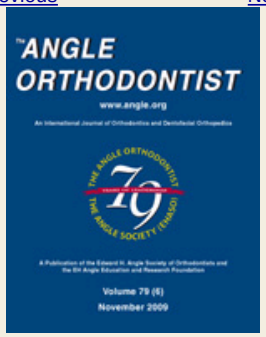
Volume 79, Issue 5 (September 2009)

< Previous Next >



Current Issue
Available Issues

Journal Information

ISSN: 0003-3219
Frequency: Bimonthly

Previous Article Volume 79, Issue 5 (September 2009) Next Article

Add to Favorites Share Article Export Citations Track Citations Permissions

Full-text PDF

Janvan Gastel, Marc Quirynen, Wim Teughels, Martine Pauwels, Wim Coucke, Carine Carels (*2009*) Microbial Adhesion on Different Bracket Types in vitro. The Angle Orthodontist: Vol. 79, No. 5, pp. 915-921.

Original Articles

Microbial Adhesion on Different Bracket Types in vitro

Janvan Gastel[a], Marc Quirynen[b], Wim Teughels[c], Martine Pauwels[d], Wim Coucke[e], and Carine Carels[f]

Abstract

Objective: To test the hypothesis that there are differences in total bacterial counts and capacity for biofilm formation between seven different bracket types.

Material and Methods: By means of an in vitro experiment, seven commercially available bracket systems (Damon [A], Clarity [B], Mystique [C], Speed [D], Victory MBT [E], Micro-loc [F], and Generus [G]) were compared. A total of 25 premolar brackets of each bracket system were incubated in brain heart infusion medium containing the saliva and bacteria of two orthodontic patients. After 72 hours, the amounts of aerobe and anaerobe bacteria were determined by counting the colony-forming units (CFU). The CFU ratio (aerobe/anaerobe) also was calculated, and the black pigmented bacteria were analyzed.

Results: Significant differences between the different bracket types in terms of biofilm formation were found. Bracket types can be arbitrarily divided into low, intermediate, and high plaque-retaining brackets. The group with low adhesion consists of bracket types E, F, and G; the group with high adhesion of bracket types A, B, and C; and type D exhibits intermediate adhesion. The group with high microbial adhesion (A, B, and C) did present significantly lower CFU ratios (aerobe/anaerobe) than were exhibited by the other bracket systems ($P < .05$).

Conclusion: The hypothesis is accepted. Orthodontic brackets serve as different loci for biofilm formation; in this in vitro study, significant differences were noted between the different types of brackets.

Keywords: Orthodontic bracket, Orthodontic appliance design, Microbiology, Dental plaque

Accepted: November 2008;

[a] Postgraduate and doctorate student, Department of Orthodontics, Catholic University, Leuven, Belgium

[b] Professor and Head, Department of Periodontology, Catholic University Leuven, Belgium

[c] Professor, Department of Periodontology, Catholic University Leuven, Belgium

[d] Head, Laboratory for Periodontal Microbiology, Department of Periodontology, Catholic University Leuven, Belgium

[e] Scientific Institute of Public Health, Clinical Biology, Brussels, Belgium

[f] Professor and Head, Department of Orthodontics, Catholic University, Leuven, Belgium

Corresponding author: Dr J. L. van Gastel, Faculty of Medicine, School of Dentistry, Department of Oral Pathology and

Maxillo-Facial Surgery, Department of Orthodontics, U.Z. St Rafael, Kapucijnenvoer 33, B-3000 Leuven, Belgium (Johannes.vanGastel@med.KULeuven.ac.be or Johannes.vanGastel@uz.KULeuven.ac.be)

Related Articles

Articles Citing this Article

Google Scholar

Search for Other Articles By Author

- Janvan Gastel
- Marc Quirynen
- Wim Teughels
- Martine Pauwels
- Wim Coucke
- Carine Carels

Search in:

- Angle Online

Search

top