

Analysis of the parameters of the Er: YAG Laser on the surface topography and mechanical properties of Zirconia

Authors: Alexandre Morais; Anna Carolina Tempestini Horliana; Lara Jansiski Motta; Raquel Agnelli Mesquita-Ferrari; Kristianne Porta Santos Fernandes; Ana Eliza Castanho Garrini dos Santos; Sandra Kalil Bussadori

Universidade Nove de Julho (UNINOVE)

Abstract:

The With the increase in aesthetic requirements in Dentistry, alternatives were sought for the elimination of metallic structures. Ceramics are the materials of choice for dental prosthetic rehabilitation because they have many enviable properties. Among them are: aesthetics, abrasion resistance, biocompatibility, little plaque accumulation, low thermal conductivity and color stability. Zirconia structures are widely used. However, the great disadvantage of zirconia is the low potential for adhesion to resin cements. Unlike conventional porcelains where the vitreous phase can be conditioned by hydrofluoric acid, creating mechanical retentions on the internal surface of the piece, zirconia has a high crystalline content without any vitreous phase at the edges of the 'crystalline organs'. Thus, it is inert to acid conditioning, and its wettability with the cementing (bonding) agent is impaired. In an attempt to increase the mechanical retention between zirconia and cement, some treatments are suggested by the literature: Sandblasting with aluminum oxide and high power lasers. Although there is much information about the effects of this irradiation on enamel and dentin, little is known about the irradiation of this laser as a surface treatment for high-strength dental ceramics. The aim of this work will be to compare the surface roughness and morphological characteristics of Zirconia ceramic surfaces irradiated with Er: YAG laser with variation of radiant energy.

Biography:

Alexandre Morais has been a university professor at UNINOVE for 4 years, but he has been teaching for over 14 years. He finished his degree in Dentistry in 1997, obtained his Master's degree in 2010 and is a PhD student at UNINOVE. He is also an international consultant and speaker for a dental products company based in Germany. He has been in clinical practice since 1997 with an emphasis on cosmetic dentistry. In his spare time, he enjoys cooking, taking care of his family, traveling with them to new places.