Zygomatic & Pterygoid Implants

Rehabilitation of Atrophic Jaws
About Noris Medical

Improving the lives of dentists and patients around the world with the leading technology in dental implant systems

ENGINEERED FOR HEALTH
The collaboration between leading experts and our team of experienced physicians and professional engineers to design, develop and manufacture innovative products and systems results in a creative synergy that benefits both the dental industry and the patients it serves.

GROUNDBREAKING RESEARCH & DEVELOPMENT
Results in innovative solutions backed by clinical evidence. Each new product and system developed is supplied with comprehensive peripheral tooling needed for its successful implementation.

PROFESSIONAL TRAINING
Familiarizes dental surgeons and technicians with expert techniques and tools.

PROVEN PRODUCTS & WIDE RANGE OF SOLUTIONS
Enables all procedures, from simple to complex, to be tackled with ease.

PERIPHERAL TOOLKITS
Enable easy implementation, providing a total solution which covers every step of the process.

ONGOING SUPPORT
Ensures dental professionals benefit from knowledge sharing and backup every step of the way.

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Restoration of Atrophic Jaws

**Zygomatic Implants**

The Zygomatic implant placement is a highly predictable procedure with a high success rate in restoration of atrophic jaws, without the need for complex bone augmentation procedures.

**Zygomatic Surgical Kit**

Zygomatic surgical kit, designed for placement of zygomatic implants according to the Extra Maxillary approach.

**PteryFit Implants**

The pterygoid implant procedure provides posterior bone support without sinus augmentation or supplemental bone grafts, while eliminating the need for prosthetic cantilevering.

**Pterygoid Implant Tools**

Specially designed osteotomes for Pterygoid implants.

**Multi-Unit System**

Implant prosthetic platform is shifted buccally to a more appropriate position of the restoration.

Angulated Multi-Unit abutment will provide the angle correction needed.

**EZplan**

Pre-Op Preparation & Planning Assessment using specialized software

**EZgoma**

Guided Surgery 3D printed guide enables safe and accurate placement
Zygomatic Implant

The Zygomatic implant is placed following the extramaxillary protocol. The implant is anchored in the zygomatic bone; the resulting torque is very high. A bypass of the maxillary sinus prevents damage to the sinus membrane.

The Zygomatic Implant is designed to provide a solution for cases of atrophic maxilla. The shape of the Zygomatic Implant consists of sharp threads at the apical part for maximum retention to the Zygomatic bone. The implant has a 2.42mm internal hex. connection, which enables simple and easy restoration. The Zygomatic Implant is available in a variety of lengths, from 30mm to 60mm.

Material: Titanium (Ti6Al4V ELI)
Treatment: RBM

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Cover screw included with all implants Item NM-S5023

2.42mm internal hex. connection

Especially designed for the extramaxillary approach

RBM treated surface at the threaded part increases the BIC

Deep threads for excellent stability in the zygomatic bone

Smooth body to reduce periopathogens adherence

Available in lengths from 30mm to 60mm with 2.5mm increments
Zygomatic Surgical Kit NM-X2118

Zygomatic surgical kit designed for placement of zygomatic implants according to the Extra Maxillary approach.

Zygomatic Burs for Groove Preparation

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Depth Probe NM-X1028

Drill Sequence

Zygomatic Step Drills

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PteryFit Implant

PteryFit implants are installed in the posterior region of the atrophic Maxilla and are located in the Pterygomaxillary region.

PteryFit implants have been uniquely designed to match the anatomy of the bone structure. The lower V-shaped thread zone enables self-tapping. The middle zone square type thread is used for compressing cancellous bone and help achieving maximum BIC.

The smooth “Neck” surface at the top helps in eliminating the adherence of Perio-Pathogens, thus reducing the chances of an inflammatory process to develop around the neck area. The RBM treated surface increases the BIC.

Material: Titanium (Ti6Al4V ELI)
Treatment: RBM

Cover screw included with all implants Item NM-S5023

Pterygoid Implant Tools

Osteotomes

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Long Drills

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**Multi-Unit | Straight & Angulated**

The Multi-Unit system provides a solution for screw-retained prostheses even with complicated-to-restore implants (for example, multiple tilted implants).

The Multi-Unit system comprises a full range of sizes for both the upper and lower jaws. Straight, 17°, 30°, 45°, 52° and 60° adaptors, in a variety of heights, connects to a wide range of complementary products.

**Material:** Titanium (Ti6Al4V ELI)

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**Entire Product Line for Immediate Loading**

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**Recommendation:** Tighten the screw at a torque of 20 Ncm.

**Recommendation:** Tighten the base at a torque of 25 Ncm.

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**Included with all multi-unit bases**

<table>
<thead>
<tr>
<th>NM-S7101</th>
<th>NM-X7101</th>
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**Multi-Unit Components**

### Healing Cap
- **Healing Cap**
  - Ø 4.9 mm H 4.8 mm
  - NM-H7101
- **Healing Cap**
  - Ø 4.9 mm H 4.7 mm
  - NM-H7102

### Abutments
- **Universal Abutment**
  - Ø 4.9 mm H 12 mm
  - NM-T7121
- **Wide Universal Abutment**
  - Ø 4.9 mm H 12 mm
  - NM-T7123
- **Castable Abutment**
  - Ø 4.9 mm H 12 mm
  - NM-C7121

### Passive Fit Castable Abutment Kit
- **Universal Abutment**
  - Ø 4.9 mm H 12 mm
  - NM-T7121
- **Castable Sleeve**
  - Ø 4.9 mm H 10.5 mm
  - NM-C7120
- **Castable Sleeve Positioner**
  - Ø 4.9 mm H 10 mm
  - NM-T7122

### Screw
- **Screw**
  - NM-S7102

*Recommendation: Tighten the screw at a torque of 15 Ncm.*

### Transfers & Analog
- **Open Tray**
  - Ø 4.9 mm H 11 mm
  - NM-T7111
- **Screw**
  - L 13 mm
  - NM-S7111

*Recommendation: Tighten the screw at a torque of 15 Ncm.*

### Titanium Base
- **Plastic Cap**
  - Ø 4.9 mm H 11 mm
  - NM-T4402
- **Closed Tray**
  - Ø 4.9 mm H 8 mm
  - NM-T7112
- **Screw**
  - NM-S7102

*Recommendation: Tighten the screw at a torque of 15 Ncm.*

### Scan Bodies
- **Scan Bodies**
  - Ø 4.9 mm H 7 mm
  - NM-C9207
  - Ø 4.9 mm H 10 mm
  - NM-C9210
  - Ø 4.9 mm H 13 mm
  - NM-C9213
- **Screw**
  - NM-S7102

*Recommendation: Tighten the screw at a torque of 15 Ncm.*

### Multi-Unit Drivers

### Straight Multi-Unit Drivers
- **Short Driver**
  - Ø 2.0 mm L 6 mm
  - NM-X1016
- **Long Driver**
  - Ø 2.0 mm L 10 mm
  - NM-X1017

### Star Hex. Motor Mounts
- **Motor Mount**
  - Ø 1.25 mm L 20 mm
  - NM-X7008
- **Motor Mount**
  - Ø 1.25 mm L 25 mm
  - NM-X7009
- **Motor Mount**
  - Ø 1.25 mm L 35 mm
  - NM-X7010

### Star Hex. Drivers
- **Star Hex. Driver**
  - 1.25 mm L 7 mm
  - NM-X7006
- **Star Hex. Driver**
  - 1.25 mm L 14 mm
  - NM-X7007
- **Star Hex. Driver**
  - 1.25 mm L 20 mm
  - NM-X7011

### Straight Multi-Unit Motor Mounts
- **Short Motor Mount**
  - Ø 1.25 mm L 20 mm
  - NM-X1120
- **Long Motor Mount**
  - Ø 1.25 mm L 25 mm
  - NM-X1125
- **Long Motor Mount**
  - Ø 1.25 mm L 35 mm
  - NM-X1125

*Recommendation: Tighten the screw at a torque of 15 Ncm.*
Multi-Unit Protocol

Assembly of a Straight Multi-Unit Base

1. Adjust the straight Multi-Unit Base to the implant by using the plastic handle.

2. Remove the handle.

3. Tighten the base at 25 Ncm, with a 2.0mm Straight Multi-Unit Driver.

Assembly of Angled Multi-Unit Base

1. Use the Angulated Guide Pin to choose the right correction angle.

2. Adjust the Multi-Unit base to the appropriate angle. Use the handle as an indicator for the final screw emergence.

3. Tighten the base at 20 Ncm, with a 1.25mm Hex Driver or a Star Driver.

4. Remove the handle by unscrewing it out.

Healing Cap Assembly

Impression

Choose the desired impression technique:

For closed tray choose Snap-On-Transfer.

For open tray technique choose conventional Transfer.

Immediate Loading
(Fabrication of the temporary bridge)

1. Assemble the Titanium Sleeve on the Multi-Unit base and tighten the screw at 15 Ncm.

2. Attach the pre-prepared provisional acrylic prosthesis.

Laboratory Phase

1. Mount the Plastic Sleeve on the Multi-Unit analog and tighten with the screw.

2. Splint the sleeves.

3. Carve the Sleeves to the desired shape.

4. Cast the metal frame of the prosthesis.

Passive Fit Castable Abutment Kit

The Passive Fit Castable Abutment Kit consists of three parts aimed for the fabrication of accurate metal reinforced prostheses. The uniquely designed Castable Sleeve Positioner is used for locating the Castable Sleeve on the plaster model, ensuring passive fit of the fabricated metal cast when cemented to the Titanium Abutments.
Clinical Case 1
Zygomatic Implants for the Extra Maxillary Approach

Prosthetic Rehabilitation of Atrophic Maxilla Using 4 Zygomatic Implants

Courtesy of Dr. Balan Igal D.M.D

Prosthetic rehabilitation of the upper jaw, after major bone resorption, is very challenging from both surgical and prosthetic points of view. The absence of teeth leads to cessation of the stimulation of the alveolar bone. The stimulation is caused by the physiological load which is transferred to the alveolar bone and prevents resorption. Shortly after the teeth extraction the process of alveolar bone resorption starts. The ongoing resorption is progressively continuing over the years until reaching atrophy. Installation of dental implants at this stage, using conventional techniques, is very difficult due to extensive bone resorption and the accompanied pneumatization of the maxillary sinuses.

The conventional treatment options for these patients are mostly augmentation procedures, which are meant to increase the volume of the load bearing bone.

The bone for the augmentation is taken from different sources, such as: the iliac crest, or intraoral origin, like the mandibular ramus, the intermental region etc. Augmentation procedures are very complicated and require a long recovery period.

An additional treatment option for atrophic maxilla is the placement of Zygomatic implants.

The Zygomatic bone was found to be suitable for installation of dental implants. In 1998 Branemark presented the Zygomatic implant as an optional solution for the treatment of oncologic patients. This solution was expanded later on to Atrophic Maxilla. Long implants were found to be a good alternative for complicated augmentations procedures. Even though they are not easy to install, they present promising outcomes (1, 2, 3).

Noris Medical Zygomatic Implant was especially designed for implantation in the Extramaxillary approach. The Extramaxillary approach enables the positioning of the prosthetic connection on the Alveolar Ridge, unlike the other methods in which the prosthetic unit is more palatinally positioned (4). This location is more correct and easier for the rehabilitation process.

In the Extramaxillary approach, the implant’s stability is being achieved only by the Zygomatic bone. For this reason the implant is designed with a spiral and deep retentive thread shape at its apex, while the rest of the implant is smooth. The diameter of all the Zygomatic Implants is 4.2mm and their lengths vary between 35mm and 57.5mm.

Case Description

Courtesy of Dr. Balan Igal D.M.D.

68 years old female patient

Medical history:
- Controlled high blood pressure;
- Balanced Type II diabetes;
- Bilateral mastectomy in 2008;

Clinical and radiological findings:
- Combination Syndrome;
- Pneumatization of the Maxillary Sinuses;
- Severe resorption of the upper alveolar ridge;
- Perimplantitis and mucositis around implant in position of tooth 31.

Treatment Plan

After radiological and CT assessments it was decided to install two Tubero Pterygoid Palatine Implants, 4 Zygomatic implants at the Extramaxillary approach and one implant in the incisive canal.

The surgical procedure was done in the Split Mouth technique, in order to reduce the exposure time of the bone.

After the installation of the implants, augmentation was done, using Calcium Sulfate + HA.

Correction of angulation was achieved by using Multi-Units in angulation of 17°, 30°, 45° as found necessary.

In the lower jaw, the removable prosthesis was changed to fixed prosthesis, on Multi-Unit bases, as well. Rehabilitation was performed on the day of the surgical procedure.

A few hours after the operation, the patient received two provisional acrylic bridges reinforced by induction welded Titanium (grade 5) bar.
Clinical Case 1 (Cont.)
Zygomatic Implants for the Extra Maxillary Approach

Panoramic and CT illustrate the Pneumatization of the Maxillary Sinuses and the Severe Resorption of the upper Alveolar Ridge (Figs 1, 2)

Groove preparation for leading the Zygomatic Implant drill

The integrity of the Schneiderian Membrane can be observed (Figs 5, 6)

Combination Syndrome

Zygomatic Implant in situ
Clinical Case 1 (Cont.)
Zygomatic Implants for the Extra Maxillary Approach

Correcting the Angulation using a 45° Multi-Unit Abutment

The surgical procedure was done by Split Mouth technique in order to reduce the exposure time of the bone during the installation of the Zygomatic Implants. Two Implants were placed on each side (Figs 9, 10)

After the installation of the implants, augmentation was done using Calcium Sulfate + HA

Transfers were mounted and fixed on the Multi-Units in order to take an impression using the Open Tray technique but the impression was taken without using a tray (Figs 12, 13, 14)

Impressions of the lower jaw using Snap-On Transfers

Upper jaw provisional Acrylic Bridge reinforced by induction welded Titanium (grade 5) bar
Clinical Case 1 (Cont.)
Zygomatic Implants for the Extra Maxillary Approach

In the upper jaw, two Tubero Pterygoid Palatine Implants, four Zygomatic implants at the Extramaxillary approach and one implant in the incisive canal were installed.

Clinical Case 2
Pterygoid implants for Posterior Maxilla Rehabilitation
Courtesy of Dr. Balan Igal D.M.D

Pre Op Panoramic X-ray

Osteotome Ø2.0

Drill sequence Ø2.3 (NM-D7423), Ø2.8 (NM-D7428) according to bone type

Osteotome Ø3.0

10 months Post Op with the final restoration

Pterygoid implant

Implant installation — the torque of the implant is above 35Ncm in order to enable immediate loading of the implant
Clinical Case 2 (Cont.)

Pterygoid implants for Posterior Maxilla Rehabilitation
Courtesy of Dr. Balan Igal D.M.D

EZgoma - Zygomatic Guided Surgery

Clinical Case 3
Clinical Case 3 - Guided System

“Inverted Supports” Zygomatic Guided System
Courtesy of Dr. Lederman Shlomi D.M.D O.M.F.S

1. Pre Op X-ray

2. Digital Planning

3. Attaching the guide in position

4. Attaching the guide in position

5. Fixing the guide

6. Preparing the osteotomy for Pterygoid implant

7. PteryFit implant

8. Insertion of PteryFit implant

9. Preparing the osteotomy for Zygomatic implant

10. Groove preparation

2mm drilling with a sleeve support (blue)
Clinical Case 3 - Guided System (Cont.)

“Inverted Supports” Zygomatic Guided System

Courtesy of Dr. Lederman Shlomi D.M.D O.M.F.S

Drilling

Measuring Implant length

Removing the Guide

Transfers on the Multi Units

Zygomatic Implant

Inserting the Implant

Suturing

Post Op X-Ray

Placing Multi Units

Placing Multi Units