

Efficient and Predictable Endodontics

Treating a patient using EdgeFile X7 and EdgeBioCeramic Sealer

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Case presentation

A 38-year-old female patient presented with spontaneous pain and lingering sensitivity in the mandibular first molar (#19) (Fig. 1). A clinical examination revealed a deep cavity inlay preparation with temporary restorative material present (Fig. 2). Both clinical and radiographic findings confirmed a diagnosis of symptomatic irreversible pulpitis with symptomatic apical periodontitis. Nonsurgical root canal therapy was recommended.

Step-by-step procedure

Anesthesia and isolation

The patient was anesthetized with 3.6 mL of 2% lidocaine with 1:100,000 epinephrine via an inferior alveolar nerve block, supplemented with a buccal infiltration of 1.8 mL of 4% articaine with 1:100,000 epinephrine. A rubber dam was placed to ensure proper isolation.

Access

An endodontic access cavity was prepared using a high-speed handpiece with a diamond bur. The pulp chamber was debrided, and the four canals (mesiobuccal, mid-mesial, mesiolingual and distal) were located using an endodontic explorer and a DG-16 probe.

Shaping with EdgeFile X7

Working lengths were determined using an electronic apex locator. A #10 K-file was used to establish a glide path and confirm canal patency. The EdgeFile X7 NiTi rotary files were then used in a crown-down technique:

- **File sequence.** 17.04, 20.04 and 25.04 for the mesial canals. 17.04, 20.04, 25.04 and 30.04 for the distal canal. The mid-mesial canal merged with the mesiobuccal canal (Fig. 3).
- **Torque and speed.** 450 RPM, 2.5 Ncm.
- **Irrigation.** 5.25% NaOCl between file changes to remove debris and disinfect the canal system.
- **Recapitulation.** Performed with a #10 K-file to maintain patency.

Advantages of EdgeFile X7:

- **Enhanced flexibility.** FireWire NiTi technology allows for superior flexibility, reducing the risk of ledging or transportation.
- **Reduced shape memory.** Maintains the natural curvature of the canal, preserving anatomy and minimizing procedural errors.
- **Improved cyclic fatigue resistance.** Enhances durability, lowering the risk of file separation.

The X7 files efficiently shape the curved mesiobuccal and mesiolingual canals while preserving canal integrity.

Final irrigation and drying

Final irrigation was performed using:

- 17% EDTA for one minute to remove the smear layer.
- 5.25% NaOCl for disinfection.
- A saline flush to neutralize.

The canals were then dried with sterile paper points.

Obturation with EdgeBioCeramic Sealer

A single-cone obturation technique was performed using EdgeBioCeramic sealer:

- A master gutta-percha cone (matching the final file size) was tried in, with radiographic confirmation of length (Fig. 4).
- The cones were sterilized for one minute in 5.25% NaOCl and then dried.
- EdgeBioCeramic sealer was placed in the canals, followed by gutta-percha cones to working length (Fig. 5).
- The gutta-percha was cut at the orifice using an EdgePack-heated WP4004 tip plugger (Figs. 6 and 7).

Fig. 1: Preoperative radiograph showing deep restoration preparation in tooth #19.

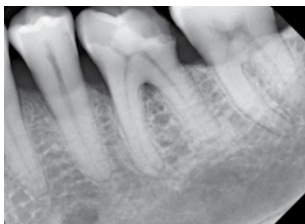


Fig. 2



Fig. 3



Fig. 4: Cone fit radiograph.



Fig. 5



Fig. 6



Fig. 7: EdgePack.



Fig. 8



Fig. 9: Postoperative radiograph demonstrating well-obturedated canals with EdgeBioCeramic Sealer and final composite build-up.



Fig. 10: Root canal treatment of #30.

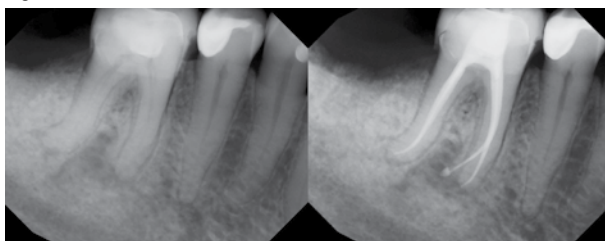


Fig. 11: EdgeFile X7.



Fig. 12: EdgeBioCeramic Sealer.



Benefits of EdgeBioCeramic sealer:

- **Biocompatibility.** Promotes a favorable tissue response and reduces postoperative inflammation.
- **Superior sealing ability.** Net expansion on setting and hydrophilic properties ensure tight adaptation to dentinal walls, minimizing microleakage.
- **Antimicrobial properties.** High pH contributes to bacterial elimination, reducing the risk of reinfection.
- **Bioactivity.** Encourages hydroxyapatite formation, supporting periapical healing and regeneration.

Coronal restoration

A composite core overlay buildup was performed using Clearfil SE Bond 2 and DC Core Build-Up (Kuraray Noritake). A final restoration was placed to reinforce the structural integrity of the tooth (Fig. 8). Postoperative radiographs (Fig. 9) confirmed well-obturedated canals with no voids.

Conclusion

The use of EdgeFile X7 rotary files and EdgeBioCeramic sealer provided a streamlined, predictable and efficient endodontic treatment. Another case using the above technique (Fig. 10) demonstrates superior flexibility, cutting efficiency

and biocompatibility, contributing to an excellent clinical outcome. By incorporating these advanced materials, clinicians can achieve long-term success in endodontic therapy with confidence and consistency.



Dr. Biraj Patel is a board-certified endodontist with specialist training from the University of Texas. He practices at the Harley Street Centre for Endodontics in London. As a global lecturer and researcher, he focuses on microsurgery, pain management and endodontic advancements.