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The effects of antibiotic pastes used in endodontic regeneration on the microhardness of dentine

Aim The aim of this study was to evaluate the effect of various endodontic regeneration medicaments on the microhardness of human root dentine after contact for different time intervals.

Methodology Thirty-five extracted human maxillary incisors were selected. The canals were enlarged using a primary One Shape (MicroMega, Besancon, France) size 25, .06 taper file. The roots were fixed in acrylic resin blocks and cut transversally in 2-mm sections using a water-cooled diamond-coated band saw. Two sections were obtained from the middle-third of each root ($n = 70$). The root discs were divided randomly into three groups of 20 and a control group of 10. Baseline microhardness testing

was completed using a microhardness tester. The previously divided root discs were placed into Petri dishes, then assigned randomly to triple antibiotic paste (TAP), double antibiotic paste (DAP), calcium hydroxide paste (CH), and the control group. CH and both antibiotic pastes were placed in the Petri dishes, and discs were covered completely with the mixtures. Microhardness tests were repeated in the same manner after 7, 14, and 28 days. Data were analyzed statistically by Chi square or Fisher's exact test at 5% significance level and post hoc analysis was performed.

Results No significant change in dentine microhardness occurred in the control group ($P > 0.05$). Overall dentine microhardness values decreased after treatment with CH and antibiotic pastes over all time intervals. The DAP group had reduced KHN values compared with the TAP group at first week measurements ($P < 0.01$). Significant differences were found among the control, DAP, and TAP groups, but no difference was seen between the control and CH group at the first week examination. No significant difference was found between the DAP and TAP groups at the fourth week.

Conclusions The four-week application of DAP and TAP medicaments reduced the microhardness values of dentine discs significantly compared with baseline values.