

Missed Canal Systems are the Most Likely Basis for Endodontic Retreatment of Molars

David E. Witherspoon, BDS_c, MS

Joel C. Small, DDS, MBA

John D. Regan, DDS, MSc, MS

Introduction

The goal of endodontic treatment is to preserve healthy and functional teeth. Classic studies report a success rate of approximately 95% in all treated endodontic cases (1-3). The small percentage of endodontic failures are characterized by persistent or reoccurring apical periodontitis. Typically, the lack of healing is a result of persistent intraradicular infection residing in previously uninstrumented canals or in the complex irregularities of the root canal system (4). In a smaller percentage of cases, persistent apical periodontitis is due to extraradicular causes including periapical actinomyces, a foreign body reaction or an unresolved cystic lesion (5-9).

An examination of failed cases showed that more than two-thirds of these failures were related to incomplete cleaning and obturation of the root canal system (1). The quality of previous endodontic treatment has been found to be a major factor in the success of retreatment procedures, with previous poor quality endodontic treatment having a great-



Witherspoon



Small



Regan

David E. Witherspoon, BDS_c, MS, private practice limited to endodontics, Plano, Texas.

Joel C. Small, DDS, MBA, private practice limited to endodontics, Plano, Texas.

John D. Regan, DDS, MSc, MS, private practice limited to endodontics, Plano, Texas.

Corresponding address and print requests: David E. Witherspoon, BDS_c, MS, 5800 Coit Rd Ste 200, Plano, TX 75023; Email: dewspoon@ntendo.com.

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Abstract

Unfortunately, a small percentage of endodontically treated teeth do not respond favorably to non-surgical root canal treatment. Failure to locate and treat an additional canal system is cited as the principle basis for endodontic retreatment. The aim of this retrospective clinical study was to identify the incidence of additional or missed canal systems in molar retreatment cases in a private practice setting. Missed canals were identified in 64 of the 133 previously treated teeth (48%). Of the total missed canals, 11% involved a maxillary second molar and 44% involved a maxillary first molar. For the maxillary first molars, 93% of all missed canal were identified in the mesiobuccal root. In the mandibular second molars, 29% of missed canals were identified in the distal and 71% were identified in the mesial root. In the mandibular first molars, 86% of missed canals were identified in the distal and 14% were identified in the mesial root. The results of the current study support the findings of previous studies and confirm the importance of locating, instrumenting and obturating the additional canal systems in molar endodontic treatment. Given that failure to locate all canal systems of a tooth contributes significantly to unsuccessful endodontic treatment, all measures available to the clinician to maximize canal identification should be used.

KEY WORDS: missed root canal, endodontic retreatment, tooth anatomy

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CASE REPORT

CAD/CAM and Lithium Disilicate: An Anterior Esthetic Case Study

Richard Zimmermann, DDS
Stefanie Seitz, DDS
Jim Evans, PhD
Justin Bonner, DDS

Introduction

The materials available today enable clinicians a variety of choices when considering a material for esthetic cases. Two of these materials considered for this case were zirconia with facial porcelain and lithium disilicate. Zirconia allows for minimal preparation of tooth structure due to the fact that it is an incredibly strong material with a flexural strength of 900 MPa (1). In addition, the degree of antagonistic tooth wear is less in zirconia than feldspathic dental porcelain (2). However, advanced technical training on zirconia-based restorations is recommended when compared to lithium disilicate (3). In the following case study, lithium disilicate (e.max CAD, Ivoclar Vivadent) was chosen due to several factors. Lithium disilicate is an esthetic material with high and low translucency options in a variety of classic shades, as well as a medium opacity that can be used as an anatomic framework material if restorations must be fully layered (4). The e.max CAD block is not initially fully crystallized, which improves milling time and decreases the risk of material chipping during milling. The milled restoration is then fired for 20-30 minutes to crystallize and produce the final shade and mechanical properties of the ceramic (5). Lithium disilicate has a favorable flexural strength of 360-400 MPa when compared to the strength of traditional feldspathic porcelain and can be conventionally

Richard L. Zimmermann, DDS, assistant professor, Department of Comprehensive Dentistry, University of Texas Health Science Center at San Antonio Dental School, San Antonio, Texas.

Stefanie Seitz, DDS, general dentist in private practice and assistant professor, Department of Comprehensive Dentistry, University of Texas Health Science Center at San Antonio Dental School, San Antonio, Texas.

Jim Evans, PhD, certified dental technician, Department of Comprehensive Dentistry, University of Texas Health Science Center at San Antonio Dental School, San Antonio, Texas.

Justin Bonner, DDS, (currently) oral surgery resident, University of California, San Francisco, California; (at manuscript writing) dental student, University of Texas Health Science Center at San Antonio Dental School, San Antonio, Texas.

Correspondence: Richard L. Zimmerman, DDS, University of Texas Health Science Center at San Antonio, Mail Code 7914, 7703 Floyd Curl Dr, San Antonio, TX 78229-3900; E-mail: zimmermannr@uthscsa.edu.

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Abstract

Digital technology has brought a new and exciting dimension to dental esthetics. Innovative ways to take impressions and create chair-side restorations are continuing to expand and new dental materials specifically made for CAD/CAM are allowing for extremely esthetic restorations. Lithium disilicate is one such material that is efficiently milled, has a favorable flexural strength, and provides highly esthetic chair-side restorations. The following is a case study that utilizes lithium disilicate for esthetic full coverage crowns on teeth #7, 8, 9, and 10.

KEY WORDS:
CAD/CAM, lithium disilicate, e.max CAD

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