Early implant placement and blue®m oral gel: A case report with 1.5-year follow-up

Author: Minas Leventis, DDS, MSc, PhD

Department of Oral and Maxillofacial Surgery, Dental School, University of Athens, Athens, Greece; Private Practice, London, UK.
E-mail: dr.minasleventis@gmail.com

Background & Aim

Early implant placement is performed 2 to 8 weeks after tooth extraction, and is usually combined with simultaneous bone augmentation in an attempt to reconstruct and maintain the architecture of the hard and soft tissues of the alveolar ridge. Digital workflow is nowadays the state-of-the-art in implant dentistry, allowing the detailed planning of the future prosthesis and the accurate pre-operative virtual visualization of the surgical site. Fully-guided surgery facilitates precise implant placement and safe surgery with a lower complication rate. In surgery, oxygen is a prerequisite for successful wound healing as it affects all reparative processes such as cell proliferation, angiogenesis and collagen synthesis. Improving oxygenation may also be helpful in limiting wound infection.

The aim of this presentation is to report a clinical case highlighting the use of blue®m oxygen gel as an optimizer for tissue healing in contemporary oral surgery and implant dentistry.

Case Report & Results

A male 50-year-old male patient, with non-contributory medical history, non-smoker, presented with a filing lower right second premolar (45). The treatment plan consisted of: 1. Extraction of 45; 2. Early implant placement with simultaneous bone grafting, according to standardised protocol (Fairbairn and Leventis 2015); 3. Delayed loading of the implant; 4. Follow-up 1.5 year post-op.
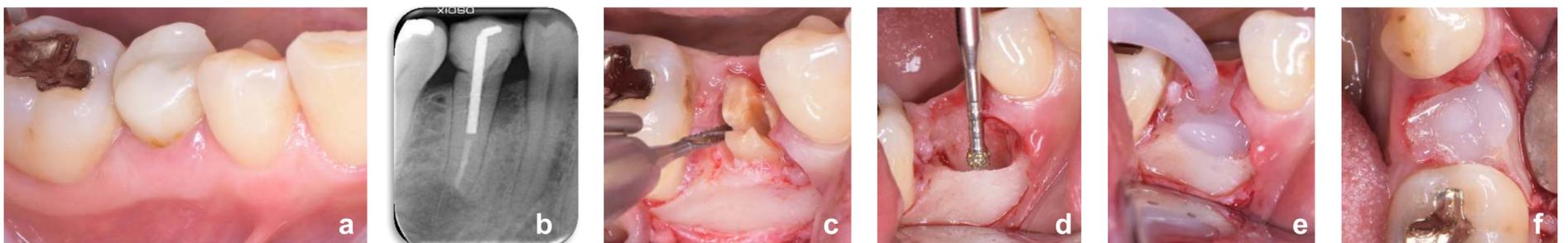

Fig. 1 – Extraction of 45. Initial clinical (a) and radiological (b) images. A site-specific full thickness flap was raised, and a surgical handpiece with a straight Lindemann bur was used to remove a small amount of bone and cut the root into pieces (c). Thorough debridement of the extraction socket is of great importance for uneventful healing. Degranulation burs were used to remove all soft tissues and to polish any pointy areas of the socket walls (d). The extraction site was treated with blue®m gel for 1 min (e, f) and subsequently rinsed with sterile saline. The flap was repositioned and sutured without achieving primary closure.

Fig. 2 – Clinical view 4 weeks post-extraction. Secondary intention healing. The site was covered by newly-formed soft tissues (a). Digital wax-up and digital planning of the optimal 3D positioning of the implant using the Implant Studio software (3Shape, Copenhagen, Denmark) (b-d). The position of the mental nerve is precisely visualized (c). One significant benefit of digital virtual planning is the pre-op visualization of bone defects around the implant leading to predictable, safer and quicker surgery (d). Precise placement of a 4.2x13 mm Paltop Advanced Plus implant (Keystone Paltop, USA) using fully guided surgery (e). The predicted bone defect was grafter with 0.5cc synthetic b-TCP/Calcium Sulfate (EthOss, Ethoss Regeneration Ltd, Silsden, UK) (f, g). No barrier membranes were used, in order to take advantage of the osteogenetic potential of the periosteum.
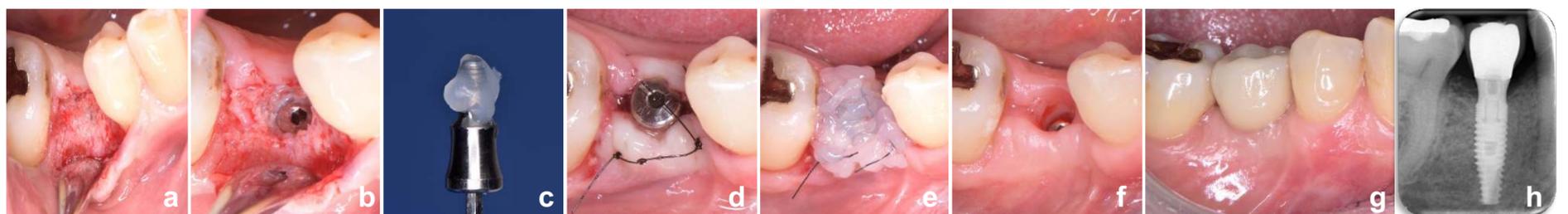

Fig. 3 – Three months post-op. The healing was uneventful. At surgical re-entry the site was filled with newly-formed regenerated bone (a). Bone was removed crestally to uncover the implant (b). Placing of the healing abutment with blue®m gel (c), and suturing with vertical mattress sutures (d). The applications of blue®m gel are numerous, so that we can take full advantage of the benefits of the active oxygen (e). Three weeks after uncovering, the soft tissues have matured around the healing abutment (f). Clinical evaluation 1.5 year post-op revealed a pleasant and stable outcome with successful preservation of the architecture and contour of the ridge, and thick keratinized soft tissues surrounding the implant (g). A periapical x-ray at this point revealed excellent bone levels. The bone has started remodeling around the loaded implant in order to become stronger and adapt to the transmitted occlusal forces (h).

Conclusion

A standardized staged approach with digital implant planning, fully guided placement and grafting with synthetic b-TCP/Calcium Sulfate enabled the precise and safe implant placement, and the simultaneous regeneration of vital bone and newly-formed thick keratinised soft tissues. Patient morbidity, complication risk, cost, length and complexity of the procedures were thus minimized; resulting in a successful and stable outcome, regarding aesthetics and function. Blue®m oral gel seemed to enhance wound healing in all stages.

References

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