



Worn-dentition: A new challenge for the bonding

A long-lasting effective bond is greatly influenced by the peculiarities of the substrate. Enamel bond, for instance, is more predictable and stable than dentine bond. Interfaces produced on caries-affected dentin have been proven to be weaker than those produced on health dentine. Likewise, abrasive/erosive lesions pose a challenge to restorative procedures. The dentine subjected to abrasive and erosive processes undergoes morphological and chemical changes that impact the quality of the bonding. The surface of eroded dentine lacks minerals and presents a dense mesh of collagen fibrils covering an underlying layer of partially demineralized dentine. Although the zone of collagen fibrils is resistant to clinically relevant acids and to mechanical removal by brushing, it is susceptible to enzymatic degradation by matrix metalloproteinases (MMPs). The inhibition of these enzymes can arrest the progression of erosion. Also, eroded/abraded dentine gradually becomes sclerotic, displaying a mineral-rich, shiny surface along with the occlusion of dentinal tubules. Most studies using human dentine have reported lower bond strengths to sclerotic dentine compared to normal dentin. The understanding of the challenges to produce a high-quality bond and the strategies currently being investigated to increase the longevity of resin restorations are the core focus of this lecture.

Josimeri Hebling (Sao Paulo, Brazil)



Dental degree (DDS) by the University of São Paulo State (Unesp), School of Dentistry, Araraquara, Brazil. Master and PhD degree in Dental Sciences by the same University. Post-doctoral training in Pediatric Dentistry at the University of Michigan, School of Dentistry and in Oral Biology at the Augusta University. Full Professor of the Department of Orthodontics and Pediatric Dentistry at the University of São Paulo State (Unesp), School of Dentistry at Araraquara, Brazil. Researcher fellow of the National Council for Scientific and Technological Development (CNPq). Principal investigator for several Brazilian funding agencies grants Director of the Laboratory of Dental Biomaterials Research. Teaching activities include theoretical and clinical teaching of Pediatric Dentistry for Undergraduate students, and theoretical, clinical and research activities for graduate students from two graduate programs, Dental Sciences and Oral Rehabilitation.