Received: 26 January 2020 | Revised: 20 April 2020 | Accepted: 22 April 2020

DOI: 10.1002/ccr3.2937

CLINICAL IMAGE

Clinical Case Reports Open Access WILEY

Transparent dentin region in the tooth root

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Abstract

Transparent dentin in the tooth root forms during the aging process. The transparent dentin is weaker than normal opaque dentin, which may explain the occurrence of root dentin fractures in aged individuals. Tooth fractures are caused by the brittleness of the transparent dentin. Clinical procedures in aged persons require modification to accommodate the reduced strength of the dentin tissue.

KEYWORDS

dentin, root, teeth, transparent dentin

Question: What is the region in which the color has changed (yellow arrow) in the tooth root of Figure 1A?

Answer: Transparent dentin.

A 60-year-old patient underwent extraction of the mandibular second premolar because of tooth mobility and severe attachment loss due to periodontal disease. The tooth tissue, particularly the optical properties of root dentin, changes as aging progresses. Dentin transparency is a commonly observed physiological process in aged teeth that starts at the apical end of the root and often extends into the coronal dentin (Figure 1A). However, it is difficult for practitioners to determine the presence of this anomaly without extracting the tooth. In this case, the transparent dentin was observed using a scanning electron microscope. The dentin tubule lumens had become filled with mineral (yellow arrows), decreasing the amount of light that scattered off the lumens (Figure 1B).

Transparent dentin is brittle in comparison with healthy dentin; it is also weaker.[1] Thus, transparent dentin is more fragile and susceptible to cracks,[2] which cause root fractures. Symptoms of root fractures are dull pain, gingival swelling, and sinus tracts that lead to deep localized periodontal pockets and vertical bone defects. Tooth fracture is a major

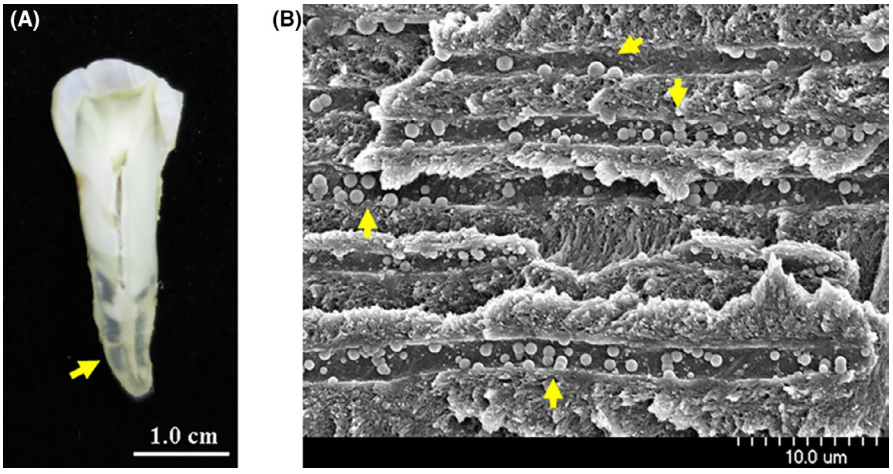

FIGURE 1 A, Section image of the whole tooth (mandibular second premolar). B, Scanning electron microscope image of the transparent dentin

problem in dentistry and a common cause of tooth loss. The morphological variations of dentin make it a difficult substrate to manage in clinical dentistry.

CONFLICT OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

TI: designed the project and wrote the manuscript. MS: collected and analyzed the data and created the figures. FN and TM: aided in manuscript writing and editing. All authors have read and approved the final manuscript.

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How to cite this article: Inoue T, Saito M, Nishimura F, Miyazaki T. Transparent dentin region in the tooth root. *Clin Case Rep*. 2020;8:1831–1832. https://doi.org/10.1002/ccr3.2937