

Immediate Implant Placement and Immediate Loading

- The innovative possibilities of the XiVE® implant system -

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Introduction

Achieving natural esthetic results with implants after tooth loss has become one of the greatest challenges in implant dentistry, particularly in the esthetically relevant anterior region. To compensate the collapsed interdental structures and the atrophy of alveolar ridge, which starts only a few weeks after extraction, different concepts are described. Nevertheless, these complex techniques have to be proven on feasibility and predictability.

Immediate implant placement appears to be a proven method to reduce the collapse of the extraction alveolar ridge and resorption

of the alveolar bone to a minimum. However, the peri-implant soft tissue and the papillae can only be retained in the long term by simultaneous temporary restoration conducted as socket preservation. The temporary restoration should match the emergence profile of the replaced tooth that is being replaced.

We wish to use the following case presentation to demonstrate a practical concept of immediate implant placement with immediate temporary restoration.

Discussion

Immediate implant placement is a proven and predictable treatment concept in implant dentistry when combined with careful assessment of the indications. In combination with immediate temporary restoration, implant placement at this time prevents atrophy of the alveolar bone and collapse of the peri-implant soft tissue. This avoids complex surgical procedures for bone augmentation or regeneration of papillary structures. Healing time is reduced and surgical trauma is minimized. In addition, the retention and contouring of the peri-implant soft tissue by the temporary reconstruction offers optimum esthetic results.

An important aspect in this case is a restoration immediately after implant placement. The provisional restoration should have an ideal contour (contact points, emergence profile) for effective soft tissue

support and also a high surface-quality in terms of a machine-polished, laboratory-fabricated plastic temporary crown. This virtually eliminates tissue irritation. The XiVE® implant system (DENTSPLY Friadent, Mannheim, Germany) has proven to be ideal for meeting these requirements. In this system the premounted TempBase abutment initially serves as a placement head for the implant. It can also be used as an index coping and as an lab analog. Ultimately, it can also be used as a base for the temporary reconstruction. This offers an option for an immediate and ideal temporary restoration after immediate implant placement that can be integrated into the daily routine of the practice. This method also avoids the rotation forces that occur during frequent changes of abutments and soft tissue irritation caused by temporary plastic materials.



Fig. 1: Status after multiple apicoectomy of tooth 11 and 21. Tooth 11 has a degree of loosening of 3. Tooth 21 has undermined decay extending deep below the alveolar margin. We decided in favor of immediate implant placement after careful consideration of all therapy options.



Fig. 2: Intrasulcus incision line with the microsurgical scalpel.



Fig. 3: Careful extraction with rotary movements as atraumatically as possible!



Fig. 4: Status after extraction: non-irritated gingival and papillary conditions.

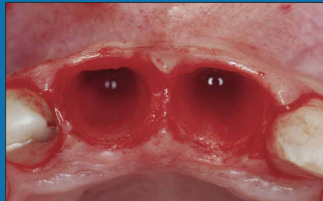


Fig. 5: Integrity of bone alveolar sockets. Essential for immediate implant placement.



Fig. 6: Checking the facial alveolar wall with the flat silver probe.

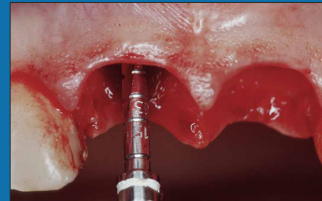


Fig. 7: Drilling the pilot hole palatal from the original dental axis. The facial alveolar wall must not be contacted during preparation of the implant site!



Fig. 8: Screwing in the implant with the machine in region 11.



Fig. 9: Screwing in the implant with the machine in region 21.



Fig. 10: Status after implant placement regions 11, 21. The visible seating coping (TempBase) now acts as an impression coping for index registration.



Fig. 11: Positioned transfer caps (TempBase Caps) for impression taking with a polyether-gum impression material (Ponmadyne, Espe, Seefeld, Germany). After separation of the retention aids the cap is used as the base for the temporary crowns.

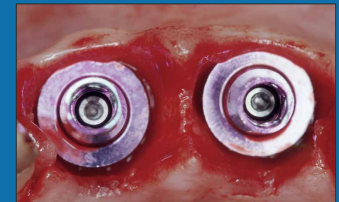


Fig. 12: Occlusal view of the TempBase abutments after impression taking.



Fig. 13: View from the occlusal direction after removal of the TempBases. Incongruence defects can be filled with bone substitution material or autogenous bone.



Fig. 14: TempBase abutments on the cast (laboratory abutments).



Fig. 15: Laboratory-fabricated temporary crowns. Ideal contour with respect to emergence profile and contact points. Optimum, tissue-compatible surface quality.



Fig. 16: Placed temporary crowns in situ. Setup papilla suture for excellent soft-tissue management.

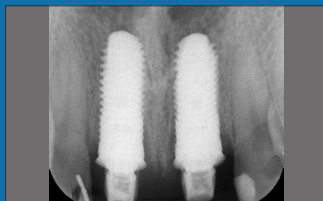


Fig. 17: X-ray image after surgery. Vertical implant position at the level of the cementum-enamel junction of the adjacent teeth.



Fig. 18: Patient after implant placement and immediate temporary restoration.



Fig. 19: CAD/CAM zirconium oxide abutments milled according to the emergence profile (Cercor® Smart Ceramics).



Fig. 20: CAM fabrication for natural analogous abutment shape.



Fig. 21: Healthy periimplant conditions due to bio-compatible materials.



Fig. 22: Cemented galvanic crowns. Complete preservation of the papillary structures.



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