The 12th Annual
MEGA GEN
International Symposium
in MOSCOW

Scientific Challenges beyond Osseointegration

3D - 1 year

A CUSTOM-MADE CAD CAM SCAFFOLD FOR BONE REGENERATION ANYRIDGE® DENTAL IMPLANTS PLACED IN A GRAFTED SITE

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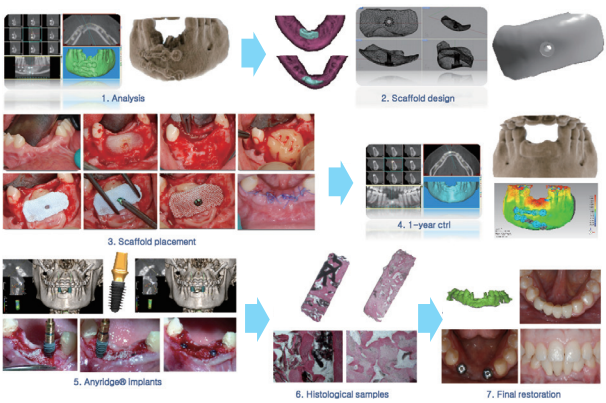
Objectives

This report documents the clinical, radiographic, and histologic outcome of a custom-made computer-aided-design/computer-aidedmanufactured (CAD/CAM) scaffold used for the alveolar ridge augmentation of a severely atrophic anterior mandible.

Materials and Methods

Computed tomographic (CT) images of an atrophic anterior mandible were acquired and modified into a 3-dimensional (3D) reconstruction model; this was transferred to a CAD program, where a custom-made scaffold was designed. CAM software generated a set of tool-paths for the manufacture of the scaffold on a computer-numerical-control milling machine into the exact shape of the 3D design. A custom-made scaffold was milled from a synthetic micromacroporous biphasic calcium phosphate (BCP) block. The scaffold closely matched the shape of the defect: this helped to reduce the time for the surgery and contributed to good healing. One year later, newly formed and well-integrated bone was clinically available, and two implants (AnyRidge® implants) were placed.



Results

The histologic samples retrieved from the implant sites revealed compact mature bone undergoing re-modelling, marrow spaces, and newly formed trabecular bone surrounded by residual BCP particles. The implants were successfully restored with a monolithic zirconia fixed partial prosthesis.

Conclusions

This study demonstrates that custom-made scaffolds can be fabricated by combining CT scans and CAD/CAM techniques. Further studies on a larger sample of patients are needed to confirm these results.

References

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