LASER Welding and TIG Welding of Titanium Alloy in Dental Prostheses Laboratory

L. M. Cardoso, J. R. Berretta, M. D. Martins das Neves, W. de Rossi

IPEN – Instituto de Pesquisas Energéticas e Nucleares, São Paulo-SP, Brazil

With the dental implants and the introduction of new dental materials, LASER and TIG have been studied as welding process in dental prostheses. This work aims to evaluate the performance of welds done with LASER (Nd:YAG) and TIG equipments for dental prostheses laboratory, measuring flexural strength (in accordance with biting forces direction) of welded titanium-aluminum-vanadium alloy. Dental prostheses situations have been considered for the joint's configuration: joint together (with zero gap) and with space associated to filler material. The results show: i) in the laser weld with zero gap group, a similar behavior of base material; ii) TIG weld with zero gap group supported the biggest loads; and, iii) in the welds with filler material an inferior performance when compared to base material.

Keywords: LASER, TIG, welding, titanium, dental prostheses.

[1] M. Chaves, S. G. Vermilyea, E. Papazoglou, W. A. Brantley, *J Prosthet Dent*, 79(6): 677 (1998).

[2] R. Rocha, A. L. B. Pinheiro, A. B. Villaverde, *Braz Dent J*, 17(1): 20 (2006).

[3] K. A. Al Wazzan, A. A. Al-Nazzawi, *J Contemp Dent Pract*, 8(1): 19 (2007).

lorenacardoso@bol.com.br
(R. Três Irmãos 160, Ap. 72, Morumbi, CEP 05615-190, São Paulo – SP)
berretta@ipen.br
mdneves@ipen.br
wderossi@ipen.br