

Long-term esthetic results with Straumann® BoneCeramic

Mats Hallman

Straumann® BoneCeramic is a fully synthetic bone graft substitute, consisting of 60% hydroxyapatite (HA) and 40% tricalcium phosphate (TCP) combined during chemical synthesis resulting in a homogeneous biphasic calcium phosphate (BCP). The morphology and composition of Straumann® BoneCeramic allows for gradual substitution via the patient's own bone: the TCP component dissolves and remodels relatively quickly leaving space for the patient's new bone formation, while the HA part provides a scaffold for bone deposition and maintains bone volume over time. This case report describes the use of Straumann® BoneCeramic in an esthetically demanding indication.

Replacement of upper central incisors

Pre-operative planning

Bone regeneration and soft tissue management are crucial for a good esthetic outcome in the anterior region of the oral cavity. In the following case, the patient, a 35-year-old male, presented with root fractures at both upper central incisors as a result of trauma (Figures 1a, b).

The contour of the lateral ridge was flat at both sites. The decision was taken to firstly extract both fractured crowns and allow the soft tissue to heal for 6 weeks; secondly, root extraction was planned, with immediate implant placement and augmentation of the lateral ridge.

Straumann® BoneCeramic was chosen for this esthetically demanding case in order to reconstruct and maintain the bone volume over time.

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Treatment

In the first step the crown fragments were extracted and the soft tissues were allowed to heal for six weeks. At this time the ridge contour appeared to be maintained and soft tissue healed completely. The papilla remained intact and visible (Figure 2). In the second step both remaining roots were removed and two 12mm Straumann® Standard Plus (Ø 4.1mm, SLActive 12mm) implants were placed (Figure 3). Lateral augmentation was simultaneously performed to cover visible threads and preserve alveolar ridge volume and contour using 0.25cm³ Straumann® BoneCeramic (400–700µm) covered with a collagen membrane (Figure 4) before wound closure (Figure 5). The implants were allowed to heal semi-submerged (with bevelled cover screws) for 8 weeks. After 2 weeks, the sutures were removed and the provisional was placed.

Outcome

At 3 years follow-up the patient displayed a healthy mucosa, a perfectly preserved alveolar ridge contour and an overall very satisfying esthetic result (Figures. 6, 7).

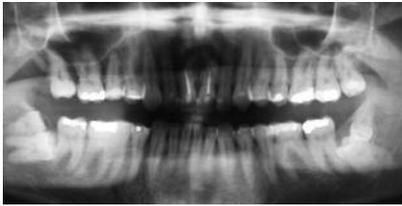


Figure 1a: Preoperative panoramic x-ray showing fractured roots of the upper central incisors.



Figure 1b: Bony defect (vertical) clearly visible on the periapical radiograph.



Figure 2: Perfect soft tissue healing 6 weeks post crown extraction.

Conclusion

Immediate implant placement in combination with GBR in esthetically demanding cases is probably one of the most difficult situations for a clinician. The implant has to be placed in a perfect position and the use of a scaffold that preserves the alveolar ridge volume in combination with a membrane is mandatory to be able to predict the esthetic outcome of the procedure. It is essential that clinicians have

knowledge about how different biomaterials vary in their function in order to avoid a less than esthetic outcome. The use of Straumann® BoneCeramic in the challenging case described here, involving replacement of both upper frontal incisors with implants, allowed for successful long-term restoration of esthetics and function.

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Figure 3: Implant placement with bony defect clearly visible.



Figure 4: Simultaneous augmentation with Straumann® BoneCeramic.



Figure 5: Sutured wound.



Figure 6: 3-year follow-up picture showing very pleasing esthetic treatment outcome.



Figure 7: Panoramic x-ray showing 3-year follow-up of the implants and crowns.