The outcome of oral implants placed in limited vestibule-oral bony dimensions: a 3-year prospective follow-up study.

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Background and Aim

The dimensions of the alveolar bone reduce significantly after tooth loss. Clinicians consider a 1 to 2 mm buccal & lingual bone width mandatory at implant placement. This retrospective study analyses the interproximal bone changes radiological (up to 3-year after functional loading) for implants placed in sites with ≤ 4.5 mm of vestibule-oral bone width. The bone width is measured on 3-dimensional radiographs.

Methods and Materials

This retrospective, single centre study, included 28 patients (mean age 63, 11% male, 89% female) who presented with a narrow alveolar crest. All the patients were pre-operatively scanned (cone-beam CT or multi-slice CT). Implants were only placed in sites with ≤ 4.5 mm of vestibule-oral bone dimensions. A total of 100 implants (AstraTech, Möln达尔, Sweden) were installed with a two-stage procedure. The intra-oral radiographs were taken at the following moments: placement, abutment connection, 1-year follow-up, 2-year follow-up and 3-year follow-up. The distances in millimetres between the neck of the implant and the first clear bone-to-implant contact mesially and distally were recorded. The analysis of peri-implant bone level alterations was performed by 2 calibrated, independent periodontologists (JK and AT). Results were re-evaluated when there was a ≥1 mm inter-examiner difference.

Results

All implants integrated and the cumulative survival rate after 3-years was 100%. The implants were inserted 0.81 mm ± 0.83 subcrestal. At abutment connection the bone was located 0.65 mm ± 0.6 apical of the implant shoulder (baseline). During the first 3 years of loading the amount of marginal bone loss was 0.17 ± 0.4, 0.05 ± 0.4, and - 0.06 ± 0.1 mm, respectively.

Conclusions

Based on the present data and within the limitations of this study it became clear that implants, placed in sites with limited dimensions (≤ 4,5mm width), showed minimal amounts of marginal bone loss during the first 3 years.