

New Indications Regarding the Use of Endodontic Ni-Ti Rotary Instruments, How Is Shaping Changing?

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The possibility of performing root canal treatment has greatly increased with significantly wider margins of success than in the past.¹

This possibility is guaranteed by various factors: The possibility of early diagnosis of even very small lesions, with gains in terms of recoverable tissues and healing times, the greater effectiveness of rotary instruments which allow for extremely high levels of resistance to stress and rapidity in completing the treatment, almost complete disinfection and cements and closing techniques that significantly reduce the gaps.²⁻⁷

Focusing on the innovations introduced by rotary instruments, we can define countless advantages that new alloys and new engines allow us to achieve.^{8,9}

In particular, the possibility currently offered by various instruments to optimize the movement (through endodontic motor software) according to the type of instrument or according to the difficulty of the clinical case represents an interesting future prospect that is now absolutely current.^{9,10}

Furthermore, the possibility of modifying the type of movement that the endodontic instrument can exercise inside the canal gives several more therapeutic possibilities, allowing the more expert clinician to optimize his technique and the less expert clinician to overload the rotary instrument in a lesser way rotating during its intracanal activity.^{9,11-13}

Furthermore, the market now offers a truly wide choice of Ni-Ti rotary instruments, both in terms of design and metallurgical features. It is possible to use these instruments to ream the canal according to its characteristics.^{10,14,15} Particularly large bending radii, or even double bends can be tackled much more safely than in the past.¹⁵

Not only that, current Ni-Ti rotary instruments allow the clinician to obtain important results in shaping and disinfection at the level of the apical third while maintaining the tissue loss at the root canal entrance level conservatively.¹⁶

The dentin in the cervical area maintained thanks to this technique represents an element of fundamental importance for the resistance of the endodontically treated tooth to stress.¹⁶⁻¹⁸

The possibility granted by current instruments to shape the apical third while maintaining a reduced diameter at the level of the root canal orifices allows even high levels of disinfection to be achieved by removing a large part of the infected tissue.^{18,19}

This allows irrigants to dramatically improve intracanal disinfection, making endodontic treatment extremely more predictable.¹⁹

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Therefore it is possible, in the light of the previous indications, to state that current rotary instruments offer several more solutions than in the past. First of all, greater possibilities of choice, both from the point of view of the diameter, the cross-section, and the alloy of which the instrument is made.^{12,16}

Furthermore, significantly reduces the invasiveness of our treatments, considering the reduced root canal shaping to achieve the same levels of disinfection, and the preservation of dentin at the level of the pulp chamber floor.¹⁸

For this reason, the attention of research towards ever simpler instruments, with reaming systems that make it possible to make the result ever more repeatable, represent the future, assisted by endodontic motors which, by controlling the intracanal operative-torque and modifying the type of movement of the instruments, allow obtaining better and better results.^{14,17}

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