partially delaminated surfaces revealing no clear crack sites, and the adhesive failures, particularly in glass-infiltrated alumina/feldspathic ceramic, exhibited visible delamination sites at the core-veneer interface.

Conclusion: Bilayered ceramic specimens exhibited complex failure modes that could be attributed to differences in the flexural strengths between the two ceramics, as well as to the differences in their thermal expansion coefficients.[1] Although the thickness of the core ceramic was standard for all groups, it was reported that small variations could affect the strength of the restoration.[4] Fluorapatite veneering ceramic demonstrated higher bond strength to lithium disilicate ceramic than the leucite–glass ceramic/feldspathic ceramic or glass-infiltrated alumina/feldspathic core–veneer ceramic combinations did. After thermocycling, core–veneer bond strength was affected the most in lithium disilicate/fluorapatite combinations.

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Literature Abstract

Resonance frequency analysis of implants subjected to immediate or early functional occlusal loading

The objective of this study was to analyze the development of implant stability by repeated resonance frequency analysis measurements during 1 year in 23 patients treated according to an immediate/early-loading protocol. An additional objective was to evaluate the possible differences between failing and successful implants. Eighty-one Brånemark System implants were placed in 23 patients for immediate/early-occlusal loading in all jaw regions. The patient inclusion criteria were: 1) height and volume of bone to allow placement of implant with a minimum length of 7 mm; 2) no granulation tissue or signs of acute infections in cases of immediate implantation in an extraction socket; 3) no signs of pathology in the maxillary sinus (when placing implants in the posterior part of the maxilla); and 4) sufficient primary stability as judged clinically. Thirty of the implants were placed in extraction sockets and 62 were subjected to GBR procedures. In 71% of the cases, the provisional reconstruction was delivered on the same day. For all other cases (29%), the patients received the prostheses at the latest 11 days after fixture insertion due to technical or logistic reasons. Apart from clinical and radiographic examinations, the patients were followed with resonance frequency analysis at placement, prosthesis connection and after 1–3, 6, and 12 months. Statistical analyses were carried out to study the possible differences between implants that failed during the study period and implants that remained successful. Nine implants failed (11.2%) during the 1 year of loading. Resonance frequency analysis showed a distinct different pattern between the implants that remained stable and the implants that were lost. The implants that failed during the course of the study showed a significantly lower stability after 1 month with progressive lower stability until loss of implants. Within the limitations of this study, it is concluded that failing implants show a continuous decrease of stability until failure. Low resonance frequency analysis levels after 1 and 2 months seem to indicate an increased risk for future failure. This information may be used to avoid implant failure in the future by unloading implants with decreasing degree of stability with time as diagnosed with the resonance frequency analysis technique.

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