Post-Implant Removal with Bone Regeneration And Immediate Loading Using the NeO Alpha-Bio Tec. Implant

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Abstract

The case is that of an immediate loading in a patient with coronal fracture. A 33-year-old patient with tooth number 24 fractured. A CT scan revealed a chronic periapical lesion of the vestibular root. The patient was treated with a post-extraction NeO AlphaBio implant, xenograft bone regeneration, resorbable collagen membrane and non-functional immediate loading using PEEK abutment.

Background

Tooth fractures with aesthetic alterations are situations that require efficient and predictable treatments. The post-extraction implant is one such predictable treatment. The osseointegration capacity of the NeO AlphaBio implant has been previously demonstrated [1, 2, 3].

There is no significant difference between the post-extraction implant and the delayed implant with regard to success rates or peri-implant tissues [4, 5]. Ideal situations have been described for the placement of these implants [6].

Implant placement is not contraindicated in teeth with chronic periapical infections, provided that they are previously curetted and treated with antibiotics [7].

Immediate loading is defined as functional or non-functional loading within 48 hours [8]. The success rate of immediate loading implants is between 96.9% and 98.99% [9, 10]. Because there is no difference between delayed loading implants and immediate loading implants, some practitioners recommend doing immediate loading [11].

It is important to avoid micro-movements during the healing phase [12, 13] which is why we do non-functional immediate loading.

The basic requirement for immediate loading is the primary stability of the implant, which depends on the design of the implant, bone quality and milling [14].

The post-extraction immediate loading implant is a procedure that is well documented in the literature.

Case Overview

A 33-year-old female patient came for a consultation due to a tooth fracture, requesting a dental implant that has, if possible, a base without palatal coverage. The patient smokes 10 cigarettes per day. No medical history was reported.

Extra-oral inspection: Mouth opening of 45 mm. High smile line and normal ATM. Normal mastication muscles.


Maxilla: Residual rot of tooth number 16, coronal fracture of tooth number 24, cavities in numbers 25 and 26, and wear facets on numbers 11 and 21. Fracture of the distal radius of tooth number 22.

Radiographic findings

**Orthopantomogram:** Residual rot was observed in numbers 15 and 36. Coronal fracture of tooth number 24 with radiolucency in the periapical area.

**CT Scan:** Periapical lesion of the vestibular root of tooth number 24 with bone loss was observed at this level.

Materials used

- NeO AlphaBio Implant 3.75 x 13 mm
- PEEK Abutment H 1.0

Treatment plan

In response to the demands of the patient, who asked for a quick and aesthetic solution for the fracture of tooth number 24, we proceed to do the following:

- Atraumatic extraction of tooth number 24 and curettage of the periapical lesion through a fold in the vestibular floor to prevent vertical shocks.
- Implant placement, xenograft bone regeneration, placement of a resorbable collagen membrane through the vestibular fold and alveolar preservation.
- Non-functional immediate loading and occlusion control.

The treatment was done in one visit to the dental office.
5. Residual rot with periapical lesion in vestibular root

6. Opening of fold in the vestibular floor for curettage of the periapical lesion and to observe for bone defects for subsequent regeneration

7. Fold on the vestibular floor

8. Extraction with a periapical lesion of the vestibular root

9. Curettage of periapical injury

10. Disinfection with chlorhexidine 0.12%

11. Visualization of the vestibular defect

12. Implant bed preparation

13. NeO Alpha-Bio® implant

14. Placement of implant in palatal position
15. Placement of implant in palatal position

16. Note integrity of the vestibular wall in the coronal portion and the position of the implant

17. Post operational X-ray

18. Placement of PEEK abutment for immediate loading

19. Previously prepared acrylic temporary cover

20. Placement of temporary cover for non-functional immediate loading

21. Xenograft placement on periapical lesion to help in defect regeneration

22. Vestibular gap

23. Filling of the vestibular gap and xenograft placement on the vestibular wall to prevent reabsorption
24. Placement of resorbable collagen membrane

25. Resorbable membrane covering apical defect and vestibular wall of the socket

26. Silk suture 5.0 (fold on vestibular floor and suspensory points for vestibular closure are sutured, helping to stabilize the membrane)

27. Occlusion control to ensure that there are no contacts in centric or eccentric movements, laterality and protrusive occlusion (non-functional immediate loading)

28. Follow up X-ray - 6 weeks after surgery

29. CT scan showing the material of the vestibular area, conservation of volume and position of the implant

30. Follow up, six weeks after surgery. Proper healing of the soft tissues is seen

31. 3 months follow up. Soft tissues healing and X-Ray follow up

32. Smile line
Summary

In this case, the use of the NeO AlphaBio implant for post-extraction immediate loading in an aesthetic area was a good choice because we achieved primary stability thanks to its design. The prosthetic phase did not present any difficulties due to the accessories that the office has for this purpose. The result was predictable, aesthetic and functional in line with the expectations of the professional and the patient. This type of treatment negated the use of removable dentures and shortened the recovery and procedure time.

References


The welding is achieved using a SonicWeld Rx® unit, an ultrasound generator producing ultrasonic waves of precisely defined frequency that are focused with a sonotrode. Once the barrier is fixed, the Alpha-Bio Tec. NeO implant was placed supra-crestally in its preferred location (2-3 mm apically to CEJ of the adjacent teeth). The space between polymeric membrane and pristine bone was filled with a Xenograft. A resorbable collagen membrane was placed over the augmented area (Figs. 12-13). Periosteal horizontal releasing incisions were performed at the base of the flap which was sutured without tension using Vicryl 4-0 sutures. A temporary prosthesis (24-X with metal reinforced wire) was placed without gingival or occlusal contact (Figs. 14-16). Healing was uneventful.

The case will be prosthetically finalized and updated in the coming months with the delivery of the final prosthetics to the patient.