ABSTRACT.
A microgap has been described at the level of the implant-abutment connection. This microgap can be colonized by bacteria, and this fact could have relevance on the remodeling of the peri-implant crestal bone and on the long-term health of the peri-implant tissues.

The authors report on 272 implants with screw-retained abutments (Nobel Biocare, Sweden) (Implant Innovations implants, USA) (Lifecore Biomedical, Minn) or cement-retained abutments (Bone System, Italy) retrieved from humans for different causes during a 16-year period. In the implants with screw-retained abutments, a 60-microm microgap was present at the level of implant-abutment connection. In some areas the titanium had sheared off from the surface and from the internal threads. The contact between the threads of the implant and those of the abutment was limited to a few areas. Bacteria were often present in the microgap between implant and abutment and in the internal portion of the implants. In implants with cement-retained abutments, a 40-microm microgap was found at the level of the implant-abutment connection. No mechanical damage was observed at the level of the implant or of the abutment. All the internal voids were always completely filled by the cement. No bacteria were observed in the internal portion of the implants or at the level of the microgap. The differences in the size of the microgap between the two groups were statistically significant (P < .05). In conclusion, in screw-retained abutments the microgap can be a critical factor for colonization of bacteria, whereas in cement-retained abutments all the internal spaces were filled by cement. In these retrieved implants, the size of the microgap was markedly variable and much larger than that observed in vitro.