

CASE STUDY

Endodontic Treatment Preserves Teeth in the Aesthetic Zone

by Dr. Roberto Aza

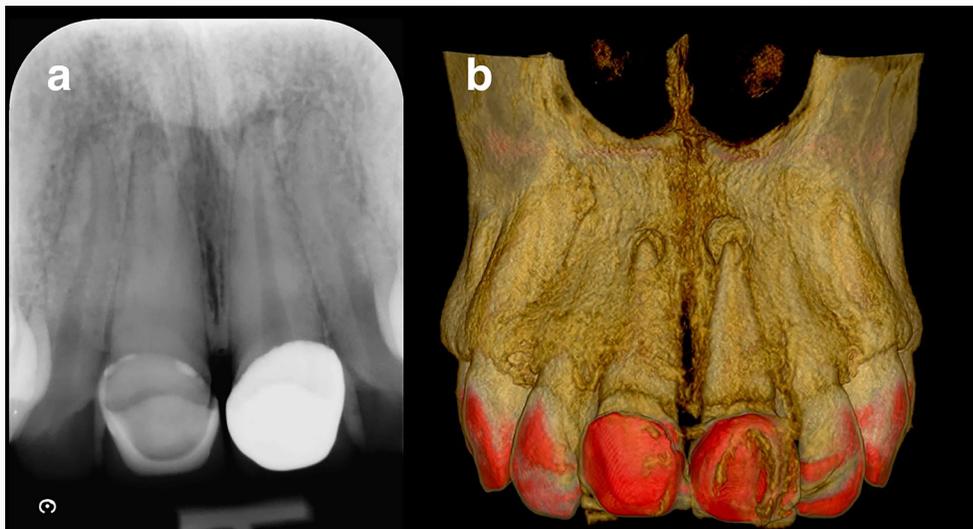


Fig. 1: a.) Periapical radiolucencies in both upper central incisors and a severe pulp calcification in tooth 1.1. b.) 3D reconstruction of the volume acquisition

Introduction

A 40-year-old woman was referred to our dental office with a history of acute periapical abscess. A conventional radiographic examination using the RVG 6100 was performed and showed periapical radiolucencies in both upper central incisors and a severe pulp calcification in tooth 1.1 (Fig. 1a).



Diagnosis and Treatment Planning

Tridimensional diagnosis was done with the CS 8100 3D extraoral imaging system using a 5 cm x 5 cm FOV and high resolution (75 μ m voxel size). Data obtained during the acquisition showed periapical bone loss in teeth 1.1 and 2.1 (Fig. 1b); apical periodontitis and a severe pulp canal obliteration in the sagittal plane of tooth 1.1 (Fig. 2a); and apical periodontitis in the sagittal plane of tooth 2.1 (Fig. 2c).



Fig. 2: a.) sagittal plane of tooth 1.1 b.) location and measurement of canal 1.1 c.) sagittal plane of tooth 2.1

High-quality images obtained with the CS 8100 3D allowed us to make a correct diagnosis and treatment plan accordingly, especially in tooth 1.1 due to the presence of a severe calcification. With the clinical history, conventional radiographic examination and advanced tridimensional exam (CBCT), the plan presented to the patient was endodontic treatment of 1.1 and 2.1 in order to save both teeth, eliminate periapical pathosis and regenerate bone loss.

Treatment and Follow-up

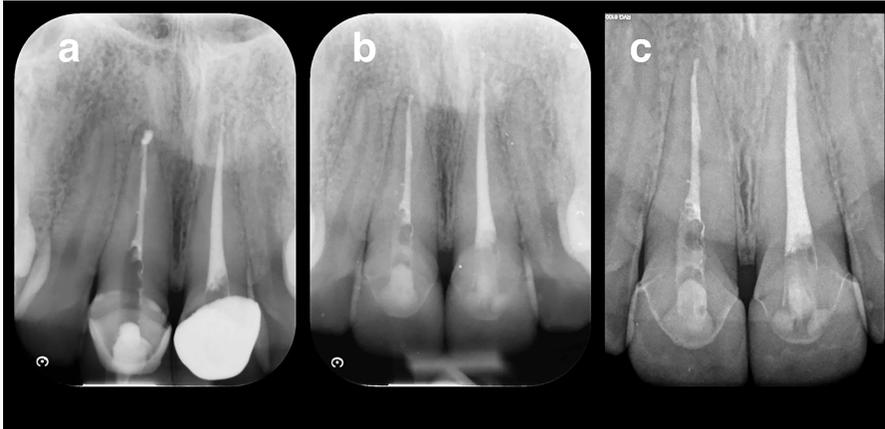


Fig. 3: a) treatment confirmed with radiograph b) one-year follow-up confirmed with periapical radiograph c) two and half years follow-up confirmed with periapical radiography

Root canal therapy was performed and confirmed with a radiograph taken with the RVG 6100 (Fig. 3a). Follow-up radiographic exams conducted after one year (Fig. 3b) and two-and-half years (Fig. 3c) showed the periapical radiolucency in both teeth had disappeared.

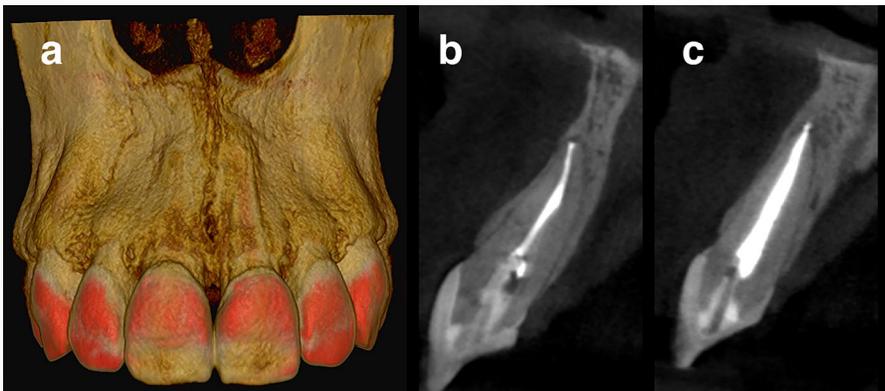


Fig. 4: a) two and half year follow-up 3D volume; b) two and half years follow-up sagittal plane of tooth 1.1 c) two and half years follow-up sagittal plane of tooth 2.1

Tridimensional follow-up at two-and-half years obtained with the CS 8100 3D (Fig. 4) revealed bone regeneration in the periapical region (Fig. 4a) and complete bone regeneration for teeth 1.1 (Fig. 4b) and 2.1 (Fig. 4c) when viewed in the sagittal plane.

The Conclusion

Endodontic treatment objectives include elimination of periapical pathology and regeneration of bone loss due to bacterial contamination. In this case, the aesthetic and functional importance of both teeth were included in the treatment plan.

Periapical radiography is essential in endodontics, however, in many clinical situations, the information obtained by 2D periapical radiography is not enough. That's why endodontists need a CBCT exam to make an accurate diagnosis and treatment plan. Not all CBCT modalities (field of view and spatial resolution) are indicated for use in endodontics, as we need the highest possible spatial resolution to obtain a diagnostically acceptable and interpretable image. Fortunately, the CS 8100 3D was designed to meet the needs of specialists like endodontists.

About the Author



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- Dental Degree. ISCS-SUL, Lisbon. 1990-1996
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