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BASIC RESEARCH

Bone grafting using a novel *in situ* hardening synthetic material with simultaneous early implant placement. A case report highlighting a new approach.

Minas Leventis,[1] Peter Fairbairn,[2] Danai Papavasileiou[1]and Demos Kalyvas[1]

1 Department of Oral and Maxillofacial Surgery, Dental School, University of Athens, Athens, Greece;

2 Department of Periodontology and Implant Dentistry, School of Dentistry, University of Detroit Mercy, Detroit, USA

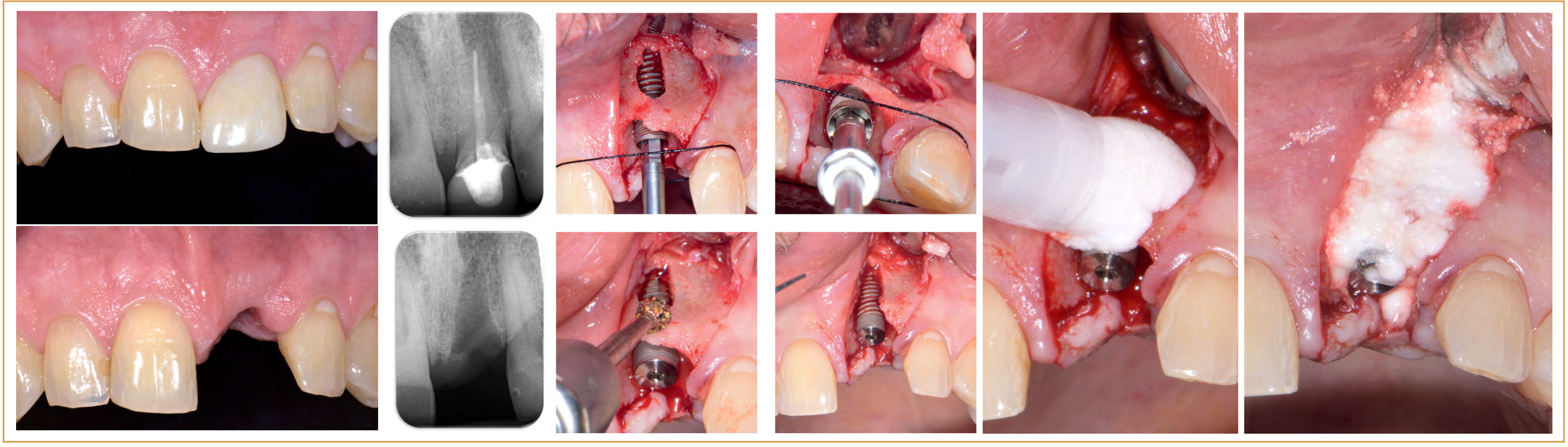
Background and Aim

Background: The thickness of the buccal plate seems to have a significant influence on the amount of horizontal and vertical crestal resorption in human sockets, while the placement of an implant into the extraction socket with simultaneous implementation of bone regeneration procedures is routinely followed in an attempt to limit the resorption process and preserve the architecture of the alveolar ridge.

***Aim*:** The presence of the thin buccal plate will trigger locally an osteoclastic activity in order to be resorbed and removed from the body, as this residual bundle bone has lost its functional support from the root, and its nutrition from the periodontal ligament, whether the site is grafted or not.

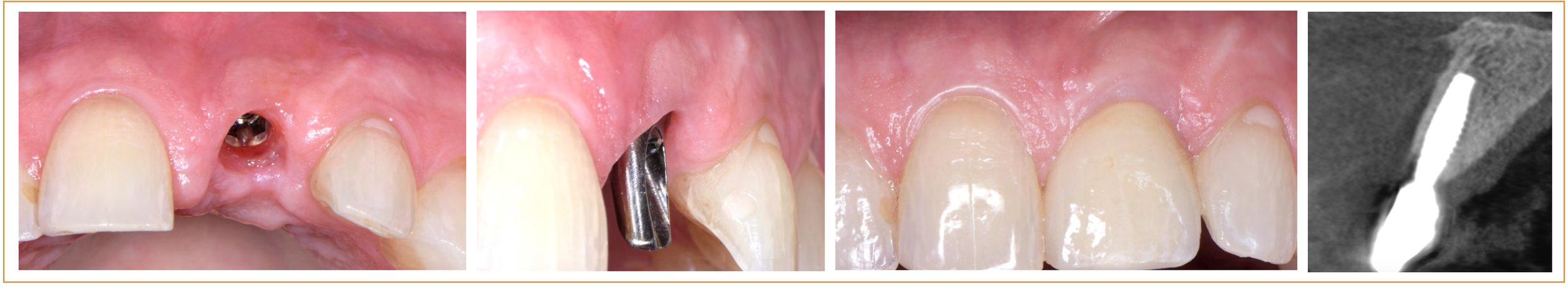
Materials and Methods

This case report highlights the management of an upper central incisor post extraction site with a defective thin residual buccal plate, where an early implant placement procedure, with simultaneous intentional removal of the residual buccal bone and bone augmentation, was performed. Four weeks after extraction, a site-specific full thickness flap was raised, without including the papillae of the adjacent teeth. After flap elevation, all granulation tissue was removed from the site, revealing a thin fenestrated buccal bone plate. A tapered implant (Paltop Dental Solutions Ltd, Israel) was placed at the optimal position and the residual buccal bone plate was completely removed. After placing the cover screw, the site was augmented utilizing a self-hardening resorbable synthetic bone grafting material (EthOss, Ethoss Regeneration Ltd, Silsden, UK), consisting of β-TCP (65%) and CS (35%), as described by the authors in previous publications.
No barrier membranes were used.



Results

After 10 weeks, the healing was uneventful. The architecture and the dimensions of the ridge were adequately preserved and the site was covered with thick keratinized epithelium. A periapical x-ray showed excellent osseointegration of the implant and consolidation of the grafting material. A linear crestal incision was made to access and remove the cover screw, and the secondary stability of the implant was measured by resonance frequency analysis (PenguinRFA, Integration Diagnostics Sweden AB, Göteborg, Sweden). An ISQ-value of 72 was recorded, demonstrating high stability. An open-tray impression was taken and a healing abutment was placed. After allowing the soft tissues to mature for 2 weeks, the ISQ was recorded again revealing again excellent stability of the implant, the final abutment was placed and torqued at 35 Ncm, and a metal-ceramic restoration was cemented resulting to a successful outcome, regarding aesthetics and function.
One year post-op clinical and CBCT examinations revealed successful and stable results.



Conclusions

Clinicians should be familiarized with the surgical protocols and methods that they employ, and at the same time they should have thorough understanding of the healing processes of the body and knowledge of the specific properties of the grafting materials that they use, in order to control and enhance the biologic mechanisms of regeneration in each individual implant case, and thus achieve successful and predictable results.

References

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