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White Spot Lesions after Orthodontic Fixed Appliance Treatment

The effectiveness of MI Paste Plus® as a remineralising agent

a randomised controlled trial

1. MI Paste Plus®, a remineralisation agent, does not show its intended effect in patients who have white spot lesions (WSL) after orthodontic treatment with full fixed appliances.
2. WSL tend to regress over time but do not disappear after removal of the appliances.
3. After bracket removal the microbial composition gradually changes towards a more healthy composition. This is a gradual change that does not occur immediately after bracket removal.
4. The ICDAS scoring system on clinical oral photographs does not have enough discriminatory power to address changes in WSL over time.
5. Comparing respective clinical oral photographs taken over time provides discriminatory power in assessing changes in WSL severity. This method of monitoring WSL over time is useful for clinical decision making in the management of WSL.
6. Quantitative light induced fluorescence (QLF) is confirmed as a useful outcome measure in detecting and monitoring WSL over time.
7. The DGGE-banding pattern software, Gelcompare-II is susceptible to bias when used with the provided settings.
8. Denaturing Gradient Gel Electrophoresis (DGGE) and analysis of microbial composition does not have a predictive value for caries risk assessment of the formation of WSL in orthodontic patients treated with full fixed appliances.
9. Conventional microbiological plating, analysing bacteria counts, percentage of aciduric flora, *S. Mutans*, *Lactobacillus* spp. and *Candida Albicans* is not predictive for caries risk assessment of the formation of WSL in orthodontic patients treated with full fixed appliances.
10. This thesis describes the first randomised control trial assessing the effectiveness of MI Paste Plus® *in vivo* for the treatment of WSL after orthodontic fixed appliance on the long term (12 months) and stipulates the importance of combining independent outcome measures in research.