

Nobel-Active in severe case of periodontal disease

Transdental Guided-Implant-Planning (TdGIP) - deep shift implantation - Periobridging

Language: English

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Introduction

Due to severe periodontal diseases a 42-year old female translator [10] asked for help. Several periodontal-therapies had been already accomplished in the past. Other clinics had been recommended the removal of all teeth and an over-denture. By conversion on removable denture the female patient feared phonetic difficulties; thus in the long run an inability to work. We recommended an immediate implantation after tooth extraction based on Nobel-Guide Planning (Transdental Guided-Implant-Planning; TdGIP) using Nobel-Active-Implants.

Objectives

The clinical investigation showed reduced dentures of the upper jaw and prosthetic treated teeth. In the maxilla 2nd°-movement of the teeth was identified, in the lower jaw 1st°-movement. Left central and lateral incisors were rotated and labial protruded. The marginal gingiva was fibrotically thickened as indication of recurrent infections; (API: 65%, PBI between 3-4°; CPTIN Code x>4); [1a,b].
The radiological investigation (OPT; Orthopantomography) demonstrated a bimaxillary horizontal bone loss with vertical break-downs in region 15, 11-22, 24-26, 36-34 und 44.[2]

Diagnosis:

Chronical adult periodontitis (AP)

Planning:

First the maxilla was planned in arrangement with the patient needs as immediate implantation after tooth extraction with immediate function; En detail:

1. Periodontal pretreatment including Photolase®-Therapy
2. Tooth extraction in the maxilla
3. Sinuslifting right
4. Transdentale Nobel-Guide-Planning (TdGIP) with implantation [3a-c]
5. Immediate loading with "PerioBridge"
6. 3 weeks later Transfer from "PerioBridge" to Procera® Crowns and Bridges

Material and Methods

According to data conversion ten implants were planned in the three-dimensional data record. The radiological differentiation between tooth and bone substance could be accomplished using the Hounsfield-function. If possible the clinical tooth axle was imitated. Doing so, the implants could be placed in the X-Y-plane correctly. The vertical dimension (Z-axis) was extrapolated by following the clinical crown-height. After proving the Nobel-Guide-template intraorally, the laser-based periortreatment (Photolase®-procedure); [4a] were performed.

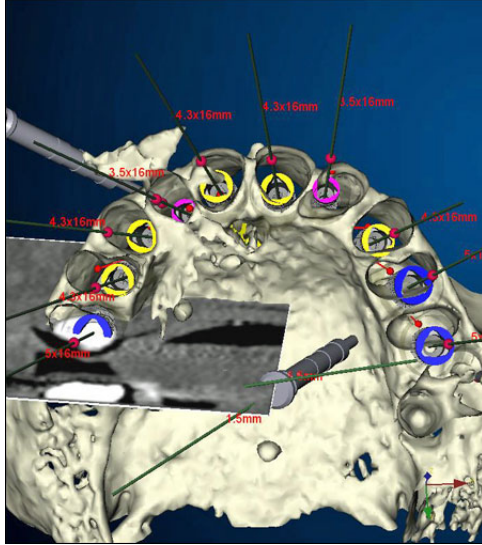
The tooth extraction in the Maxilla was followed by conditioning the cervical epithelium [4d]. Right side sinus lifting was performed [4c]. Afterwards ten Nobel Active implants were inserted deep with the help of the Nobel Guide Template [4b]: (Rp 4.3x13mm in region 011, 022, 023, 014; Np 3.5x13mm in region 012, 022; Rp 5.0x13mm in region 015, 024, 025; Range of force between 45 and 65 Ncm). For loading via PerioBridge Narrow profile Abutments (Rp and/or NP 9mm) were used [4d].



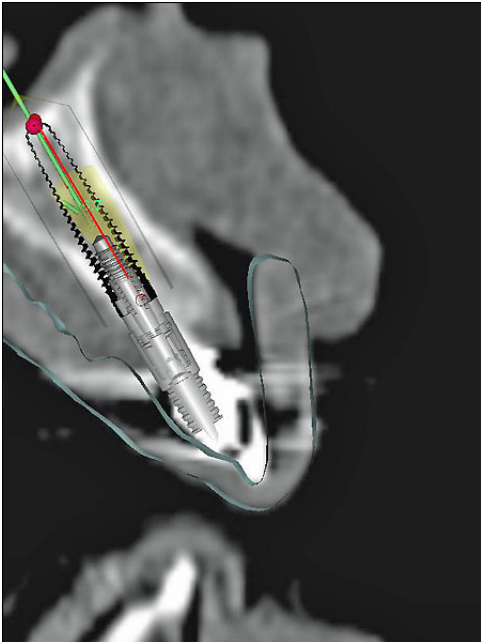
1a



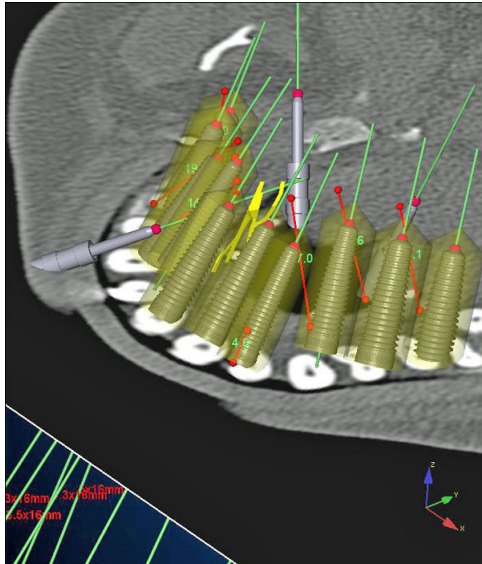
1b



2

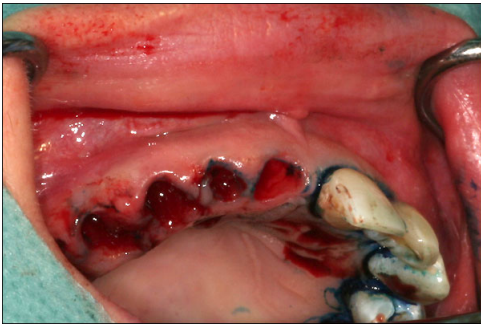


3a



3b

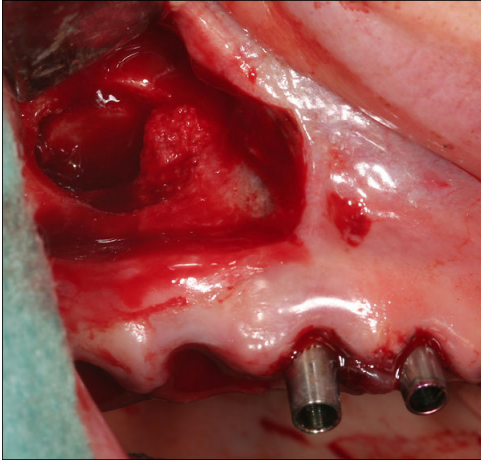
3c



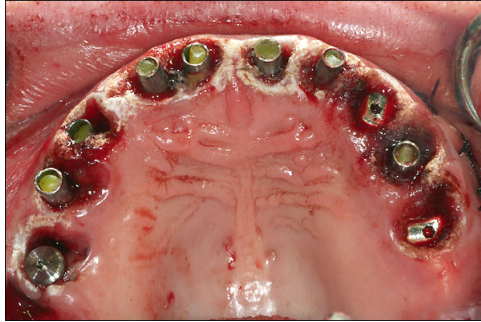
4a



4b



4c



4d

Prosthetic rehabilitation:

After fitting in the PerioBridge an exchange of the Narrow-profile-Abutments to casting abutments took place. An open casting was accomplished [5a]. After this the provisional PerioBridge was integrated again [6a,b].

As final prosthetic restoration six Procera-Crowns were manufactured on Procera-Abutments in region 013-023 and inserted three weeks later [7a-c]. The remaining implants 014, 015, 024 and 25 were supplied by Procera-Bridges with distal extension on titanium abutments [8a-d].



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6a



6b



7a



7b



7c



8a



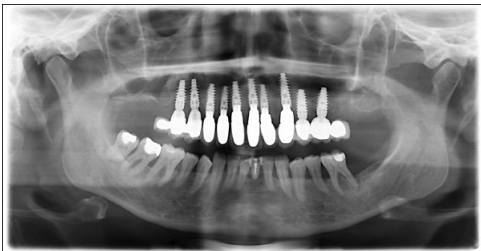
8b



8c



8d is the same image as the left one next to image 10



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Results

Immediate implantation after tooth extraction in severe periodontal diseases represents a possibility to preserve the current bone situation. When combined with modern periortreatments like Photolase-Therapy immediate function with provisional crowns or bridges secures the receipt of the periodontal tissue. TdGIP permits the receipt of the Gingiva after extraction and during the replacement of the PerioBridge by Procera-Crowns.

Conclusions

Due to missing physiological load the loss teeth leads to a decreased bone height by alveolar atrophy. The result of each extraction are 40% to 60% bone loss in the first 2-3 years. Afterwards an absorption rate results of 1% per year to the end of life of the patient. The supply of cover prostheses after extraction leads to the loss of the Papilla. Late implantation and planning of single crowns can lead to a problem with the red and white aesthetics. Pretty often the Papilla must be replaced ceramically in these cases, which particularly means an aesthetic compromise with high laughter line. Immediate implantation after tooth extraction represents a possibility to use current bone situation. Immediate function with provisional crowns or bridges secures the receipt of the periodontal tissue. It is however a clearly bound defined criteria. In inflammation or chronic degenerative diseases causing vertical bone loss, augmentative possibilities (e.g. sinuslifting) must be used. Immediate function of implant using Nobel Guide is not new. Since guided components are not yet available for the Nobel Active implant alternatives were chosen. As a check of the height and adjustment of the implants and abutments a Real-Axis-Verificator (RAV) was developed. This advice was fixed palatinal by using Guided-Anchor Pins in position of the beforehand used Nobel-Guide-template and in correct occlusion with the corresponding Mandibula. Necessary additional corrections of the implant axle could be accomplished in such a way. Thus insertion of the PerioBridge in x-y-z-position was possible. In the past Nobel-Guide-Templates were used and indicated for edentulous jaws or single tooth replacement. More advantages can now be obtained using transdental guided implant planning (TdGIP); By improving the prosthetic security (NobelGuide), decreasing surgical interventions and avoiding phonetic problems due to removable dentures. In the long run this leads despite operation to a positive experience for the patient [10].



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Literature

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Abbreviations

API: Modified Approximal-Plaque-Index
AP: Chronical Adult Periodontitis
CPITN: Community Periodontal Index of Treatment Needs
PBI: Papilla-Bleeding-Index
RAV: Real-Axis-Verificator
TdGIP: Transdental Nobel-Guide®-Implant-Planning

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Nobel-Active in severe case of periodontal disease

Transental Guided-Implant-Planning (TcGIP) - deep shirt implantation - Periobridging

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ABBREVIATIONS

3D: Three-dimensional
 CBCT: Cone beam computed tomography
 CEM: Computerized tomography
 CT: Computed tomography
 CTGIP: Transental Guided-Implant-Planning
 CTGIP: Transental Guided-Implant-Planning
 CTGIP: Transental Guided-Implant-Planning

LITERATURE

1. Nilius M, et al. (2018) ...
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3. Nilius M, et al. (2020) ...
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ABSTRACT

Abstract: Due to severe periodontal disease a 45-year old female underwent CTGIP guided for full. Several periosteal elevations had been already accomplished in the past. Over decades had been recommended the removal of all teeth and an overdenture. An extension on removable denture the female patient based previous difficulties. Due to the long run an inability to work, she recommended an immediate implantation after tooth extraction based on Individualized Planning (Transental Guided-Implant-Planning - TcGIP) using Individualized-bridges.



Oral findings: The clinical investigation showed reduced denture of the upper jaw and prosthetic treated teeth. In the maxilla the placement of the teeth was identified, in the lower jaw 1st molar, 1st premolar, 1st molar and lateral incisors were retained and tilted proximal. The marginal gingiva was far already thickened as indication of recurrent infections (AP1: 60%, P8 between 5-8%, D2N1: 11%).

Planning: The 3D models was planned in arrangement with the patient needs as immediate implantation after tooth extraction with immediate function. In detail:
 1. Removable prosthesis including overdenture Proforma
 2. Tooth extraction in the maxilla [1-4]
 3. Smoothing right side [5]
 4. Transental Guided-Implant-Planning (TcGIP) with overdenture
 5. Immediate loading with "Periobridge" [6-8]
 6. In 2nd step: Transfer from "Periobridge" to Proform® Crown and Bridge [9-11]

PROCEDURES

Procedures: According to this extraction ten implants were planned in the three-dimensional data report. The multigonal differentiation between teeth and bone structures could be accomplished using the Horizontal-Function. If possible the critical teeth were not retained. During on, the implants could be placed in the X-ray image correctly. The vertical dimension (Z-axis) was distinguished by following the critical crown-heights. After giving the Individualization primarily, the laser-based preformation (PhotoShop-procedure) [12] were performed.



Prosthetic rehabilitation: An open surgery was accomplished [13]. Nanoacrylic Abutments were placed on the implants and fixed by the Periobridges. After this the preformal Periobridge was integrated again [14].



RESULTS

Results: Immediate implantation after tooth extraction in severe periodontal disease represents a possibility to prevent the current bone situation. When combined with modern periosteal elevation like (PSE) immediate function with provisional crowns or bridges assures the needs of the patient before. TcGIP respects the original heights after extraction and during the replacement of the Periobridge by Proforma-Crowns.



Discussion: Due to missing physiological load the alveolar crest leads to a decreased bone height after tooth extraction by vascular atrophy. The result of such extraction are 40% in CBCT bone loss in the first 3-6 years. Advances on extraction rate of 7% p.a. occur to the end of it. The needs of over prosthesis after extraction leads to the loss of the Periodontal. Late maintenance and planning of single crowns can lead to a problem with the re/retire mechanic. Firstly after the Periodontal can be replaced completely in these cases, which permanently means an alveolar compression with high biological risk. Immediate implantation after tooth extraction represents a possibility to use current bone situation. Immediate function with provisional crowns or bridges secure the needs of the periodontal tissue. It is however a clearly sound defined criteria, in inflammation or chronic degenerative disease causing vertical bone loss, aggressive periodontitis (e.g. smoking) must be used.

Immediate function of implants using hybrid Guide is not new. Since guided components are not yet available for the Nobel-Active implant alternatives were chosen. As a check of the height and adjustment of the implants and abutments a Periobridge/transfer (POT) was developed. This advice was fixed realized by using GuideAnchor Pins in position of the lab-retained steel Nobel-Guide-templates and in correct occlusion with the corresponding Maxilla. Necessary additional components of the implantable could be accomplished in such a way. This version of the Periobridge in preparation for the patient. In the past Nobel-Guide-templates were used and indicated for overdenture jaws or single tooth replacement. More advantages can now be obtained using Transental Guided Implant Planning (TcGIP). By respecting the prosthetic aspects (Individualized), decreasing vertical overextensions and equally physical problems due to removable dentures.

In the long run this leads despite operation to a precise sequence for the patient.