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Editorial

Current Applications of Modern Technologies in Endodontics

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We are pleased to present this Special Issue on "Current Applications of Modern Technologies in Endodontics".

Commonly, in modern endodontics, the complete chemomechanical disinfection of the root canal system is essential in achieving success. Specifically, this goal can be gained through good shaping, 3D cleaning, and the three-dimensional obturation of the complicated endodontic area [1,2], as presented in Figure 1.

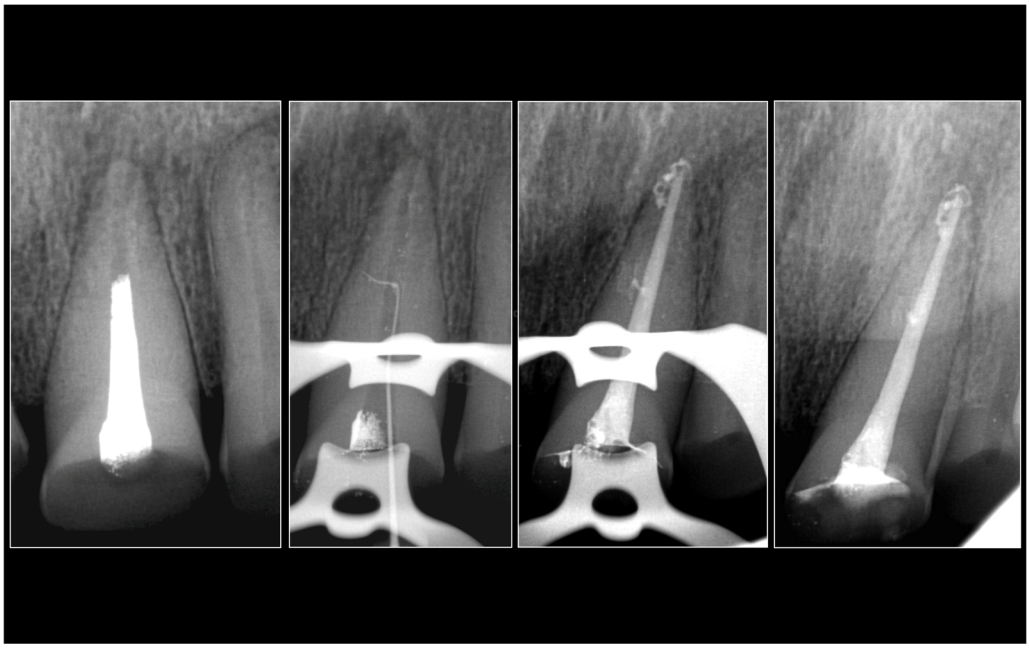

Figure 1. Non-surgical endodontic retreatment of tooth number 2.1. A complex endodontic space can be seen.

Recently, with the development of modern technologies, such as CBCT, operating microscopes, special ultrasonic tips, contemporary rotary files, devices to activate irrigation, and three-dimensional obturation techniques combined with biosealers, promising and predictable clinical outcomes could be obtained.

The use of CBCT has revolutionized diagnoses in endodontics; owing to this accurate 3D examination, it is possible to anticipate difficult anatomies, root fractures, and internal or external resorptions. Furthermore, CBCT helped to evaluate the sinusitis of the periapical origin and examine small periapical lesions [3].

On the other hand, using high-magnification and ultrasonic tips allows the clinician to perform with higher precision and conservatism. Additionally, the human eye has limits, and only with the help of high magnification is it possible to exceed this limit.

The ultrasonic tips under an operative microscope are useful in endodontic surgery and non-surgical endodontic retreatment, e.g., in removing broken files, fiber posts, and calcifications.

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The three fundamental steps in endodontics are shaping, 3D cleaning, and 3D obturation. With the introduction of modern rotary files, the shape of difficult anatomies became more feasible. Correspondingly, the less skilled operators can safely shape severe curvatures without the risk of breaking the files or altering the root canal's original anatomy [4–7].

The 3D cleaning phase is fundamental to cleaning all the complex endodontic spaces. However, the maximum cleaning depth can only be reached by employing powerful irrigant activation techniques. Examples of activation techniques include ultrasonic activation, sonics, lasers, etc. Notably, a recently introduced technique involves the internal heating of NaOCl inside the canal, followed by ultrasonic activation. This easy but highly effective irrigation technique is called internal heating and ultrasonic activation (IHAN) [8–10].

Ultimately, the final step of a root canal treatment is the three-dimensional obturation of the formerly cleaned endodontic space. Revolutionary sealers, the biosealers, have been introduced in recent years. This new generation of sealers has many benefits, including faster healing, better antibacterial activity, low solubility, micro-expansion inside the root canals, and high PH [11–13].

This Special Issue aims to discuss all the technologies available today to increase the success rates in root canal treatment.

We are confident that the research contained herein will enlighten the path to modern technologies in endodontics.

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