Post-Implant Removal with Bone Regeneration And Immediate Loading Using Alpha-Bio Tec's NeO implant

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Abstract

The case shows 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 of Alpha-Bio Tec's NeO implant, xenograft bone regeneration, resorbable collagen membrane and non-functional immediate loading using a PEEK abutment.

Background

Tooth fractures with aesthetic alterations are situations that require efficient and predictable treatments. The post-extraction implant is an example for such a treatment. The osseointegration capacity of the NeO 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 45mm. High smile line and normal ATM. Normal mastication muscles.

Intra oral inspection: Tongue, palate and floor of the mouth are normal. Normal salivation. Normal palate anatomy. Thin gingival biotype. No periodontal disease.

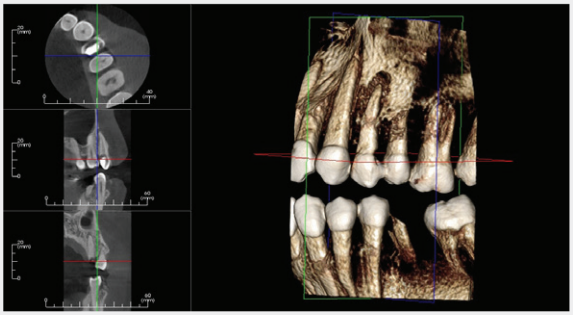
Maxilla: Residual root of tooth number 16, coronal fracture of tooth number 24, cavities in numbers 25 and 26, and wear facets on numbers 11 and 21. Fracture of the distal radius of tooth number 22.

Mandible: Fillings in 37 and 46. Residual rot of 36. Cavities on the vestibular surface of 34.

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.



X-ray

Materials Used

- 3.75 X 13mm NeO Implant (Alpha-Bio Tec)
- 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 proceeded 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.

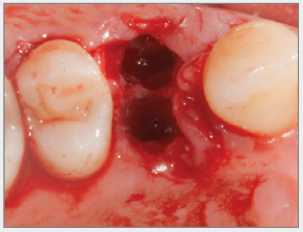
The treatment was done in one visit to the dental office.

Surgical Phase

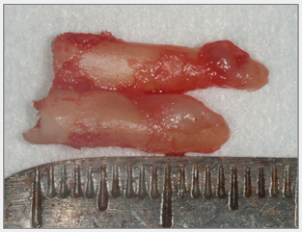
1 Patient smile: High smile line, thin gingival biotype

2 Intraoral views: Coronal fracture of tooth number 24

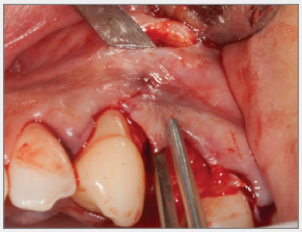
3 Fold opening without vertical unloading



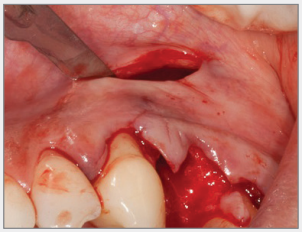
4 Atraumatic extraction of residual root



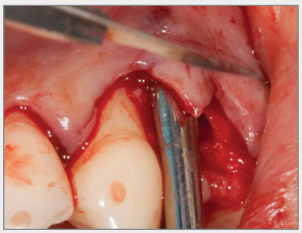
5 Residual rot with periapical lesion in vestibular root



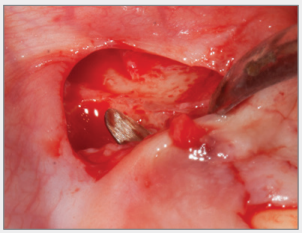
6 Opening of fold in the vestibular floor for curettage of the periapical lesion and to observe for bone defects for subsequent regeneration



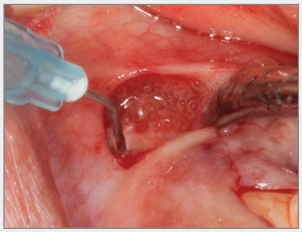
7 Fold on the vestibular floor



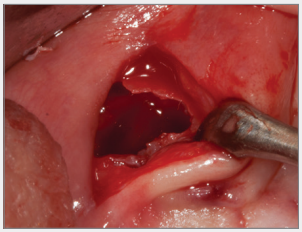
8 Extraction with a periapical lesion of the vestibular root



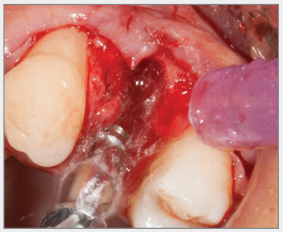
9 Curettage of periapical injury

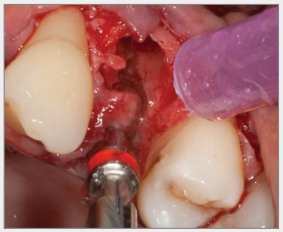


10 Disinfection with chlorhexidine 0.12%

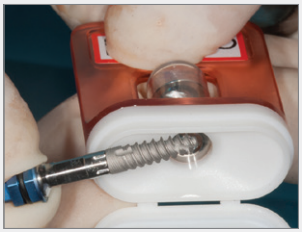


11 Visualization of the vestibular defect

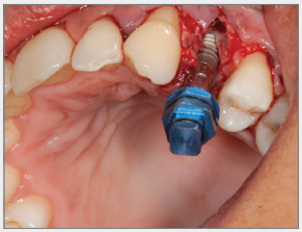




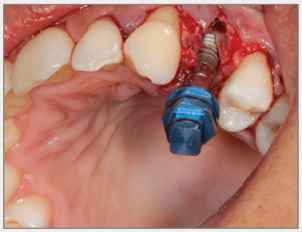
12 Implant bed preparation



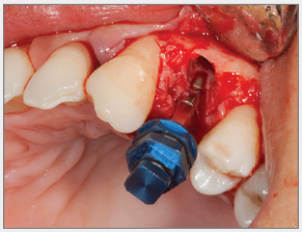
13 Alpha-Bio Tec's NeO implant



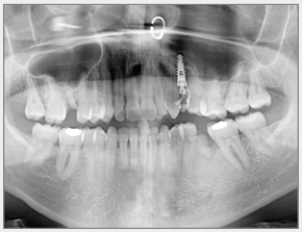
14 Placement of implant in palatal position



15 Placement of implant in palatal position



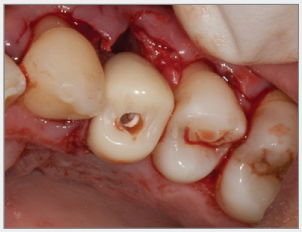
16 Note integrity of the vestibular wall in the coronal portion and the position of the implant



17 Post operational X-ray

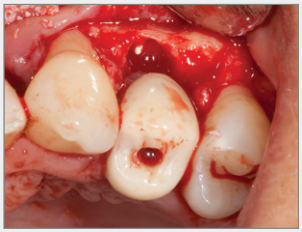
18 Placement of PEEK abutment for immediate loading

19 Previously prepared acrylic temporary cover

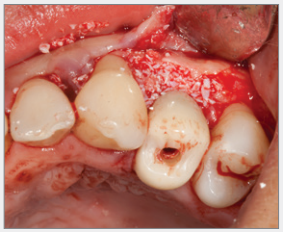


20 Placement of temporary cover for non-functional immediate loading

21 Xenograft placement on periapical lesion to help in defect regeneration



22 Vestibular gap



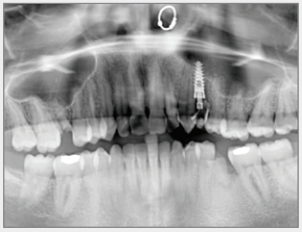
23 Filling of the vestibular gap and xenograft placement on the vestibular wall to prevent reabsorption

24 Placement of resorbable collagen membrane

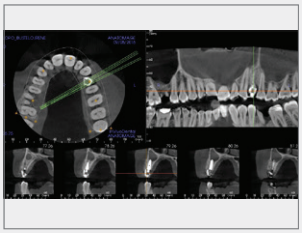
25 Resorbable membrane covering apical defect and vestibular wall of the socket

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

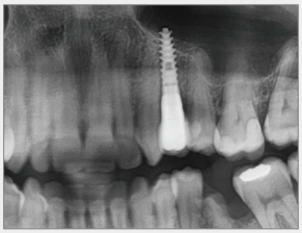


29 CT scan showing the material of the vestibular area, conservation of volume and position of the implant

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



33

3 months follow up with final crown

Summary

In this case, the use of the NeO 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 clinic 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.

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