IMPLANTATION AND RESTORATION ON I.C.E. IMPLANTS

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DENTAL PROSTHESES AND IMPLANTS: IMPLANTATION AND RESTORATION ON I.C.E. IMPLANT

ABSTRACT

Implantation and immediate loading of an I.C.E type implant in an 82 year old male patient with a history of balanced blood pressure.

INTRODUCTION

• An implant-supported fixed denture for restoring edentulous jaws is currently considered to be the treatment of choice for restoring functional, aesthetic, and phonetic abilities.
• When the patient has a removable denture, the implantation can be performed and the existing denture can be used as a transitional denture. This enables the treatment to be both cost and time effective. However, there are also a few disadvantages to this:
  - The patient's mastication quality does not improve and can even be harmed. This is because the area over the implants must be relieved after the implantation, which reduces the stability of the denture.
  - If a local bone graft is required, the non-balanced pressure on this area may cause bone resorption and sabotage the result.
  - The patient does not "experience" the change in the permanent denture, which differs in occlusal aspects, guidance, and occlusal height (particularly when there is a defect in the patient's previous denture); all of which bear information that is vital for the planning of the final denture.

In view of the periodontal condition and extensive loss of tooth material, all lower teeth are to be extracted. The patient ruled out the option of a removable denture, due to strong gag reflex and a previous bad experience with adjusting to an upper denture. Therefore, there is a preference for an additional fixed denture in the mandible to achieve maximum stability and effective masticatory capabilities.

• Correction of the upper occlusal plane by selective grinding
• Temporary fixed transition denture with immediate loading
• Cemented FPD on the mandible implants

CASE DESCRIPTION

A 82 year old male patient, complaining of pain in the mandible, and chewing difficulties.

History:

Hypertension stabilized by medication, using a B-Blocker type drug.

Extra-oral:

Mouth opening of 42 mm, TMJ, normal mastication muscles, low smile line.

Intra-oral:

Soft tissues: tongue, palate, and mouth floor are normal. Saliva secretion is at the lower normal limit, shallow super-posterior vestibule, normal inferior vestibule. BOP, pocket depth of 8 mm in mandible. Deficient Fixed Partial Denture (FPD) type restoration: poor fit, partial bridge mobility, deformed occlusal plane, and upper midline deviates by about 2 mm to the left, from the center of the face.

X-ray examination:

- Maxilla: FPD supported by teeth and implants, poor fit, pockets of 3-5 mm without BOP, no mobility.
- Mandible: missing teeth, FPD supported by teeth with poor fit and extensive loss of osseous support around most teeth, secondary canals down to the bone height, former root canal treatments and extensive abutments, edentulous ridges, demonstrating moderate resorption.

Diagnoses

• Periodontitis
• Caries
• Periapical lesions
• Missing teeth
• Faulty restoration
• Deformed occlusal plane

Materials

I.C.E. Implants, Alpha Bio's Graft bovine bone substitute, Alpha Bio's Graft collagen membrane

TREATMENT PLAN

• Proximity of alveolar bone peak to the mandibular nerve: in the majority of the area it is above 13 mm, except in area 45 where it is approximately 3 mm.
• Alveolar bone width: distal area more than 8 mm and mesial area 5-7 mm.
Implantation and transitional denture planning

To plan a fitted transitional denture, study models were made with some modifications in the occlusal plane (by carving), completion of missing teeth and additional contact surfaces. (2)

Paraguides used for examining the direction of the implants. (7)

Completion of the drilling based on bone Type 2 protocol and insertion of two Ø3.75/13mm I.C.E. implants in position 46 and 47. (8)

Use of a plate to examine the height and location of the abutments in relation to the planned temporary denture. (13)

Extraction of the remaining teeth and use of a plate as a surgical guide for inserting the rest of the implants (Table no. 1). (14)

Impressions, work model preparation and transferring the data to the lab

Connecting the rest of the abutments, then adjusting and preparing them to obtain a uniform insertion path, according to the surgical plate. (15)

Connecting closed tray transfers to the implants. (21)

Radiograph after the implantation procedure. (19)

After 3 months - removal of the temporary bridge, implant stability check, and tightening the abutment screws. Performing a lining for the temporary bridge follow up of gingival outline. (20)

Connecting an analog to each transfer and inserting it into the impression according to the corresponding location in the mouth. (25)

Casting a work model in the lab. (26)

Bite registration for the interocclusal relations of the temporary bridge (Zhermack Colorbite). (27)

Installing the upper model antagonist on the temporary bridge on the work model. (28)

Transposing of a few abutments from the mouth to install the temporary bridge to the work model. (29)

Assembly of the temporary bridge on the work model. (29)

Preparation of buccal and occlusal index. (33)

Abutments, metal and porcelain frame preparation

Preparation of the metal frame according to the index. (34)

Positioning the model against the opposing jaw at the original interocclusal height. (34)

Preparation of the abutments according to the buccal and occlusal index. (35)

Preparation of buccal silicone index. (31)

Buccal and occlusal silicone index. (33)

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Bite registration for the interocclusal relations. (32)
Cementing the bridge using temporary cement (Freegenol GC). (44)

Occlusion: the occlusion that was built after selective upper grinding is mutually protected. (45)

Aesthetic evaluation: The lower incisor arch is parallel to the lower lip with a midline correction. (46)

After the treatment is completed, a radiograph shows good osseointegration of the implants and a good fit of the lower denture. (47)

Table No. 1

<table>
<thead>
<tr>
<th>Post type</th>
<th>Insertion torque</th>
<th>Diameter</th>
<th>Length</th>
<th>Implant type</th>
<th>Location</th>
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<tr>
<td>TL15</td>
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<td>11.5 mm</td>
<td>I.C.E.</td>
<td>47</td>
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<td>TL25</td>
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<td>37</td>
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</table>

SUMMARY

• An implant-supported fixed denture for the edentulous jaw rehabilitation is considered the treatment of choice. In cases where bone availability allows for immediate implantation and immediate loading, the patient enjoys a significant improvement in quality of life and functionality. Additionally, the transitional denture provides important and useful information for building the final denture, which can save precious chair time and laboratory stages.

• The patient complained about functional difficulty. Immediately after the implantation, full functionality was regained without functional or aesthetic impairment.

• The final result corresponded with the patient’s expectations throughout the treatment, and provided him with good functionality and aesthetic appearance. Additionally, throughout the procedure the healthy natural areas were kept, to ensure a durable, stable restoration.

• The I.C.E. implant system provided good initial stability during the transitional restoration, and maintained the bone height around the neck of the implant during the healing period, and for a few months after the implantation. This advantage is possible due to the unique spiral design of the implant, which enables it to be inserted in bone type I or II without increased pressure on the implant neck area. The unique design also provides very good initial stability in immediate loading procedures.

Bibliography


Alpha-Bio Tec’s products are cleared for marketing in the USA and are CE-marked in accordance with the Council Directive 93/42/EEC and Amendment 2007/47/EC.

Alpha-Bio Tec complies with ISO 13485:2003 and the Canadian Medical Devices Conformity Assessment System (CMDCAS).