

Glass fiber-reinforced abutments for dental implants. A pilot study.

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Titanium abutments in dental implants shine through all-ceramic crowns and therefore limit excellent esthetic results. Prototypes of tooth-colored fiber-reinforced abutments were investigated to avoid the shining-through effect. In vitro, the fracture strength was determined after thermal cycling and mechanical loading of all-ceramic single crowns and four-unit bridges made of a fiber-reinforced composite. The suprastructures were adhesively fixed onto fiber-reinforced implant abutments and compared with those fixed on standard titanium abutments. The median of the fracture strength of the titanium-supported all-ceramic crowns was significantly higher than the median of crowns fixed onto the prototypes. But this value was still more than twice as high as the maximum loading force under oral conditions. No statistical difference was found between four-unit bridges made by fiber-reinforced composite inserted onto titanium abutments and those inserted onto fiber-reinforced abutments. Fiber-reinforced abutment prototypes for dental implants avoided the shining-through effect associated with metal abutments. Their load-bearing capacity after in vitro stress simulation was higher than the maximum oral loading force. With some improvements, the fiber-reinforced implant abutments are therefore a promising alternative to titanium abutments.

PMID: 11251668 [PubMed - indexed for MEDLINE]