

Scientific release from the EFP
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Study:



A five-year prospective study on single immediate implants in the aesthetic zone

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**Relevant
background:**

Immediate implantation can be greatly beneficial in terms of aesthetic and functional requirements. Previous studies showed that implantation in a fresh alveolar socket will not prevent bone remodelling and resorption. It was shown that there is an increased risk of mid-facial recession

after type-1 implant placement. However, recession can be limited by following preventive guidelines such as flapless surgery, correct three-dimensional positioning of the implant, connective tissue grafting, and immediate provisionalisation.

Aims:

This prospective clinical trial aimed to evaluate the five-year outcome of single immediate implants in the aesthetic zone in well-selected patients with a low risk of aesthetic complications.

Methods:

Twenty-two patients with low risk of aesthetic complication (thick gingival biotype, intact buccal wall after extraction, both neighbouring teeth present) underwent a flapless extraction and type-1 implant placement in the fresh socket in the aesthetic zone. The gap between the implant and the walls of the socket were filled with bovine bone (Bio-Oss) and three hours later the patients received a non-functional fixed provisional restoration. In cases of advanced buccal recession or major alveolar process remodelling, connective

tissue graft (CTG) surgeries were performed three months after implant placement.

Clinical outcomes included survival rate, complications, marginal bone loss (using peri-apical radiographs), plaque score, probing depth, and bleeding on probing (BOP). Aesthetic outcomes included mesial and distal papillary recession, mid-facial recession, and pink aesthetic score (PES). The outcomes were evaluated after one and five years.

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Results:

Seventeen out of 22 patients attended the fifth-year reassessment. Seven of the 22 had been treated three months after surgery with CTG at the buccal aspect because of early aesthetic complications (advanced mid-facial recession or major alveolar-process remodelling). The other complications were recorded were one implant failure and four prosthetic complications.

BOP increased significantly (24% to 32% at one and five years, respectively; $p = 0.021$). Marginal bone, plaque score, and probing depths did not change significantly at either one or five years (MBL 0.12 mm and 0.19 mm, plaque score 12% and 15%, at one and five years respectively. Probing depth was 3.1 mm at both time points). At study termination, seven of the 17 implants demonstrated

full-bone preservation or even slight bone gain.

Mesial and distal papillary recession was significantly reduced between one and five years ($p \leq 0.007$), indicative of embrasure fill after one year.

Changes in mid-facial recession did not reach statistical significance. After five years, cases treated with CTG yielded similar results to the group that was not treated with CTG (0.5mm and 0.63mm respectively).

The PES on the mesial and distal papilla improved significantly, whereas mid-facial contour and alveolar-process deficiency deteriorated significantly between one and five years. Total PES slightly deteriorated during follow-up from an average of 12.15 to 11.18 ($p = 0.03$).

**Limitations,
conclusions
and impact:****Limitations:**

This was not a randomised controlled study and therefore any comparison to alternative methods may be biased.

The overall sample size was initially moderate, which might affect the statistical power of the findings; more so, the sizeable attrition rate (5/22) and the lack of reporting on these subjects' condition makes the interpretation of these results more difficult. Patient-reported outcome measures were not registered. The judgment of the patient on the clinical and aesthetic outcome after five years is therefore lacking.

Conclusions:

Single immediate implants showed high implant survival and limited marginal bone loss in the long term. However, some indications of ongoing resorption of the buccal bone, which causes aesthetic complications, were found, thus raising the question of whether type-1 placement should be recommended for routine practice.

Impact: what can we learn as practitioners?

Immediate implantation showed high survival rate with minimal marginal bone loss. However, aesthetic complications were rather high. It is worth noting that the procedures were carried out by experienced clinicians and the patients were carefully selected.

Single immediate implant placement in the aesthetic zone might not be recommended for routine care of all patients.

The clinician should perform risk assessment, inform the patient of these risks, and then decide whether or not to perform this kind of procedure.