



0189

### **Comparison of Retreatment Outcome With Chlorine Dioxide and Sodium Hypochlorite**

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**Objectives** The study aimed to compare the clinical and radiographic outcome of endodontic retreatment of teeth with apical periodontitis using sodium hypochlorite (NaOCl) or hyper-pure chlorine dioxide (hClO<sub>2</sub>).

**Methods** Twenty-five teeth were randomly assigned into two groups according to the disinfectant used. In both groups, existing root canal filling was removed and irrigated with either 0.12% hClO<sub>2</sub> or 2.5% NaOCl as control. Root canal obturations were performed with lateral compaction at the second appointment. Patients were recalled after one year. The periapical status was scored using the periapical index (PAI) and evaluated as healed (<3), healing or un-healed (≥3). The presence of pain was assessed with visual analog scoring. The improvement in PAI was statistically compared between groups by the Mann-Whitney U Test. The difference in the proportion of the healed, healing, and unhealed cases between groups was assessed by the Chi-Square test.

**Results** Nineteen (NaOCl, n = 9; hClO<sub>2</sub>, n = 10) teeth were available at the 1-year follow-up. In the hClO<sub>2</sub> group, 21.1% of teeth were classified as healed, 26.3% as healing, and 5.3% as unhealed. In the NaOCl group, 5.3% of teeth were classified as healed, 26.3% as healing, and 15.8% as unhealed (p=0.252). The change in PAI was not significantly different between groups: 1.8 ± 1.03 in the hClO<sub>2</sub> group and 1.0 ± 1.2 in the NaOCl group (p=0.182). After one year, all teeth were functioning with no sinus tract, and two teeth showed pain on percussion in each group.

**Conclusions** Based on the preliminary results, the less harmful hClO<sub>2</sub> resulted in comparable healing of periapical lesions after retreatment as the gold-standard NaOCl after one year. Nevertheless, the healing trend indicates a favorable outcome for this new biocompatible endodontic irrigant solution. However, a more extended follow-up period is needed to confirm the results.