Abstract

Different types of dental implants have in common the screw part resemblance, imitating two basic varieties of screws used in metals or in wood, either small pitch (into the metal part screw-type), or larger pitch with bigger wing span (into the wooden screw-type part).

The biological concept and the MI (Minimal Invasive) principle and the desire to simplify the restorative methods and components, led Basad Medical to create $\Omega$ and $\Omega$ Implant System - neclar! in order to satisfy both surgical and restorative clinicians' requirements. The implant design, created to increase the flexibility of implant applications and of the restorative solutions, should improve the clinicians' possibilities and optimize solutions for all qualities of bone.

Introduction

According to the inventor, the structure of the preferred implants is largely modified according to the existing commercially available implant systems. Basad Medical’s Omega implants have particular characteristics which cannot be used in conventional implants. The Basad Medical’s $\Omega$ implant system is easy to use, can be produced industrially and is clinically reproducible, for the benefit of a large number of patients, taking into account, at the same time, the mechanical characteristics of the remaining bone section in which the implant is fixed. The innovative design, with its special thread construction, leading to self-tapping and bone condensing properties increasing the primary stability at very small diameters, tolerates corrections of insertion angles during surgical procedure, concomitantly with maintaining the primary stability.

This will allow the $\Omega$ implants system to be used in patients with bone deficiency due to maxillary atrophy, in edentulous maxillas, minimizing extra-surgical procedures.

Materials and Method

General points concerning implants according to the invention: the preferred implants according to the principles described above have the following advantages:

The implant extra osseous extremity is designed to accept prosthesis - supporting elements available on the market, simplifying solutions and the number of elements used.

These implants are fitted intra-orally exactly the same way as other common implants. The Omega implants have been designed to minimize surgical procedure, while ensuring rapid bone formation. As pointed out above, the section or platform which serves to fix the implant-supported structures is simplified.

According to the invention, the intra osseous part is significantly modified compared with conventional implants. It has the following peculiarities:

A. It is a one piece endosseous dental implant, with the special $\Omega$ thread design, concentric multiaxial, at the same time combining the symmetrical and non-symmetrical elements, varying pitch, angle and revolutions symmetrical or asymmetrical on a common axis evolving into the cervical part.

B. In the cervical part, the separation shoulder has the role of a stopper, when viewed from the apical or osseous side, while the oral surface of the cervical part of the implant is functioning as a prosthetic shoulder of the abutment.

C. The abutment is the final element of the invented implant device.

The means of a good positioning includes a special thread designed to provide the implant
with sufficient primary stability during the period of osseointegration. Intra-oral fitting of the implants is made exactly in the same way as for the traditional implants, using the same instruments or special instruments, if appropriate, with no additional manipulations, which may be a significant advantage.

Traditionally, the peristomal mucosa is cleared away and a series of drill bits creates a transosseous channel. In contrast to the traditional working methods, the operator of the new method penetrates 50% of the whole depth of bone with a 1-3mm diameter size, after a countersink of ~1 to 1.5mm for the implant’s shoulder, depending on the topography of the alveolar process.

According to the invention, the implants may be made of titanium or of any other material or combination of materials, of any nature, which are osseointegrable.

The invention enables implants to be placed in bone walls considered traditionally to be insufficiently thick. The implants are intended to be partially covered by the patient’s bone tissue.

The implant shape is advantageously designed to encourage optimal bone colonization and anchoring of the newly-formed bone in order to ensure osseointegration compatible with the loads from the prosthesis.

Dental implants of the same diameter enable insertion into the maxillary or mandibular bone with narrow space due to the design peculiarities, e.g. antero-posterior dimension, that is smaller in inter-proximal dimension. The Ω3 dental implant device offers a different geometry with its advantages in narrow alveolar processes, especially in the molar and premolar areas.

The sizes of the Ω2 and Ω3 implant systems start from 2.2mm up to 4.2mm in diameter, with an increased rate of 0.8mm. The length varies from 8mm up to 15mm. The prosthetic platform changes its shape in the 3.6mm and 4.2mm implant diameter.

Both Ω2 and Ω3 implant systems offer the practitioner a good possibility to choose the optimal implant for the insertion area, where the necessity for large implants is essential in cases of bone tissue deficiency, especially in standard cases of the existent implant systems, where additional major surgical interventions are inevitable.

The most evident cases are when the anterior alveolar process is very narrow in its sagittal profile, both in the upper and lower jaws. These problems are frequently an obstacle in the posterior regions of the mandible and maxilla, as well. Unnecessary excessive surgery on the bone tissue could be avoided. The practitioner can insert the Basad Medical implants into a narrow bone profile using a larger quantity of implants for increasing the future stability of the prosthetic components.

The special shape of the Ω2 and Ω3 implant systems allows the practitioner to use fewer drilling procedures, saving a much larger amount of bone tissue. In cases of immediate loading and in long-term periods, the 3D special geometry is made to assure greater stability and tolerance towards the loading forces in the life cycle of restorations.

The absence of screw type connections to the implant enhances simplicity and stability of the prosthetics mounted on the surgical intraosseous
part, allowing versatile and creative solutions for the clinician. When using titanium implant, osteointegrative properties can be created by a suitable treatment of the implant surface. To this end, the titanium surface has conventionally been mechanically roughened by a subtractive removing process, e.g. sandblasting, grinding or etching. Alternatively, the surface can be subjected to additive processes, e.g. coating with a textured surface.

The surface treatment protocols for dental implants differ from one manufacturer to another. Some of them are recognized as standards by authorities. The aim is to enhance faster osseointegration and biccoropatibmy for a term success of the dental implant in the oral cavity and to be less sensitive to ambient aggressions.

Conclusions

The Basad Medical’s Ω implants with their special thread design and simplified prosthetic solutions series enable:

A. Minimal invasive procedures for the patients
B. Smart solutions avoiding extra surgical procedures
C. Simple working methods for both practitioner and assistant team
D. Minimal quantity of additional elements and equipment
E. Use of smart and disposable/recyclable materials

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