Prosthetic Manual
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Why Choose Cortex Prosthetics?

Cortex offers a wide range of prosthetic components for a variety of applications and individual needs of clinicians and technicians.

Using original Cortex components ensures maximum accuracy in the connection interface between the abutment and the implant, and avoids mechanical and biological failures that can result from the use of third-party components.

The benefits of using Cortex products guarantee maximum accuracy that has been tested by the company’s quality assurance, complete geometric matching that prevents screw release and creates more accurate lead transmission to implants and surrounding tissues.
INTRODUCTION

Color Coding Conical Connection

In prosthetic components with a conical connection color coding is implemented, which distinguishes between different connection platforms.
Types of Abutments:

Healing Caps

Cortex healing caps are offered in a variety of diameters to fit the desired tooth profile and a variety of different gum levels.

Temporary Abutments

Temporary abutments provide the option of temporary aesthetic restorations, immediate loading and design of soft tissues around the implant. The temporary abutments can be used either for screwed or cemented restorations.

Standard Abutments

They are available in various sizes and angles that provide solutions to various conditions in the restoration site.

Anatomical Abutments

Available in a variety of levels and angles. The aim of the anatomical abutments is to provide abutments with a natural contour of the gums and to decrease to a minimum the need to introduce changes.

Castable Abutments

In cases when there is a need for personal design of the abutments or for casting of various prosthetic constructions - castable abutments provide a perfect solution. The abutments are supplied with titanium or chromium cobalt base, with or without hexagonal connection.

Warning: Please be aware about the limitations of casting on Titanium. For casting with high temperature CrCo bases should be the first choice.
INTRODUCTION

Multi-unit Abutments

Cortex’s multi-unit abutments allow complex restoration options such as edentulous jaws and cases of immediate loading. The special design of the multi-unit abutments and the variety of angles allow immediate reconstruction and restoration of implants that were inserted in extreme angles. The abutments allow excellent maintenance of the implants and simplify the restoration procedure since it is done at the level of the abutment and not at the level of the implant.

Transfers

The transfers are available in a variety of lengths, diameters and angles. For open and closed trays techniques. This variety allows to cope with any clinical characteristic of the site.

Angulated transfer for closed tray. Enables accurate impression of tilted or angulated implants.

Analogs and Special Analogs

Cortex implant analogs are suitable for all implant platforms and manufactured in exact match to the implants themselves. In addition, there are special abutment analogs for abutment level restorations, multi-unit abutments, one-piece, premium abutments, etc.

Attachments

Designed for use with prostheses and make the dental implant treatments available also for elderly patients. The aim of the attachments is to provide a better grip for the removable prosthesis in lower and upper jaw.
INTRODUCTION

Prosthetic tools

**Ratchets**
A variety of drivers of different lengths and different options of tool use

**Torque Control**
Ratchet with torque control tightening screws with maximum accuracy

Surgical options
Various surgical protocols can lead to the desired aesthetic result, and the surgical technique depends on various factors such as available bone, bone quality at the implant site, location of the implants and the different types of occlusions.

**Two-step Surgical Procedure**
The implant is placed under the soft tissue and protected from occlusal loads, external pressures and infiltration of bacteria throughout the osseointegration period.
The implant is covered with protective cover screw to protect the connection.
At the second stage the implant is exposed through a surgical procedure, and a healing cap is placed on the implant or a healing abutment for the surrounding tissue is installed.
INTRODUCTION

One-step Surgical Procedure

During the implantation, a healing cap or an abutment with plastic cap is placed on the implant and remains exposed to the oral cavity during the osseointegration period. This procedure eliminates the need for additional surgery for implant exposure, but exposes the implant to the risk of bacteria penetration and chewing loads.

Immediate Temporary Restoration

Immediately after the implantation, a temporary and infunctional restoration is installed on the implants for partial aesthetic area restoration or even functional recovery of the whole jaw. Immediate temporary restoration can contribute significantly to the formation of the soft tissue around the implants for aesthetic purposes.
Prosthetic options

Temporary restorations can be made at each stage of the treatment using implants. They can be placed on the final abutments or on temporary abutments. Well-designed temporary restorations can contribute to early formation of the gums contour in esthetically significant areas and can be cemented or screwed.

Cemented restorations are very similar to crowns or bridges that are cemented onto the abutments or implants. They can be used for recovery of partial lack of teeth or completely toothless jaw. The advantage of cemented restoration: Aesthetics, passive adjustment of restorations and perfect occlusion. Disadvantage: Cement residues can cause irritation of the tissue around the implant and lead to irreversible bone resorption.

Screw retained restorations are installed on implants using screws that go through occlusive surface of the restoration. They can be used for single tooth restoration, partial or fully edentulous cases and in cases of vertical restriction of height in relation between the two jaws. The benefits of screwed restorations are the lack of cementing and easy hygiene maintenance. Disadvantage: Screw access area can damage the occlusion and could compromise the aesthetics of the restoration and creates a limit in cases of tilted implants.

Multi-unit Abutments for Screw restoration

Multi-unit abutments are used for hybrid restorations, fixed on 4 or restorations of bar-supported prosthesis. The advantages of multi-unit abutments are the flexibility of tilted implants and possibility of proper hygiene maintenance. The limitation of the abutments is the requirement for minimal intra-maxillary space for the location of the abutments and the restoration.
INTRODUCTION

Removable Restorations

Removable restorations which are supported by the soft tissue and fixed using the implants are an option for new or existing dentures. The indications are: edentulous upper or lower jaw, temporary restorations or in cases of extensive bone deficiency. The benefit is that for removable restorations can make use of the existing dentures. The disadvantage is that removable prosthesis requires the maintenance of relining in order to ensure the proper support of soft tissues.

Impression taking technique

The clinician decides which technique to use in order to take the impressions open tray, closed tray, closed tray with pickup or conventional tray of bridges and crowns with retraction cords.

Open Tray Technique

Open tray technique requires the use of individual trays or standard trays with case-specific adjustments. Open tray impressions are considered more accurate.

The impressions are taken from the implant level with direct transfers or from the abutment level in case of multi-unit. It is indicated for cases of single implant or multiple implants. The benefits are high level of accuracy and reduced risk that the tray will bend the tilted implants. The limitations are: the need for individual tray or adjustments of standard tray, complex access to posterior areas or in cases of limitation in mouth opening.

Closed Tray Technique

Closed tray technique is very similar to impression taking procedure for crowns or bridges. Within this method the transfers are screwed into the implants or, alternatively, the abutments are screwed in their final position and the impression records the location and the angle of the transfers, the position of the hexagon and the proFill of surrounding soft tissues. It is indicated for single implants, bridges, crowns and in cases of complex approach to posterior areas. The advantage is that this method is similar to the standard impression method for crowns and bridges and can be used with standard trays. The disadvantage is the inaccuracy with long bridges or tilted implants.
INTRODUCTION

Surgical and prosthetic options

Closed Tray Impression with Premium Transfer

Premium transfer impression is intended for impressions with specific abutment, CO 8036, that is supplied in premium package. The indications are: closed tray impressions for single tooth and multiple teeth that can be fixed in similar way to open tray.

Advantages: the method is simple, there is no need to remove the crown unless a laboratory change is needed and shorter chair time.

Limitations: the transfers cannot be used if a specific change was introduced to the abutment form.

Conventional Impression Method

The impression is made on the level of modified abutment. The method is suitable for cases where modifying and adjustment of the abutment are performed in the clinic. Advantages: The method is simple and does not require the removal of the abutment even if it was modified or adjusted in the oral cavity. In addition, it is suitable with “One-Abutment One-Time” concept.

Limitations: It requires the preparation of the abutments in the clinic, and the impression does not supply any information regarding the platform of the connection or the placement of the hexagon.
Closed tray impression with premium transfer

**Step 1**
Remove the plastic healing cap or the temporary crown from the CO 8036 abutment.

**Step 2**
Carefully remove cement residues from the abutment.

**Step 3**
Place the transfer on the abutment with the vertical bulge against the straight surface on the abutment until you hear a click. If the transfer is too large for inter dental space, you can modify it by grinding in order to fit to the space.

**Step 4**
Inject the elastomer medium or have body around the transfer and fill the tray with the impression material.

**Step 5**
Locate the tray and wait for the hardening of the material.
IMPRESSION TECHNIQUES

Step 6
After hardening carefully remove the tray. Ensure that the transfers are safely fixed in the impression material.

Step 7
Send to the laboratory together with the counter-impression and analogues of CO 8047 abutments.

Step 8
Stone model casting, articulator positioning and preparation for the lab work are performed according to the regular procedure.
Open tray impression

**Individual tray**
Creation of an individual tray for open tray impression allows maximum accuracy by creating an equal thickness of the impression material and a better support for the transfers. This method also allows to copy the tooth profile of the soft tissue around the implant.

**Step 1**
Take an impression of the jaw with healing caps in the oral cavity and send to laboratory.

**Step 2**
Laboratory: Casting of stone model in hard gypsum.

**Step 3**
Laboratory: Carving a wax block of over the ridge to a height in the future transfers area.

**Step 4**
Make sure to take into account the level of the transfers. Short - 9 mm, long - 12 mm.

**Step 5**
Laboratory: Prepare an individual tray according to the conventional laboratory procedure.
### Step 6
Laboratory: Locate the holes over the healing caps which will allow the exit of the transfer screws out of the caps.

### Step 7
Return the tray to the clinician.

### Step 8
After the removal of healing caps or the abutments ensure that the implants platform is clean from tissue remains. Install the transfers with screwing using manual tightening.

### Step 9
Ensure that the transfers are placed correctly using an x-ray.

#### Open tray impression with standard tray

### Step 1
Perforate the standard tray or open a window above the transfer screw.

### Step 2
You can close the window by using heated wax plate, and before it cools, to place the tray in the patient’s oral cavity and press until the transfer screws go through it.
## IMPRESSION TECHNIQUES

### Continuation for both tray types

### Step 1

Fix the transfers using a ligature or a dental floss and resin.

![Image of transfers fixed with ligature](image1.png)

### Step 2

Inject the impression material medium or have body around the transfers and fill the tray with the impression material.

![Image of impression material](image2.png)

### Step 3

Locate the tray and ensure that the transfer screws are exposed on the other side of the tray.

![Image of tray located](image3.png)

### Step 4

After the hardening of impression material, open the screws using 1.25 driver. In the posterior and difficult to access parts a spatula may be used for opening by using the slot in the upper part of the screw.

![Image of screws being opened](image4.png)

### Step 5

Gently remove the tray from the patient’s mouth.

![Image of tray being removed](image5.png)

### Step 6

Screw in the analogs to their place and send to the laboratory.

In order to copy the tooth profil of the soft tissue, after the transfer is screwed in place, inject a liquid composite around the transfer in the connection area up to the level of free gums and harden under light.

![Image of analogs being screwed in](image6.png)
Closed tray impressions

Closed tray technique suits for taking impressions of a single implant or multiple implants. The technique is effective in cases where there is a limitation in mouth opening or in a need to shorten the procedure. It copies the data regarding implant position and its hexagon position.

**Step 1**
Remove the healing cap or the abutment using 1.25 driver.

**Step 2**
Choose the transfer that suits a closed tray in terms of length, diameter or angle.

**Step 3**
Screw the transfer into the implant using 1.25 driver manually, after ensuring that the platform is clear from tissue residues.

**Step 4**
Seal the screw opening with a piece of wax.

**Step 5**
Verify using x-ray that the transfer is placed correctly.
### IMPRESSION TECHNIQUES

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 6</td>
<td>In the case of multiple implants install each transfer in its turn after removing the healing caps to prevent gums collapse.</td>
</tr>
<tr>
<td>Step 7</td>
<td>Inject the elastomer medium or have body around the transfer and fill the tray with the impression material</td>
</tr>
<tr>
<td>Step 8</td>
<td>Locate the tray and wait for the hardening of the material.</td>
</tr>
<tr>
<td>Step 9</td>
<td>After the hardening of the impression material, gently remove the tray from the patient’s mouth.</td>
</tr>
<tr>
<td>Step 10</td>
<td>Remove the transfers one by one, return the healing cap or the abutment to its place and screw them into the 8040 analog.</td>
</tr>
<tr>
<td>Step 11</td>
<td>Replace the transfer into the tray while guiding the flat or figured part of it in front of its place in the impression.</td>
</tr>
</tbody>
</table>
Step 12

The feeling of the click or 2 clicks according to the number of vertical slots on the transfer will indicate that the transfer is fixed on its place.

Step 13

Send to the laboratory together with the counter-impression, dental occlusion and instructions.

Combined impression method with Click Transfer

Closed tray technique suitable for taking impressions of a single implant or multiple implants without significant tilt. The technique is effective in cases where there is a limitation in mouth opening or in a need to shorten the procedure. This technique copies the data on implant position and the hexagon position and incorporates the option of transfers connection to create maximum accuracy as with open tray method.

Step 1

Remove the healing cap or the abutment using 1.25 driver.

Step 2

Insert the transfer into the implant manually until a click, after ensuring that the platform is clear from tissue residues.
IMPRESSION TECHNIQUES

Step 3
Verify using x-ray that the transfer is placed correctly.

Step 4
In the case of multiple implants install each transfer in its turn after removing the healing caps to prevent gums collapse.

Step 5
Fix the transfers using a ligature or a dental floss and resin.

Step 6
Inject the elastomer medium or have body around the transfer and fill the tray with the impression material.

Step 7
Locate the tray and wait for the hardening of the material.

Step 8
After the hardening of the impression material, gently remove the tray from the patient’s mouth.
Step 9
Install CO-8040 analog on each transfer.

Step 10
Send to the laboratory together with the antagonist, bite registration and instructions.

Conventional impression method
This method is useful for taking impressions in cases when temporary restoration or immediate loading was performed at the time of implantation and or One-Abutment One-Time technique was used. In this case the aim of the clinician is to copy the location of the existing abutment for lab work model without removing the abutment.

Step 1
Remove the temporary restoration from the abutments.

Step 2
Ensure that the abutments are held with 30 Ncm torque
Step 3
In case of sub-gingival margins, you can use a gentle retraction cord around the margins of the abutments.

Step 4
Inject the elastomer medium or have body around the abutments and fill the tray with the impression material.

Step 5
Locate the tray and wait for the hardening of the material.

Step 6
After the hardening of the impression material, gently remove the tray from the patient’s mouth.

Step 7
Send to the laboratory together with the antagonist-impression, dental occlusion and instructions.
IMPRESSION TECHNIQUES

Multi-unit impressions with open tray technique

This technique is designed to take impressions on the level of multi-unit abutments using a standard or individual open tray, in order to create a work model which will reflect the exact location of the abutments and will describe the soft tissue around them.

Step 1

In case of temporary screwed restoration, remove the restoration with 1.25 driver and ensure that there are no debris or tissue residues on the abutments. In case of temporary removable restoration, remove the covering caps using 1.25 driver.

Step 2

In case of healing caps, install the multi-unit abutment according to the protocol and go on with the instructions in this chapter.

Step 3

Ensure the tightening of the multi-unit abutments connection screws to 30 Ncm with 1.25 driver.

Step 4

Install the transfers on the abutments from the posterior part to the front and tighten them manually.

Step 5

Splint the transfers using a ligature or a dental floss and resin. The resin should be added in stages until complete fixation.
Step 6
Inject the elastomer medium or heavy body around the transfer and fill the individual or standard tray with the impression material.

Step 7
Ensure that the transfer screws are exposed out of the impression tray.

Step 8
After the hardening of impression material, open the screws using 1.25 driver. In the posterior and difficult to access parts a spatula may be used for opening by using the slot in the upper part of the screw.

Step 9
Gently remove the tray from the patient’s mouth.

Step 10
Screw in the CO analogs onto their place and send to the laboratory.

Step 11
Return the cover screws or the screwed temporary restoration to their place.
Step 12

After the work model is created, continue with the formation of permanent restoration within regular procedure.

Multi-unit impressions with closed tray technique

This technique is designed to take impressions on the level of multi-unit abutments using a standard or individual open tray, in order to create a work model which will reflect the exact location of the abutments and will describe the soft tissue around them.

Step 1

In case of temporary screwed restoration, remove the restoration with 1.25 driver and ensure that there are no debris or tissue residues on the abutments. In case of temporary removable restoration, remove the covering caps using 1.25 driver.

Step 2

In case of healing caps, install the multi-unit abutment according to the protocol and go on with the instructions in this chapter.

Step 3

Ensure the tightening of the multi-unit abutments connection screws to 30 Ncm with 1.25 driver.

Step 4

Install the transfers on the abutments from the posterior part to the front and tighten them manually.
## IMPRESSION TECHNIQUES

### Step 5
Inject the elastomer medium or heavy body around the transfer and fill the individual or standard tray with the impression material.

### Step 6
After the hardening of the material, gently remove the tray from the patient’s mouth.

### Step 7
Remove the transfers from the patient’s oral cavity one by one and screw the analogs into them.

### Step 8
Return the transfers to the impression tray. The double click will indicate the correct placement of the transfer.

### Step 9
Return the cover screws or the screwed temporary restoration to their place.

### Step 10
After the work model is created, continue with the formation of permanent restoration within regular procedure.
Choosing the suitable abutment

The abutment guide is intended to help you choose the most suitable abutment for the final restoration. It is necessary to define whether it is a case of single implant or multiple implants restoration, whether the restoration is permanent or removable, cemented or screwed. In case of removable restoration, it is necessary to define whether the restoration is supported by implants or abutments.

| Screwed restorations (castable and aesthetic connection abutments with hex, including peek) |
| Cemented restorations (full titanium with hex, including peek) |
| Individual abutments: |
| - Full titanium |
| - Castable abutments with hex |
ABUTMENTS SELECTION

Abutments Guide for Restoration using Bridge

Screwed restorations (castable and aesthetic connection abutments without hex, including peek)

Cemented restorations (full titanium without hex, including peek)
Individual abutments:
- Full titanium
- Castable abutments without hex

Temporary abutments

PEEK ABUTMENTS

Abutments for restoration supported by soft tissue
Ball attachments

Abutments for screwed bar or hybrid work

Castable abutments without hex
Angulated multi-unit
Straight multi-unit

Tissue-supported abutment-retained abutments

Abutments guide for hybrid or removable restoration

Castable Abutments (UCLA) Non-Hexed

MPN-9700  MPR-9700  MPW-9700

Abutment-level bar

MPR-5200  MPW-5318  MU-50PL  MU-50SPL

Screw-retained bar

CO-6105  CO-6115  CO-6125  CO-6605
One of the main problems of cemented restorations is the remains of adhesives that can lead to peri-implantitis, bone loss and compromised clinical results.

The proposed techniques aim to minimize the risk of cement residues around the implants in temporary and permanent restorations.

Preparation for cementing in the oral cavity

**Step 1**
Check the adjustment of the restoration to the abutment and the contour in relation to soft tissue and contact points.

**Step 2**
Carefully insert the retraction cord around the abutment under the abutment margins which will serve as a barrier to the residues of the adhesive.

**Step 3**
Fill the crown or the bridge with thick silicone impression material.

**Step 4**
After the hardening release the silicone residues around the crown margins.
### Step 5
Fill the crowns with cement, wipe and put on the silicone replica.

### Step 6
Wipe off residual cement, remove the restoration from the replica and insert it into the oral cavity.

### Step 7
After the hardening of the cement, gently remove the retraction cord.

### Step 8
Ensure that no cement residues were left using the probe.
### Adjustment of the abutments in the laboratory

When there is a need to make changes in abutments from supply, ensure proper filing which will not damage the connection area between the abutment and the implant.

#### Laboratory stages

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Screw the abutment in the analog or the handle.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2</td>
<td>Grind off the abutment to the desired shape.</td>
</tr>
<tr>
<td>Step 3</td>
<td>Mark the buccal line on the abutment for orientation.</td>
</tr>
<tr>
<td>Step 4</td>
<td>Clean the abutment in ultrasonic tub with thorough cleaning of the chips.</td>
</tr>
<tr>
<td>Step 5</td>
<td>Return the abutment with the work to the clinic for sterilization.</td>
</tr>
</tbody>
</table>
Temporary abutments from peek

Peek abutments are used for progressive load on the implants. The restorations may be either screwed or cemented.

Using a peek abutment for screwed restoration:

**Step 1**
Screw in the abutment directly on implant using 1.25 driver.

**Step 2**
Mark on the abutment the desired level. Ensure minimal level of 4 mm in order not to damage the connection screw.

**Step 3**
Remove the abutment and prepare retention slots on its surface.

**Step 4**
Replace the abutment on the implant.

**Step 5**
Adjust the temporary crown and modify, as required.
TEMPORARY RESTORATIONS

Step 6
Prepare a hole in the crown for access to connection screw and replace the connection screw with transfer screw for closed tray.

Step 7
Protect undercuts in the adjacent teeth area and pad the crown with acrylic and ensure that the screw goes through the crown.

Step 8
After the hardening of the acrylic, open the screw and release the abutment.

Step 9
Grind the residues.

Step 10
Screw the abutment onto the crown using a 30 Ncm torque.

Step 11
Block the access space of the screw using a Teflon strap and seal it with acrylic or composite.
**TEMPORARY RESTORATIONS**

**Using a peek abutment for cemented restoration**

<table>
<thead>
<tr>
<th>Step 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust the abutment, straight or angled, and screw the abutment onto the implant using 1.25 driver.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark on the abutment the desired level. Ensure minimal level of 4 mm in order not to damage the connection screw.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove the abutment and prepare the shape according to desired outline.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return the abutment onto the implant using a 30 Ncm torque.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust the temporary crown or the bridge and modify, as required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal the screw access space with Teflon film and a composite.</td>
</tr>
</tbody>
</table>
TEMPORARY RESTORATIONS

Step 7

Pad the crown or the bridge. Protect undercuts in the adjacent teeth area.

Step 8

Cement the restoration according to the protocol.
Preparation of single screwed crowns using castable abutments

Castable abutments allow to prepare screwed and custom crowns that connect directly to the implant using a screw connection. Castable abutments allow to prepare an outline according to existing gums outline.

**Step 1**

In the clinic: Prepare impression on the implant level.

**Step 2**

Prepare a work model according to regular work stages.

**Step 3**

Place the abutment for cast with hexagon in the analog and tighten manually with 1.25 driver.

**Step 4**

Perform the necessary changes at the level of the plastic sleeve.

**Step 5**

Be sure to keep the minimal level to avoid damaging the screw’s head.
SCREW RETAINED RESTORATION

Step 6
Complete the required crown form using wax or resin

Step 7
Sprue, invest and cast - prepare the crown for metal cast.

Step 8
Take into account the various casting conditions in cases of titanium or cobalt-chrome bases.

Step 9
After the casting - divest, fit and finish.

Step 10
When divesting, it is important not to perform sandblasting in the area of crown-implant connection to avoid damage to the connection surface.

Step 11
Place the crown in the model in order to verify its suitability to the analog.
**SCREW RETAINED RESTORATION**

**Step 12**
Prepare the crown for porcelain build-up.

**Step 13**
Avoid porcelain entrance to the screw tunnel area.

**Step 14**
After finishing, polish the metal edges and send to the clinic.

**Step 15**
In the clinic: Prepare the crown area for restoration replacement.

**Step 16**
Screw in the restoration using a 30 Ncm torque.

**Step 17**
Seal the screw access space with Teflon film and a composite.
Step 18

Perform final occlusal balance and make sure there are no overloads or premature contact points.

Step 19

Perform a final x-ray.

In case you use chromium cobalt base, the casting may be done in a regular manner according to casting protocol recommended by the metal manufacturer.
**SCREW RETAINED RESTORATION**

**Preparation of screwed bridges using castable abutments**

Castable abutments allow to prepare screwed and custom crowns that connect directly to the implant using a screw connection. Castable abutments allow to prepare an outline according to existing gums outline.

**Step 1**

In the clinic: prepare impression on the implant level.

**Step 2**

Prepare a work model according to regular work stages with soft tissue replica.

**Step 3**

Place the abutment for cast without hexagon in the analog and tighten manually with 1.25 driver.

**Step 4**

Perform the necessary changes at the level of the plastic sleeve.

**Step 5**

Be sure to keep the minimal level to avoid damaging the screw’s head.
SCREW RETAINED RESTORATION

Step 6
Complete the required bridge form using wax or resin.

Step 7
Sprue, invest and cast - prepare the crown for metal cast.

Step 8
Take into account the various casting conditions in cases of titanium or cobalt-chrome bases.

Step 9
After the casting - divest, fit and finish.

Step 10
When divesting, it is important not to perform sandblasting in the area of crown-implant connection to avoid damage to the connection surface.

Step 11
Place the bridge in the model in order to verify its suitability to the analog.
SCREW RETAINED RESTORATION

Step 12
Send to clinic for measuring and dental occlusion taking.

Step 13
Prepare the bridge for porcelain build-up.

Step 14
Avoid porcelain entrance to the screw tunnel area.

Step 15
After finishing, polish the metal edges and send to the clinic.

Step 16
In the clinic: Prepare the bridge area for restoration replacement.

Step 17
Screw in the restoration using a 30 Ncm torque.
Step 18
Seal the screw access space with Teflon film and a composite.

Step 19
Perform final occlusal balance and make sure there are no overloads or premature contact points.

Step 20
Perform a final x-ray.

Restoration using multi-unit abutments

The use of multi-unit abutment is aimed for screwed or hybrid restoration of several implants for partial or complete reconstruction of the jaw. Multi-unit abutments may be used during surgery for implant insertion using One-Abutment One-Time technique, or after a healing period at the second stage after exposure.

Screwed prosthesis

Step 1
Adjust the multi-unit abutment according to the angle (straight, 18 or 30 degrees) and according to the level of soft tissue around the implant.
Step 2
Insert the abutment to the implant’s hexagon using the carrier and place it in the desired direction.

Step 3
If this is an angular abutment, tighten it with 1.25 driver in 30 Ncm torque.

Step 4
If this is a straight abutment, tighten it with a driver in 30 Ncm torque

Step 5
Take impressions using open or closed tray in accordance with the protocol in “Impressions” chapter.

Step 6
Send to laboratory together with analogs and plastic sleeves.

Step 7
In the laboratory: Prepare the dental stone model.
### SCREW RETAINED RESTORATION

**Step 8**
Prepare wax dental occlusion baseplate fixed on two plastic sleeves at least with approach to connection screws.

**Step 9**
Send to the clinic.

**Step 10**
In the clinic: Measure the wax dental occlusion and attach it using manual tightening with 1.25 driver.

**Step 11**
Adjust the dimensions of the dental occlusion to reflect the dimensions of future restoration in terms of height, lip support, smile lines, etc.

**Step 12**
Mark the centerline, pointed teeth line and smile lines.

**Step 13**
Send to the laboratory.
Step 14
In the laboratory: Position the teeth, create an access to connection screws.

Step 15
Send to the clinic.

Step 16
In the clinic: Measure the restoration by connecting with connection screws.

Step 17
Assess the aesthetic and phonetic parameters. Balance, if needed.

Step 18
Send to the laboratory.

Step 19
In the laboratory: On the work model prepare slots for exact positioning of the silicone key from silicone putty.
Step 20
After the silicone key is performed, remove the teeth from the model and arrange them on it with sticky wax.

Step 21
Place the plastic sleeves on multi-unit abutments and adjust their height level according to the silicone key.

Step 22
Carve the wax to receive framework and distance it from the gums to about 2 mm in order to maintain proper hygiene of the final restoration.

Step 23
Create a retention measure for acrylic.

Step 24
Prepare the castable work from noble or semi-noble metal.

Step 25
After the casting polish the work. It is important to protect the connection interface, and therefore it is better to perform chemical removal instead of sandblasting.
Step 26

At the polishing stage, multi-unit analogs should be screwed into the abutments to protect the edges.

Step 27

Send to the clinic.

Step 28

In the clinic: Measure the work by screwing in all connection screws and check that it is fixed with passive adjustment.

Step 29

Send to the laboratory.

Step 30

In the laboratory: Position the teeth as usually done with conventional prostheses.

Step 31

Send to the clinic.
Step 32
In the clinic: Measure and check the aesthetic and phonetic parameters.

Step 33
Send to the laboratory.

Step 34
In the laboratory: Finish the work as usually done with conventional prostheses.

Step 35
Install the final work with the tightening of connection screws to 15 Ncm using 1.25 driver.

Step 36
Seal the connection screws tunnels with Teflon film and a composite.

Step 37
Perform a final occlusal balancing.
Bar-supported prosthesis

**Step 1**
Adjust the multi-unit abutment according to the angle (straight, 18 or 30 degrees) and according to the level of soft tissue around the implant.

**Step 2**
Insert the abutment to the implant's hexagon using the carrier and place it in the desired direction.

**Step 3**
If this is an angular abutment, tighten it with 1.25 driver in 30 Ncm torque.

**Step 4**
If this is a straight abutment, tighten it with a driver in 30 Ncm torque.

**Step 5**
Take impressions using open or closed tray in accordance with the protocol in “Impressions” chapter.

**Step 6**
Send to laboratory together with analogs and plastic sleeves.
Step 7
In the laboratory: Prepare the dental stone model.

Step 8
Prepare wax dental occlusion baseplate fixed on two plastic sleeves at least with approach to connection screws.

Step 9
Send to the clinic.

Step 10
In the clinic: Measure the wax dental occlusion and attach it using manual tightening with 1.25 driver.

Step 11
Adjust the dimensions of the dental occlusion to reflect the dimensions of future restoration in terms of height, lip support, smile lines, etc.

Step 12
Mark the centerline, pointed teeth line and smile lines.
Step 13
Send to the laboratory.

Step 14
In the laboratory: Position the teeth, create an access to connection screws.

Step 15
Send to the clinic.

Step 16
In the clinic: Measure the restoration by connecting with connection screws.

Step 17
Assess the aesthetic and phonetic parameters. Balance, if needed.

Step 18
Send to the laboratory.
Step 19
In the laboratory: On the work model prepare slots for exact positioning of the silicone key from silicone putty.

Step 20
After the silicone key is performed, remove the teeth from the model and arrange them on it sticky wax.

Step 21
Place the plastic sleeves on multi-unit abutments and adjust their height level according to the silicone key.

Step 22
Carve out of the wax the bar with round attachments or supported connections.

Step 23
Prepare the castable work from noble or semi-noble metal.

Step 24
After the casting polish the bar. It is important to protect the connection interface, and therefore it is better to perform chemical removal of investment instead of sandblasting.
Step 25
At the polishing stage, multi-unit analogs should be screwed into the abutments to protect the edges.

Step 26
Send to the clinic.

Step 27
In the clinic: Measure the work by screwing in all connection screws and check that it is fixed with passive adjustment.

Step 28
Send to the laboratory.

Step 29
In the laboratory: Position the teeth as usually done with conventional prostheses.

Step 30
Send to the clinic.
### Step 31
In the clinic: Measure and check the aesthetic and phonetic parameters.

### Step 32
Send to the laboratory.

### Step 33
In the laboratory: Finish the work as usually done with conventional prostheses.

### Step 34
Install the final bar with the tightening of connection screws to 15 Ncm using 1.25 driver.

### Step 35
Perform a final occlusal balancing of the prosthesis.
Prosthesis with ball attachments

Step 1
Measure the depth of the gums around the implant and select the desired level of ball abutment.

Step 2
Prepare an individual impression tray as you do with conventional prostheses with openings for transfers for open or closed tray.

Step 3
Adjust the margins of individual tray using Thermoplast material, as with conventional prostheses.

Step 4
Take an impression using open or closed technique.

Step 5
Send to the laboratory.

Step 6
In the laboratory: Prepare a dental stone model without soft tissue replica. Release the undercuts around the abutments using a scalpel.
Step 7
Adjust the ball abutments and seal the undercuts around them with the wax.

Step 8
Prepare wax dental occlusion.

Step 9
Send to the clinic.

Step 10
In the clinic: Adjust the dimensions of the dental occlusion to reflect the dimensions of future restoration in terms of height, lip support, smile lines, etc.

Step 11
Mark the centerline, pointed teeth line and smile lines.

Step 12
Send to the laboratory.
Step 13
In the laboratory: Position the teeth as usually done with conventional prostheses.

Step 14
Send to the clinic.

Step 15
In the clinic: Measure and check the aesthetic and phonetic parameters.

Step 16
Send to the laboratory.

Step 17
In the laboratory: Finish the work as usually done with conventional prostheses.

Step 18
Install on the ball abutments the metal structure with appropriate silicone inserts.
**Step 19**
Send to the clinic.

**Step 20**
In the clinic: Perform a final occlusal balancing of the prosthesis.

**In case you perform the metal structure installation in the clinic, ask the laboratory to leave open tunnels above the ball abutments**

**Step 1**
Install the suitable ball abutments in their place with 20 Ncm tightening.

**Step 2**
Place above them a rubber dam or a silicone ring to protect the undercut.

**Step 3**
Install on the abutments metal caps with appropriate inserts.
Step 4
Place the prosthesis and ensure passive fixing on the gums.

Step 5
Fill the tunnel with Self Curing pink acryl.

Step 6
Place the prosthesis and instruct the patient to tighten their teeth.

Step 7
After the hardening, remove the prosthesis, clean the residues and perform a final occlusal balancing.