

Calcium hydroxide removal in straight and curved root canals - Comparison of two needles (preliminary results)

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Aim

To compare two different irrigation needles with side vents in removing calcium hydroxide from straight and curved root canals.

Methodology

Extracted human teeth with straight and curved root canals were shaped to a size of 40/06 and then filled with calcium hydroxide (Ultracal XS, Ultradent, USA). Micro CT scans (Skyscan Kontich, Belgium) were made with the calcium hydroxide filling and after rinsing with 5ml of NaOCl. Two different irrigation needles were compared: IrriFlex (Produits Dentaires SA, Switzerland) 30G needle made of polypropylene with two lateral openings and a 30G side vented metal needle (KerrHawe SA, Switzerland). The volume of the residual calcium hydroxide (blue) were analyzed.

Results

The Micro CT scans showed a larger amount of calcium hydroxide left in the apical part of the root canal after irrigation with the 30G side vented metal needle (Fig. 1). The volume of the residual calcium hydroxide was lower in the irrigation group with IrriFlex (Fig. 2). It is especially in curved canals that the removal of calcium hydroxide was significantly better in the IrriFlex group as compared to the 30G side vented metal needle group.

The two needle groups showed different irrigation times. Both groups were rinsed with 5ml of NaOCl. The irrigation time in the IrriFlex group was much shorter (mean 22s) as compared to the 30G side vented metal needle (mean 43s).

Conclusions

This study found that the IrriFlex needle is much faster and more effective at removing calcium hydroxide from the root canals and significantly better in curved canal as compared to a 30G side vented metal needle.

Acknowledgment

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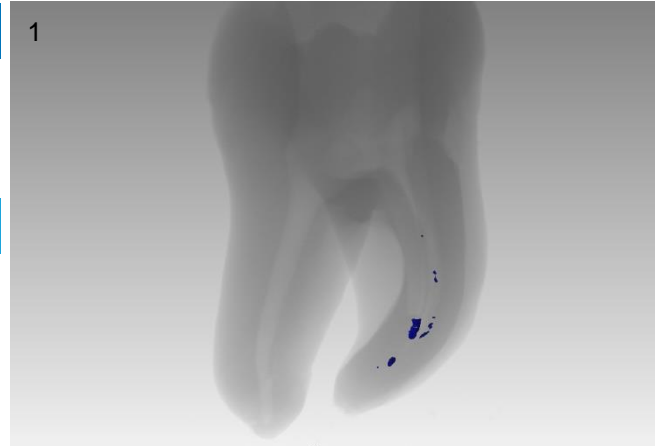


Fig. 1. Residual calcium hydroxide (blue) after irrigation with a 30G side vented metal needle.

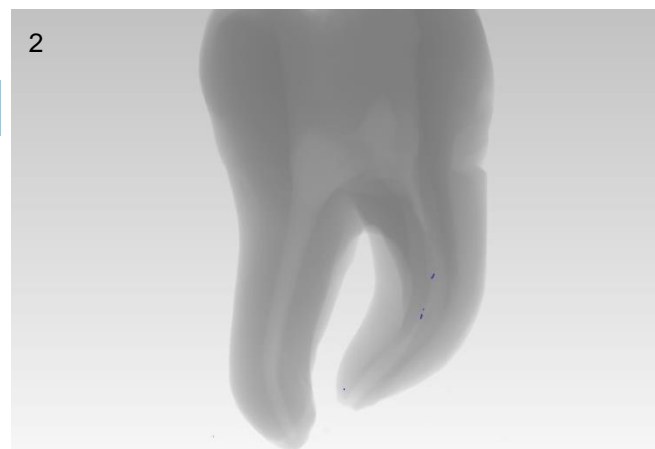


Fig. 2. Residual calcium hydroxide (blue) after irrigation with the IrriFlex needle.

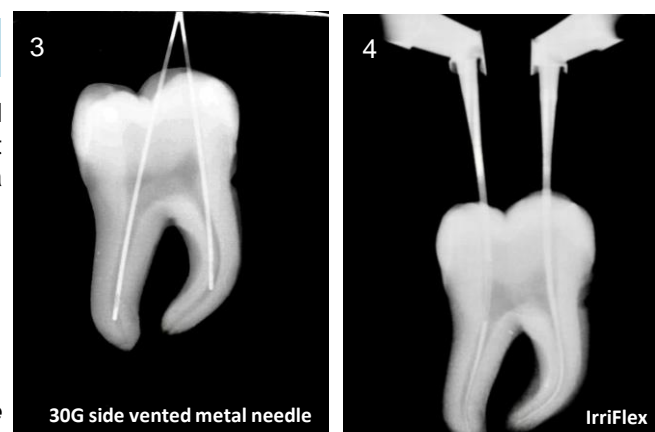


Fig. 3. and 4. Insertion depth of the inflexible 30G side vented metal needle and the flexible IrriFlex needle in a straight distal, and in a curved mesial canal of a mandibular molar.