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One abutment–one time versus a provisional abutment in immediately loaded post-extractive single implants: A 1-year follow-up of a multicentre randomised controlled trial

Key words *abutment dis/reconnection, bone loss, implant-abutment interface, platform switching, post-extractive implants*

Purpose: To compare immediately loaded post-extractive single implants using a definitive abutment versus provisional abutment later replaced by custom-made abutment.

Materials and methods: In two private clinics, 28 patients in need of one single post-extractive implant in the maxilla or mandible from the left second premolar to the right second premolar area were randomised shortly before tooth extraction to provisional abutment (PA) and definitive abutment (DA) groups. Three patients had to be excluded for buccal wall fracture after tooth extraction. In the PA group, implants were immediately restored using a platform-switched provisional titanium abutment and definitive platform-switched titanium abutments were used in the DA group. In both groups, a non-occluding provisional single crown was provided. Implants were definitively restored after 4 months. In the PA group, the abutment was removed and the impression was made directly on the implant platform. In the DA group an impression of the abutment was made using a retraction cord. Outcome measures were: implant failures; complications; and marginal peri-implant bone level changes. Patients were followed up to 1 year after loading.

Results: Twelve patients were randomised to the DA group and 13 patients to the PA group. At the 12-month follow-up, no implant failed. One biological complication occurred in the DA group and one mechanical complication occurred in the PA group. All complications were successfully treated. One year after loading, implants in the DA group lost an average of 0.11 mm (SD: 0.06) of peri-implant bone and implants in PA group about 0.58 mm (SD: 0.11). At the 12-month follow-up, there was a statistically significant difference in bone level change between groups (mean difference: 0.48 mm, CI 95% 0.40; 0.55, $P < 0.0001$).

Conclusions: Within the limits of this study, the non-removal of abutments placed at the time of surgery resulted in the maintenance of 0.5 mm more bone levels around immediately restored post-extractive single implants than repeated abutment removal, although this amount of bone maintenance may not have a clinical impact.