The influence of simultaneous lateral grafting on clinical outcomes following one-stage implant placement: A cross-sectional analysis

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Background: The effect of lateral bone augmentation procedures performed simultaneously with implant placement on clinical treatment outcomes is scarce.

Aim/Hypothesis: To investigate the influence of lateral bone augmentation procedures performed simultaneously with implant placement on peri-implant health or disease.

Materials and Methods: A total of 232 patients showing the same type of a specific one-piece implant placed either simultaneously with lateral bone grafting using a bovine bone mineral and a native collagen membrane (n = 291 implants; test group) or at pristine bone sites without lateral bone grafting (n = 283 implants; control group) were enrolled in this cross-sectional analysis. Clinical outcomes (i.e., modified plaque INDIAx (mPI), bleeding on probing (BOP), probing depth (PD), and mucosal recession (MR)), and the frequency of peri-implant disease were evaluated after a mean follow-up period of 9.97 ± 6.55 years.

Results: No differences were found between the patients in the test and control groups for any investigated parameter (i.e., mPI, BOP, PD, MR). For the implants in both groups, PD values of 4-6 mm were more frequently noted in the upper jaw (test: P = 0.001; control: P = 0.001). A correlation between increased PD values and a larger implant diameter was noted (P = 0.004) for the test implant sites. Reduced KM width (< 2 mm) was associated with a higher risk of soft-tissue recession for implants in the test and control groups (test: P = 0.001; control: P = 0.001).

The estimated incidence of peri-implant mucositis and peri-implantitis was 68% and 5% for the patients in the test group and 61% and 10% in the control group, respectively.

Conclusions and Clinical Implications: Simultaneous lateral grafting was associated with peri-implant tissue health and stability.