ONLINE ISSN : 1881-1361
PRINT ISSN : 0287-4547

Dental Materials Journal
Vol. 29 (2010) , No. 4 p.381-391

[PDF (3378K)] [References]

Effects of sandblasting media and steam cleaning on bond strength of titanium-porcelain

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(Received November 16, 2009)
(Accepted March 5, 2010)

Abstract:
The effects of sandblasting media and steam cleaning treatment after sandblast were examined on tensile bond strength of porcelain to titanium. The use of the commercially available silica-coated alumina particles for sandblast was significantly effective for increasing bond strength than the conventional alumina. It might be due to the increased surface roughness and existence of remaining silica on titanium surface. Additional application of the steam cleaning on titanium surface after sandblasting could make the surface configuration clear in SEM by removing some sandblasted particles loosely embedded in titanium as well as the debris and oily contaminants. The resultant bond strength was significantly improved to reach almost the maximum strength of this porcelain-titanium system regardless of the kind of sandblasting media used, which was confirmed by the observation of the failure mode showing that most of the fracture surface was occupied by cohesive failure in porcelain.

Key words:
Bond strength of titanium-porcelain, Sandblasting media, Steam cleaning

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To cite this article:

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doi:10.4012/dmj.2009-119

JOI JST.JSTAGE/dmj/2009-119