Zirconia dental implants: A clinical, radiographical and microbiological evaluation up to 5 years

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Abstract
Aim: To evaluate the clinical performance of zirconia endosseous implants in a retrospective study.

Materials and Methods: A cohort of 157 consecutively treated patients (n=316 zirconia implants) was studied through chart review and clinical examination. Seventy-two patients (n=147 implants) could be clinically examined. Full mouth Probing Pocket Depth (PPD) and percentage Bleeding on Probing (BOP) around teeth and implant(s) were assessed and compared. Marginal bone loss/gain relative to baseline was measured on intraoral radiographs and the prevalence and quantities of 7 periodontal bacteria were assessed around implants and teeth in the same patient.

Results: After a mean observation period of 30 months, 15/316 implants had failed, to a cumulative chance on implant survival of 93.4% (SE 1.8%) after 5 years. Nine implants had fractured. They had been milled from a batch of rectangular unilaterally pressed zirconia blancs. This kind of blancs are not produced anymore. New blancs are isostatically pressed. There were no fractures in two piece implants. Two piece Implants survival rate 96.9% (SE 2.2%) after 5 years. Two piece implants were only lost, caused by a lack of primary stability. After successful osseointegration no losses were observed.
Surviving implants demonstrated healthy mucosal conditions with low mean PPD’s (1.7 mm, s.d. 0.4) and mean BOP (3.7%, SD 5.4%). PPD and BOP were statistically significantly lower in implants than in teeth. BOP as well as PPD around implants and teeth correlated significantly (r=0.56, p<0.001; r=0.51, p<0.001); Stable marginal bone levels were observed with a mean of 0.0 mm (SD 0.4 mm) bone loss after 5 years. Bacterial counts were consistently lower on teeth than on implants, although not to a statistically significant level.

Conclusion: Zirconia endosseous implants can achieve a 5-year implant survival rate in partially edentulous patients, similar to that of titanium implants, with healthy and stable soft and hard tissues.