

## 강연 2

### The ability of using syringe irrigation and ultrasound irrigation to remove dentin debris from simulated extensions and irregularities in root canals

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#### I . Objectives

Narrow long oval canals usually cannot be instrumented completely and uninstrumented extensions or irregularities usually remain. The aim of this study was to compare the ability of syringe irrigation and ultrasound irrigation to remove dentin debris from simulations of uninstrumented canal extensions and irregularities.

#### II . Material and Methods

After same-sized canal enlargement each canine was longitudinally split into two halves. On the wall of one half of each root canal, a standard groove of 4 mm in length was cut 2 to 6 mm from the apex to simulate uninstrumented canal extensions. On the wall of the other half, three standard holes were cut at 2, 4 and 6 mm from the apex, respectively, to simulate uninstrumented canal irregularities. Dentin debris mixed with 2% NaOCl or distilled water were placed into each groove and hole until they were full with debris using a paper point but with the intention not to compact the debris. The two halves of each tooth were re-connected using wires, sticky wax and putty material to rebuild the tooth. Either syringe irrigation or ultrasound irrigation using a P MAX device was performed in the canal using 2% NaOCl as irrigant. Before and after the irrigation, images of the two halves of canal wall were taken using a microscope at  $\times 20$  magnification and a digital camera, the images were scanned as TIFF images into a PC. The amount of the remaining dentin debris in the groove and hole was evaluated using a scoring system, a higher score indicated that larger amount of debris remained.

#### III . Results

The debris score was significantly higher after syringe irrigation than after ultrasound irrigation. However, none of the irrigation methods could completely remove the dentin debris from all grooves and holes.

#### IV . Conclusion

Ultrasound irrigation is more effective to clean those uninstrumented extensions and irregularities in root canals than syringe irrigation.