

The effectiveness of ultrasonic cleaning to decontaminate orthodontic molar bands

Objective: To measure the effectiveness of ultrasonic cleaning to decontaminate orthodontic molar bands following size determination using a quantitative antibody capture assay technique.

Design: A prospective, cross-sectional, clinical and laboratory investigation.

Setting: The Orthodontic Department of the Charles Clifford Dental Hospital and the Microbiology Laboratory of the School of Clinical Dentistry, Sheffield.

Participants: 32 patients about to start orthodontic treatment with fixed orthodontic appliances.

Methods: Four first molar bands were tried in the mouth and then removed. They were randomly assigned either for no decontamination (Control) or to be decontaminated in an ultrasonic cleaning bath for 15 minutes (Experimental). The bands were placed in a pre-determined volume of phosphate-buffered saline (PBS) and assayed by Enzyme-Linked Immunosorbent Assay (ELISA) for albumin, to detect the presence of blood and amylase, to detect the presence of saliva.

Results: 50 percent of decontaminated molar bands showed detectable amounts of amylase, albumin or both. The quantity of detectable amylase was significantly reduced on the cleaned compared with uncleaned bands ($p=0.036$), however the reduction in the quantity of albumin was not statistically significant ($p=0.074$).

Conclusions: Ultrasonic cleaning for 15 minutes reduces, but does not always eliminate salivary proteins (amylase) from tried-in bands. It is less effective at removing serum protein (albumin). There is a need, therefore, to investigate effective means of cleaning organic material from orthodontic bands if they are to be adequately sterilized and reused.