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ENDODONTIC TREATMENT CHALLENGES IN THE GERIATRIC PATIENTS

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ABSTRACT

Systemic diseases or medications used in geriatric patients cause contraindication for tooth extraction. Based on the systemic diseases, endodontic treatment becomes the only option. However, soft and hard tissue changes that occur with age can complicate endodontic procedures. The purpose of this review is to reveal the difficulties of endodontic treatment with solutions in geriatric patients.

Keywords: *Endodontic challenges, geriatric endodontics, root canal treatment in geriatric patients*

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GERİATRİK HASTALARDA ENDODONTİK TEDAVİ ZORLUKLARI

ÖZ

Geriatric hastalarda gözlenen sistemik hastalıklar veya hastaların kullandığı ilaçlar diş çekimini kontrendike hale getirebilir. Bu durumda endodontik tedaviler bazen tek seçenek haline gelir. Ancak yaşla beraber oluşan yumuşak ve sert doku değişiklikleri endodontik tedavileri zorlaştırabilir. Bu derlemenin amacı; geriatric hastalarda endodontik tedavi zorluklarını çözümleriyle birlikte ortaya koymaktır.

Anahtar Kelimeler: *Endodontik zorluklar, geriatric endodonti, geriatric hastalarda kök kanal tedavisi*

INTRODUCTION

The number of patients who age with their own teeth increases day by day. This is parallel to improvements in dental procedures and materials¹. And so fewer patients will apply to the dentist with the demand for tooth extraction. In addition, teeth in elder individuals were exposed to more dental procedures. This exposure has a pathological effect on the teeth and surrounding tissues. As a result of dental needs and expectations with aging, the tasks of endodontists are increasing².

Age is an important research tool for understanding dental diseases, although its role is not clear³. The bacterial infection seems to be the most important factor affecting success in endodontic procedures⁴. Age is not a determining factor in the prognosis of apical periodontitis and the effect of systemic diseases has not been determined yet⁵. Even though it has been shown that age and systemic condition do not affect the success of the treatment, for an appropriate root canal treatment, the patient should be able to provide sufficient cooperation for dental procedures and have medical suitability⁶.

With age and diseases like Parkinson's disease, the hand-brain coordination of patients decreases. Maintaining daily oral hygiene may be difficult in these patients. The changes in the function and structure of saliva, the constant consumption of soft foods, the loss of the protective enamel layer of the teeth over time make the teeth more prone to caries⁷. Root surface caries are one of the causes of tooth loss in geriatric patients. Attachment loss and gingival recession increase the incidence of root surface caries⁸. In addition, the inability to completely clean the food impactions and local traumas may cause root surface caries⁷. Age and periodontal diseases may be related because of the decrease in tissue response to irritants, inadequate cell regeneration, or tissue healing³.

Morphologic changes occur in both the crowns and roots of the teeth with aging⁹. As a result of attrition on the enamel surface, the tooth may lose its original crown shape. Loss of important coronal guide points can complicate preparing root canal cavity access. Secondary dentin, which is produced during the life cycle of the tooth, accumulates in the pulp chamber. In addition, the volume of the pulp chamber decreases with tertiary dentin. The shape of the pulp chamber is flattened over time which makes it difficult to detect¹⁰. Secondary dentin deposits may cause obliteration of the root canal in elderly patients due to aging¹⁰.

Root canal treatment is expressed as moderately or highly difficult according to the level of obliteration when the pulp chamber and root canals are calcified¹². To provide straight-line access, an incisal cavity can be prepared in anterior teeth with excessive secondary dentin deposition¹³. Magnification and transillumination use of CBCT scans, guided access cavity

preparation, and ultrasonic tips are useful for the detection and preparation of calcified root canals¹⁴. Besides the utilization of technological equipment, root canal morphology knowledge provides advanced and successful endodontic treatment.

With aging, blood, lymph, and nerve support to the tooth decrease due to cementum deposition in the apical foramen. Fat droplets accumulate in the pulp tissue. Collagen fibers increase while odontoblast, fibroblast, and mesenchymal cells decrease. The cell density in the pulp is reduced by almost half from the age of 20 to 70. Eventually, the pulp turns into a fibrous structure. This is called fibrous degeneration¹⁵. There is another point that dentists should not overlook. The changes in the neurovascular supply reduce pulp regeneration and reparative capacity¹⁶. This may change the success of vital pulp therapy in elder patients¹⁷.

This histological differentiation in the dental pulp may complicate the detection of pathological changes. The decrease in the density of vascular and nerve supply in the aging tooth may cause the stimulation given for diagnosis to be ineffective. It has shown that elder patient has prolonged response time to diagnostic tests. In addition, since the excitability of the pulp decreases, the tolerance to pain increases with age. The probability of a false-negative response from pulp sensibility tests increases¹⁸.

Cementum is produced throughout life, especially in the apical area¹⁹. Due to cementum deposition, the minor apical foramen relocates coronally. It is important because wrongly determining the working length during the root canal treatment can cause over-instrumentation and/or extrusion of root canal filling materials²⁰. Apex locator²¹ and CBCT²² may be useful in these cases because the minor apical foramen cannot be determined with periapical radiographs²³.

Notwithstanding all these difficulties, endodontists train themselves to ensure that patients age with natural dentition. The function of natural teeth in the mouth improves the quality of life and general health of aging patients. Besides that, some teeth may become strategic for prosthetic restorations. In some patients, teeth may not extract because of the effects of drugs and systemic diseases²⁴. Additionally, tooth loss may cause psychological problems in some patients²⁵.

Dentists often prescribe antibiotics and analgesics. Also, anesthetics are part of the dental procedure²⁶ and elderly patients often use drugs related to gastrointestinal, psychotropic, and endocrine diseases²⁷. Due to drug interactions, clinicians should take special care when prescribing medication and applying anesthetics for elderly individuals with complex medical conditions.

CONCLUSION

While endodontic treatments, the clinician should be aware of systemic diseases that may affect the treatment procedure in geriatric patients. The drugs used by the patients and their interactions may cause changes in the hard or soft tissue of the teeth and jaw. The most appropriate treatment should be chosen for the patient.

Conflicts of Interest

The author has no conflicts of interest to article.

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