

Successful immediate loading of a PROGRESSIVE-LINE implant with Guided Surgery and Socket Shield Technique



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» Hürzeler et al. [Hürzeler, Zuhr et al. 2010] reported in 2010 a novel approach to preserve the soft and hard tissues following tooth extraction without the use of biomaterials. The authors proposed the retention of a buccal aspect of the root during immediate implantation to prevent alveolar bone loss following tooth extraction. Since then this technique has been further evaluated [Bäumer D, Zuhr O et al 2015, 2017] and reviewed [Blaschke et al 2020] proving the preservation of the alveolar ridge and/or soft tissue buccal to the implant. Nevertheless this technique cannot be implemented in routine dental practice without caution and is reserved for the experienced surgeon.

Clinical case

In the following case a 69 year-old male with good health condition presented in the office with a fractured central incisor due to his bruxism condition. (Fig 1a and b) show the initial situation before partial extraction of the fractured tooth and immediate implant placement.

With the impressions to produce the guide template, the crown of the tooth (Fig 2) was handed to the dental technician for orientation to build the temporary restoration and partial tooth extraction was performed. Only the palatal aspect of the root was taken out preserving the facial part of the periodontal ligament and as a consequence the bundle bone (Fig 3a and b). A small flap was raised in order to better control the thickness and final disposition of the remnant piece of root.

With the surgical guide – previously designed by overlapping the intraoral scan .STL file and the CBCT.DICOM files – the PROGRESSIVE-LINE implant was in the palatal part of the extraction socket, without contact with the retained root fragment (Fig 4a and b). The guide was used to place the implant in the right 3D prosthodontic position. Reaching an insertion torque of more than 35 Ncm, the implant qualified to be restored immediately with a screw-retained one-piece provisional crown within the following two hours (Fig 5a – c). Final restoration was delivered after 10 weeks (Fig 7, 8, p).



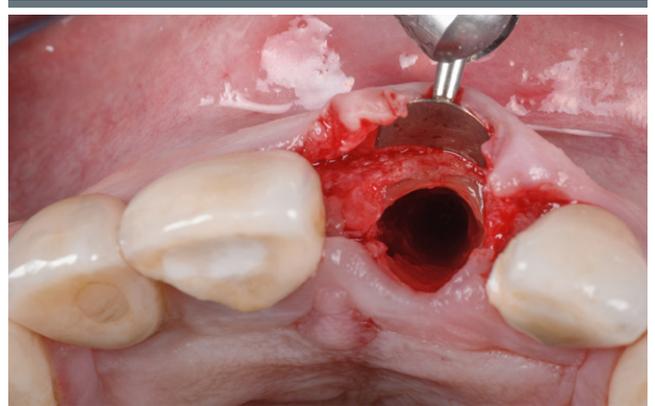
1a and b. Initial situation. Patient presents to the office with a fracture of the left central incisor.



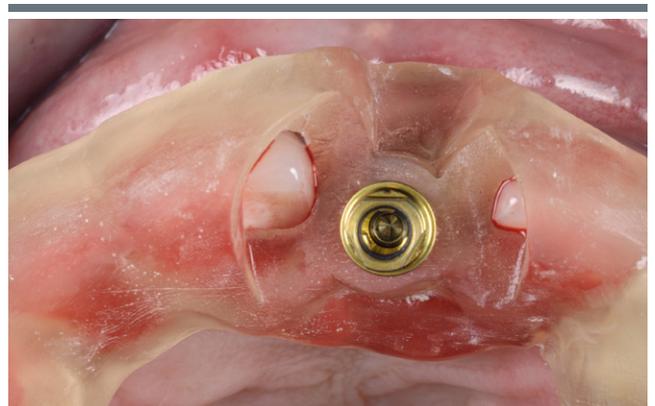
2. After intra-oral scan, the fractured crown is sent to the laboratory technician to copy the shape and color.

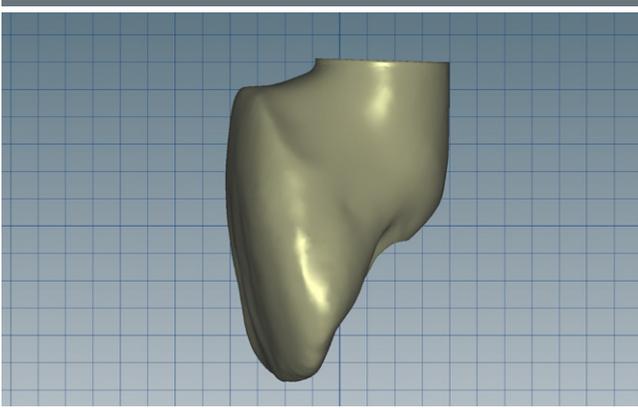


3a and b. Partial tooth extraction with socket shield approach.



4a and b. A printed surgical guide was used to place the CONELOG® implant in the exact 3D prosthodontic position.

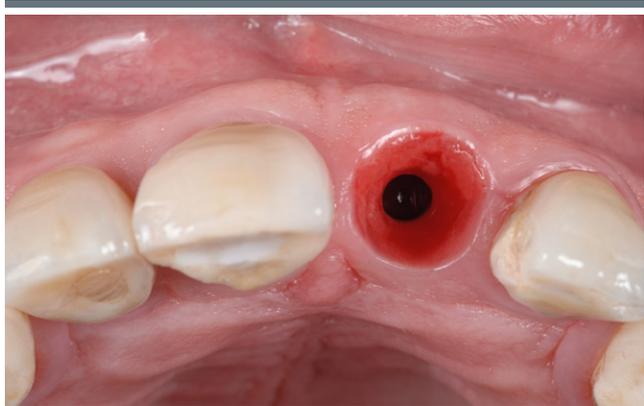




5a and b. The interim restoration was designed and screwed onto the implant immediately after the surgery.



5c. Screw retained provisional crown to cover the extraction wound and preserve the soft tissue.



6. After 8 weeks and removal of the provisional restoration the peri-implant region impresses by a voluminous and healthy soft tissue.



7. The final Zirconia crown was produced following a fully digital workflow.





8a and b. After seating the final crown, slightly chipped adjacent crowns were repaired with composite.



9a and b. Final situation the day the crown was delivered.



10a and b. Follow-up 6 months later.

Conclusion

This case illustrates an experimental technique for preserving a buccal root segment in conjunction with immediate implant placement and provisionalization. The socket shield technique in conjunction with fully guided implant placement shows to be a valuable technique to minimize buccal contour changes after tooth extraction, leading to increased volume stability of the mucosa adjacent to the inserted implant. The PROGRESSIVE-LINE implant proves to be a reliable implant for immediacy cases with fully-guided options, taking advantage of a fully digital workflow.

References

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