Latest Study shows 100 % success with Straumann Bone Level implants

Survival rates at 36 months and minimal crestal bone resorption

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Early implant placement following the extraction of a single tooth is a procedure used by many clinicians in the maxillary anterior zone, but there is a lack of documentation on the aesthetic outcomes. When aesthetic results have been reported, mucosal recessions have been observed. The aim of this study, therefore, was to prospectively investigate aesthetic outcomes of early implant placement in single tooth extraction sockets in the aesthetic zone with Straumann Bone Level implants.

Materials and methods
A total of 20 patients requiring single-tooth replacement in the anterior maxilla were entered into the study. After flapless tooth extraction the socket was allowed to heal for 4-8 weeks. Bone level implants were subsequently placed and sealed with healing caps, with simultaneous contour augmentation using locally harvested autogenous bone with antibiotic bovine bone mineral and a collagen membrane. Reopening was performed 8-12 weeks later (day 0). Within seven days, provisional crowns were placed, which were gradually enlarged if necessary to optimize soft tissue contours. Final all-ceramic restorations were placed after six months.

- Indication: Single-tooth replacement in the anterior maxilla
- Implant: Bone Level Ø 4.1 mm SLActive®
- Solution: Screw-retained full-ceramic crown

The patients were recalled for several follow-up visits at various points in time. During these visits, various parameters were assessed such as:

- Modified plaque index (mPLI)
- Modified sulcus bleeding index (mSBI)
- Probing depth (PD)
- Width of keratinized mucosa (KM)
- Pink aesthetic score (PES)
- White aesthetic score (WES)
- Modified sulcus bleeding index (mSBI)

Results
All 20 implants achieved and maintained successful tissue integration at the 5-year follow-up visits fulfilling strict success criteria.

Standard soft tissue parameters
- Mean mPLI and mSBI values at 36 months were 0.40 and 0.18 mm at the 36-month visit. However, the change was not statistically significant. A wide KM band was seen at three months, which remained stable at the following points in time (Table 1).

Radiographic evaluation/DIB values
Periapical radiographs were taken from baseline (BL) at every visit. The distance from implant shoulder to the first bone-to-implant contact was assessed (DIB). At baseline the mean DIB was 0 mm. It increased showing remodelling patterns from 3 to 6 and to 12 months with values of 0.09 mm, 0.14 mm and 0.18 mm, respectively. The mean value remained stable at 0.18 mm thereafter until 36 months (Figure 1).

Frequency analysis of crestal bone showed that 18 patients had a bone loss of 0.5 mm or less after 5 years.

Aesthetic parameters
The maximum for both pink and white aesthetic scores is 10, and the threshold for clinical acceptability is 6/10 for each index. Mean PES and WES scores remained stable between 12 and 56 months with values of 8.10 and 8.65, respectively (total score of 16.75), indicating a favourable aesthetic outcome (see Table 2).

Conclusions
- Strict success and survival criteria were fulfilled resulting in 100 % success and survival rates at 5 years.
- Minimal crestal bone resorption was demonstrated.
- Stable crestal bone at 12 months was shown.
- Good aesthetic and clinical results were seen at 12 and 36 months.