Culturing with Tungsten Carbide Burs and Different Irrigant Media J. A. von FRAUNHOFER S C SIEGEL* S FELDMAN (Dental School University of Maryland Baltimore, Maryland USA)

Previous studies indicated that enhanced cutting rates (chemo-mechanical effects) can be obtained with carbide burs when irrigated with 0.9% saline and Ringer’s lactate at high cutting load and a handpiece speed of 100,000 rpm. The present study was undertaken to evaluate whether these effects were due to different irrigation methods and bur design.

A previously established testing regimen was modified for a Kavo INTRASeal 905 dental irrigation system. An overhead water jet of 145 psi and water flow rate of 55 ml/min was used for the irrigation. Cutting studies were performed on Kavo macheal ceramic at a handpiece speed of 145 °C (9 g at the bur tip) and 20,000 rpm at 1 Nm torque. Cutting was initiated at 22 ml/min using water 2.5% saline solution and 40 ml/min using 0.9% saline solution for 0.5 h. The total output of the irrigation system on a handpiece tip was 0.326 ml/min. Mean cutting rates (CR) in mm/s were: water 0.05, saline 0.02 0.15 mm/min 0.05 and 11 mm/min 0.04 with comparable decreases in CR found under all irrigants over 3.5 min. There was no significant difference in cutting rate between the two irrigation methods.

Curing attributes of different irrigation methods were compared to analyze the effect of irrigation on the healing process. The irrigation system decreased the cutting rate significantly, which may be beneficial for dental treatment.

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