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Analysis of Dental Implant Prosthesis Screws after One to Twenty Years in Chewing

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One of the problems that exist is the loosening of the prosthesis screw on implants. However, there is no consensus among professionals as to how long the prosthesis screw maintains the union of the system. In the present study, screws removed from patients after 1 to 20 years of continuous use were collected.The surface morphology, deformation, galling, wear, cracks and surface defects of prosthetic retaining screws collected (n=14) from patients after long-term use were analyzed using a scanning electron microscope. All screws were removed due screw loosening and patient pain (n12) or screw fracture (n2). SEM images showed that the screws had plastic deformation due to the tightening and oral loads. Loosening of the screws may be attributed to the loss of preload due to plastic deformation, corrosion, grooves from manufacture processing, adherence of organic material to the surface and cyclic loading. Loosening of the screws is not correlated with time of use, but with plastic deformation and other wear processes. It is not possible to predict for how long a prosthetic screw can maintain the preload. The conclusion is that loosening or fracture of the screw is unpredictable and depends on loading conditions, patient care and the periodicity of retightening.

Biography:

Carlos Nelson Elias completed degree in Metallurgy from the Military Engineering Institute and a PhD in Materials Science. He received twice an award Scientist from the State of Rio de Janeiro (2004 and 2008), researcher at the Foundation for Research Support of the State of Rio de Janeiro - Brazil. Has experience in Materials Science, with emphasis in Physical Metallurgy and Biomaterials. Researches with dental materials, dental implants, and modification of dental implants surfaces, endodontic instruments, orthodontic appliances, coronary stents and orthopedic prostheses.Works Quote: Web of Science 1014 citations, h-factor 18, Scopus: 1257 citations, h-factor 19; Google Scholar: 3170 citations, h-factor 29 and Mendely: 1569 citations, h factor 21.