novel class of materials known as bioceramic sizers consists of several components such as calcium hydroxide, calcium silicates, calcium dihydroorthophosphate, and zirconium oxide. "Sure Seal Root" (also known as "Sure Dent") was the first product from this group to be registered in the Republic of Belarus. This material's most crucial characteristics are:

There is no shrinking.

Hydrophilicity and 3D obturation are provided. Hydroxyapatite formation.

Osteogenicity and biocompatibility.

chemical attachment to dentin.

effect against bacteria (pH>12).

radiopacity.

Working and curing times are convenient (25 minutes to 2.5 hours).

Usability (ready-to-use paste).

A clinical instance 2 Patient M. reported that the crowns of her upper central incisors were discolored. According to the anamnesis, these teeth had endodontic treatment while they were in school. clinical image. Complete fillings are present on the proximal and palatine surfaces of teeth 1.1 and 2.1, whereas their crowns are stained. The results of the cold test are

negative. There is no discomfort associated with percussion. The mucous membrane of the upper incisor projection remains unaltered. The radiograph shows evidence of obturation materials in the root canals of teeth 1.1 and 2.1, as well as foci of bone tissue deterioration with distinct contours of 0.4–0.5 cm in size in the periapical region.

Chronic apical periodontitis of the teeth is the diagnosis. The patient was given a planned and approved treatment plan. The following phases were part of the treatment:

tooth isolation. Cofferdam: old fillings are removed.

Root canal filling and passage using K-file #15.

Apexlocator working length determination and radiological verification (1.1–24 mm, 2.1–25 mm).

SX/S1 and S2 protapers are used to treat the cervical and middle thirds of the canals, respectively.

Using protapers F1, F2, F3, F4, and F5, the apical third of the canals is treated and shaped.

Following each instrument, the working length is confirmed with an apex finder, and EDTA (17%) and sodium hypochlorite (3%) are used for medicalization. Following treatment, iodides, hydrogen peroxide, and distilled water are used for further treatment. Endoactivator is used to activate all solutions for 30 to 60 seconds. Canal obturation is accomplished by lateral condensation of gutta-percha using the bioceramic sealer "Sure Seal Root" and postponed glass ionomer cement filling.

CONCLUSION

In conclusion We can conclude that modern silers are easy to use, effective, and suitable for widespread clinical usage in dentistry based on our experience treating apical periodontitis of permanent teeth.

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