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Clinical reversal of root caries using ozone, double-blind, randomised, controlled 18-month trial

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Abstract

Objective: To assess the effect of an ozone delivery system, combined with the daily use of a remineralising patient kit, on the clinical severity of non-cavitated leathery primary root carious lesions (PRCL's), in an older population group. **Design:** A total of 89 subjects, (age range 60-82, mean \pm SD, 70.8 ± 6 years), each with two leathery PRCL's, were recruited. The two lesions in each subject were randomly assigned for treatment with ozone or air, in a double-blind design, in a general dental practice. Subjects were recalled at three, six, 12 and 18 months. Lesions were clinically recorded at each visit as soft, leathery or hard, scored with a validated root caries severity index. **Results:** There were no observed adverse events. After three months, in the ozone-treated group, 61 PRCL's (69%) had become hard and none had deteriorated, whilst in the control group, four PRCL's (4%) had become worse ($p < 0.01$). At the six-month recall, in the ozone group, seven PRCL's (8%) remained leathery, the remaining 82 (92%) PRCL's had become hard, whilst in the control group, 10 PRCL's had become worse (11%) and one had become hard ($p < 0.01$). At 12 and 18 months, 87 Subjects attended. In the ozone group at 12 months, two PRCL's remained leathery, compared to 85 (98%) that had hardened, whilst in the control group 21 (24%) of the PRCL's had progressed from leathery to soft, i.e. became worse, 65 PRCL's (75%) were still leathery, and one remained hard ($p < 0.01$). At 18 months, 87 (100%) of ozone-treated PRCL's had arrested, whilst in the control group, 32 lesions (37%) of the PRCL's had worsened from leathery to soft ($p < 0.01$), 54 (62%) PRCL's remained leathery and only one of the control PRCL's had reversed ($p < 0.01$). **Conclusions:** Leathery non-cavitated primary root caries can be arrested non-operatively with ozone and remineralising products. This treatment regime is an effective alternative to conventional "drilling and filling".

Key words: Root caries, reversal, arrest, ozone, toothpaste, mouth-rinse, spray

Introduction

Elderly populations and root caries

The demographic profile of developed countries has moved from a young to an older population. This ageing is associated with better nutrition, increased standards of living, and advances in medical and pharmacological management of disease.

In a 1996 study, 2,280 subjects who were 60 years old or over from three different areas of the UK were examined clinically to assess their dental

health and needs. Root caries was found to be common and there was an age-related increase in risk of the disease¹. In a national survey of adult dental health conducted in the Republic of Ireland in 1989/1990, a total of 1,527 subjects aged 25 and older were examined for root caries. It was suggested that the prevalence of root caries was highest in older age groups, residents of non-fluoridated communities, and those earning low incomes. As tooth loss masked the potential