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Importance of microleakage-free restoration in dental treatments with dental materials

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Abstract

Dumbbell specimens are reliable to measure tensile strength of materials, as uniform stress could be loaded on them, which has been suggested by the materials science. It is very beneficial to access existence of defect hidden in restored dentin. Demineralized dentin (DD) is the weakest area (a kind of defect), and the detachment starts there. It is accessed by an old microleakage test. Impermeable hybridized dentin (Nakabayashi et al., 1982) does not permit diffusion of lactic acid produced by *Streptococcus mutans* orally. It is essential to have long lasting dental treatments. Dental clinicians misunderstood it due to weakness of restorative materials and they interested in development of stronger dental materials not to be involved in the trouble. They must compare which are stronger, dentin or restorative materials. The former is weak in acidic oral environment but the latter are more stable. Hydroxyapatite in hard tissues is basic and it is degraded by acids. And we have to consider wound healing mechanism of enamel and dentin. It is carried out by blood in our body but they do not have blood stream. Does nature permit us to remove enamel and dentin in the dental treatment? Once enamel got defect, exposed dentin must be going to die. But dentistry has not recognized this critical severe situation. We have to learn our teeth could not accept dental restoratives to heal the injured surface on teeth formed by clinicians. DD in the restored set by zinc phosphate cement had been defective and biodegraded orally.

Biography

Nobuo Nakabayashi presented his Ph.D. thesis to Tokyo Institute of Technology on 1964. Post doctoral studies were carried out in Tokyo Med & Dent Univ. He promoted to professor there on 1982. More than 400 original papers and 100 review articles on biomaterials including artificial organs were published. He wrote a book with David H Pashley on “Hybridization of Dental Hard Tissues” published on 1998. He received several awards from scientific societies in Japan, and Wilmer Souder Award (IADR) on 1994, Hollenback Memorial Prize (Academy of Operative Dentistry) on 1997, Medal with Purple Ribbon (Japanese Government) on 2001 etc.