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In Vitro Evaluation of the Reciprocating Disposable Prophylaxis Angle Versus the Rotating Disposable Prophylaxis Angle in Extrinsic Stain Removal Effectiveness

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In Vitro Evaluation of the Reciprocating Disposable Prophylaxis Angle Versus the Rotating Disposable Prophylaxis Angle in Extrinsic Stain Removal Effectiveness

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This study determined the extrinsic tooth stain removing effectiveness of a 90° counter-rotational disposable prophylaxis angle (DPA) with rubber cup compared to the traditional 360° unirotational DPA with rubber cup. Four randomly-assigned groups of cleaned, sterilized, extracted human teeth, artificially stained with coffee, tea, tobacco, and red wine, were polished on the buccal and lingual surfaces using one of the 2 DPAs. Each dependent variable (4 different stain types) was tested 4 times with each prophylaxis angle, using 4 prophylaxis paste conditions, and 3 different rpm; therefore, 2 trials x 2 angles x 3 speeds x 4 stains x 4 grits = 192 trials on 96 teeth. For each trial, a DPA attached to a handpiece controlled by an eStylus™ was mounted on a testing apparatus that together controlled handpiece rpm and rubber cup pressure against the tooth. Stain removal effectiveness was measured with a Bioform Color Ordered Shade Guide both before and after the DPA was used with one of three different grits of prophylaxis pastes and a trial using no paste at 1500, 2000, and 3000 rpm. The evaluator was blind to the treatment status. Data were analyzed using a 3-way analysis of variance at p= .05 level. Results revealed no statistically significant difference between the two DPAs in extrinsic tooth stain removal. There was a statistically significant interaction among rpm (3000) of the DPA and the grit abrasivity of the prophylaxis paste suggesting that additional study may be indicated since coarse prophylaxis pastes remove stain more rapidly, but in doing so, can scratch and roughen the tooth enamel. Extrinsic stain removal effectiveness of the 2 DPAs were comparable when using different abrasivity prophylaxis paste and different rpm.