

# STEP-BY-STEP INSTRUCTIONS ON THE **PROSTHETIC PROCEDURES**



Straumann® Anatomic IPS e.max® Abutment

COMMITTED TO SIMPLY DOING MORE FOR DENTAL PROFESSIONALS



The ITI (International Team for Implantology) is academic partner of Institut Straumann in the areas of research and education.



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## STRAUMANN® ANATOMIC IPS e.max®1 ABUTMENT

#### Intended use

- Cement-retained crowns and bridges via mesostructure
  - Conventional procedure
  - Temporary restoration chairside

#### Screw-retained crowns

- Direct veneering (with IPS e.max® Ceram<sup>1</sup>)
- Press-on technique (with IPS e.max<sup>®</sup> ZirPress<sup>1</sup>)

#### **Material**

Zirconium dioxide

#### Characteristics

#### Simple

- Processing of a highly esthetic ceramic abutment in different colors with conventional lab methods
- Less grinding necessary due to prepared mucosa margins
- Adaptation to natural soft tissue contour due to prepared mucosa margins in different heights
- Oval shape resembles emergence profile of a natural tooth

#### Reliable

- Biocompatible and low thermal conductivity
- High-performance all-ceramics thanks to a high strength and high fracture toughness
- Reduced risk of margins shining through the soft tissue even with thin mucosa biotype
- CrossFit<sup>®</sup> Connection
- Precise fit

#### D Note

Only use an original Straumann<sup>®</sup> basal screw for ceramic abutment for the final insertion of the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment. The Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment is available in the following shades: MO 0 and MO 1 (MO = Medium Opacity). Recommendations regarding the sterilization procedure can be found in the instructions for use.



## 1. CEMENT-RETAINED CROWNS AND BRIDGES

Cement-retained restorations need to fulfill the following criteria (see 2c):

- Individualized abutments must have cusp and marginal ridge support.
- The maximum thickness of the veneering material on top of the coping must not exceed a maximum of 2.0 mm in all directions.
- Avoid any sharp edges.

1b

#### 1.1 Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment – Lab procedure

The following case describes the fabrication of a cement-retained crown by using the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment.



#### Step 1 – Fabricating the master cast and wax-up

 Fabricate the master cast including a gingival mask with the corresponding implant analog (see instructions in chapter 5 in brochure Art. No. 152.810).

- Contraction of the second seco
- For optimal esthetic planning, design a full anatomical wax-up.



 Make a silicone key over the full wax-up in order to define the optimal shape of the modified abutment.



# 2b



#### Step 2 – Preparing the Straumann® Anatomic IPS e.max<sup>®1</sup> Abutment

 Place the abutment on the polishing aid / analog and hand tighten the screw using the SCS screwdriver.

For the individualization of the Straumann® Anatomic IPS e.max®<sup>1</sup> Abutment, it is recommended to work with a water-cooled turbine and abrasive instruments that are appropriate for grinding sintered ZrO<sub>2</sub> material. Work with a low grinding pressure and avoid any spark formation. The Ivoclar Vivadent grinding instrument recommendations for IPS e.max<sup>®1</sup> must be followed.

#### D Note

In order to keep sufficient stability of the abutment, **do not deviate** from the dimensions shown in the following graphics (2c). The height of the abutment must achieve at least 65 % of the complete restoration.

 The final geometry of the abutment has to meet the requirements of the material of the final restoration for cementretained crowns and bridges.



Following the Ivoclar Vivadent grinding instrument recommendations for IPS e.max<sup>®1</sup> a regeneration firing for cement-retained crowns and bridges is not required. The regeneration firing has to be conducted if the Ivoclar Vivadent grinding instrument recommendations for IPS e.max<sup>®1</sup> are not followed or if a further thermal processing is necessary. The regeneration firing parameter are: 65 °C (117 °F) per minute heating up to 1050 °C (1922 °F) / 15 minute holding time and long-term cooling down with 25 °C (45 °F) per minute to 750 °C (1382 °F).



#### Step 3 – Fabricating the superstructure

 Use a standard procedure to fabricate the ceramic coping with the Straumann<sup>®</sup> CARES<sup>®</sup> Scan CS2 scanner and the Straumann<sup>®</sup> CARES<sup>®</sup> Visual software.



- Veneer the coping with conventional veneering material synchronized to the thermal expansion coefficient of the ceramic coping.
- Coefficient of thermal expansion<sup>2</sup> (CTE) (100–500 °C) 10.80±0.25 10<sup>6</sup> K<sup>-1</sup>
- For veneering follow the recommendations of the ceramic material manufacturer.



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#### D Note

In case of adhesive bonding, sandblast the portions of the abutment surface which will be covered with cement with  $Al_2O_3$  (type 100 microns) at 0.5–1.0 bar (15–30 psi). While sandblasting, the implant configuration must be protected with the polishing aid.

#### 1.2 Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment – Prosthetic procedure

The final restoration is delivered to the doctor's office on the master cast.

#### Step 1 – Preparation

- Remove the healing cap or temporary restoration.
- Remove the superstructure from the master cast and unscrew the abutment from the analog.
- Clean and dry the interior of the implant and the abutment thoroughly.
- Prepare the surface of the abutment corresponding to the cementation material which will be used (e.g. in case of adhesive bonding apply primer).
- Condition the inner surface of the superstructure according to the instructions for use given by the according manufacturer (e.g. in case of adhesive bonding apply primer).





#### Step 2 – Final insertion

- Position the cleaned abutment in the implant. Tighten the screw to 35 Ncm using the SCS screwdriver along with the ratchet and the torque control device (see instructions in chapter 7.5 in brochure Art. No. 152.810).
- Close the SCS screw channel with cotton and sealing compound (i.e. gutta-percha). This allows for later removal of the modified abutment in the event a restoration replacement is required.
- Cement the superstructure onto the abutment.
- Remove any excess cement.

#### Note

Only use an original Straumann® basal screw for ceramic abutment for the final insertion of the Straumann® Anatomic IPS e.max<sup>®1</sup> Abutment.

#### 1.3 Straumann® Anatomic IPS e.max®1 Abutment – Chairside procedure for temporary restorations

The following case describes the usage of the Straumann® Anatomic IPS e.max®1 Abutment chairside.



#### Step 1 – Preparing the Straumann® Anatomic IPS e.max®1 Abutment

For the individualization of the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment, it is recommended to work with a watercooled turbine and abrasive instruments that are appropriate for grinding sintered ZrO<sub>2</sub> material. Work with a low grinding pressure and avoid any spark formation. The Ivoclar Vivadent grinding instrument recommendations for IPS e.max<sup>®1</sup> must be followed.



#### D Note

In order to keep sufficient stability of the abutment, **do not deviate** from the dimensions shown in the following graphics (1b). The height of the abutment must achieve at least 65 % of the complete restoration.

 The final geometry of the abutment has to meet the requirements of the material of the final restoration for cementretained crowns and bridges.



Following the Ivoclar Vivadent grinding instrument recommendations for IPS e.max<sup>®1</sup> a regeneration firing for cement-retained crowns and bridges is not required. The regeneration firing has to be conducted if the Ivoclar Vivadent grinding instrument recommendations for IPS e.max<sup>®1</sup> are not followed or if a further thermal processing is necessary. The regeneration firing parameter are: 65 °C (117 °F) per minute heating up to 1050 °C (1922 °F) / 15 minute holding time and long-term cooling down with 25 °C (45 °F) per minute to 750 °C (1382 °F).



#### Step 2 – Placing the modified Straumann® Anatomic IPS e.max®1 Abutment

Place the abutment on the implant and tighten the screw with a torque between 15 Ncm and 35 Ncm using the SCS screwdriver along with the ratchet and the torque control device (see instructions in chapter 7.5 in brochure Art. No. 152.810).



#### D Note

Before taking the abutment level impression the abutment needs to be torqued with 35 Ncm.

 Cover the screw head with absorbent cotton or gutta-percha and seal the screw channel temporarily (e.g. with absorbent cotton).



• Take an impression with an individualized impression tray and order the final restoration.



# Step 3 – Fabricating the cement-retained temporary single crown

Use a standard procedure to fabricate the cement-retained single crown (e.g. grind out a prefabricated plastic tooth).



#### Step 4 – Cementing the temporary single crown

- Coat the internal configuration of the crown with temporary cement and cement it onto the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment.
- Remove any excess cement.



#### Step 5 – Insertion of the final restoration

- Remove the temporary restoration.
- Clean and dry the interior of the abutment thoroughly.



- Close the SCS screw channel with cotton and sealing compound (i.e. gutta-percha). This allows for later removal of the modified abutment in the event a restoration replacement is required.
- Cement the superstructure onto the abutment.
- Remove any excess cement.

# 2. SCREW-RETAINED CROWNS, DIRECTLY VENEERED

Screw-retained restorations need to fulfill the following criteria (see 2c):

- In the anterior region, screw hole access must be located in the palatal/lingual area of the restoration.
- The screw hole position in the incisal or labial area is contraindicated.
- In the posterior area, screw hole position must be located in the center of the occlusal area of the restoration.
- Before veneering or press-on procedure the individualized abutment must have a reduced anatomically supporting design (cusp and marginal support).
- The maximum thickness of the veneering material on top of the individualized abutments (layering ceramic and/or press-on ceramic) must not exceed a maximum of 2.0 mm in all directions of the screw retained restoration.

#### 2.1 Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment – Lab procedure

The following case describes the fabrication of screw-retained crowns directly veneered, when using the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®</sup> Abutment and IPS e.max<sup>®</sup> Ceram<sup>1</sup>.



#### Step 1 – Fabricating the master cast and wax-up

 Fabricate the master cast including a gingival mask with the corresponding implant analog (see instructions in chapter 5 in brochure Art. No. 152.810).

 For optimal esthetic planning, design a full anatomical wax-up.



 Make a silicone key over the full wax-up in order to define the optimal shape of the modified abutment.

1b



#### Step 2 – Preparing the Straumann® Anatomic IPS e.max®1 Abutment

 Place the abutment on the polishing aid / analog and hand tighten the screw using the SCS screwdriver.



For the individualization of the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment, it is recommended to work with a water-cooled turbine and abrasive instruments that are appropriate for grinding sintered ZrO<sub>2</sub> material. Work with a low grinding pressure and avoid any spark formation. The Ivoclar Vivadent grinding instrument recommendations for IPS e.max<sup>®1</sup> must be followed.



#### Directly veneered

#### **Note**

In order to keep sufficient stability of the abutment, **do not deviate** from the dimensions shown in the following graphics (2c). The height of the abutment must achieve at least 65 % of the complete restoration.

• The final geometry of the abutment has to meet the requirements of the veneering material.



After grinding and/or polishing the abutment a regeneration firing has to be conducted in a firing furnace: 65 °C (117 °F) per minute heating up to 1050 °C (1922 °F) / 15 minutes holding time and long-term cooling down with 25 °C (45 °F) per minute to 750 °C (1382 °F).

3a





#### Step 3 - Veneering

- For the veneering of the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment, use conventional veneering material synchronized to the thermal expansion coefficient of the abutment.
- Coefficient of thermal expansion<sup>2</sup> (CTE) (100-500 °C) 10.80±0.25 10<sup>-6</sup>K<sup>-1</sup>
- In this case IPS e.max<sup>®</sup> Ceram<sup>1</sup> has been used. For further details please consult the brochure "Instructions for use IPS e.max<sup>®</sup> Ceram<sup>1</sup>" (www.ivoclarvivadent.com).
- Steam clean the abutment and apply the IPS e.max<sup>®</sup> Ceram ZirLiner<sup>1</sup> only where IPS e.max<sup>®</sup> Ceram<sup>1</sup> will be applied later on.
- The implant configuration must be protected with the polishing aid while applying the IPS e.max<sup>®</sup> Ceram ZirLiner<sup>1</sup>.

#### D Note

Do not sandblast the abutment before applying the IPS e.max<sup>®</sup> Ceram Liner<sup>1</sup>. Avoid any application of IPS e.max<sup>®</sup> Ceram ZirLiner<sup>1</sup> into the screw channel.





#### D Note

Do not apply IPS e.max<sup>®</sup> Ceram ZirLiner<sup>1</sup> on the inner configuration. In case of an adaptation of the emergence profile it is recommended to place the abutment upside down on the firing tray to prevent the ZirLiner<sup>1</sup> from flowing towards the inner configuration during firing.



 Particular attention must be given to an even layer thickness of the porcelain veneered on the abutment.

#### Dev Note

Observe the maximum thickness of the layering ceramic material (max. 2 mm).



Final restoration



16 2. Screw-retained crowns, directly veneered

#### 2.2 Straumann® Anatomic IPS e.max®1 Abutment – Prosthetic procedure

The final restoration is delivered to the doctor's office on the master cast.

#### Step 1 – Preparation

- Remove the healing cap or temporary restoration.
- Remove the veneered abutment from the master cast.
- Clean and dry the interior of the implant and the abutment thoroughly.



#### Step 2 – Final insertion

Position the cleaned and veneered abutment in the implant. Tighten the screw to 35 Ncm using the SCS screwdriver along with the ratchet and the torque control device (see instruction in chapter 7.5, in brochure Art. No. 152.810).



 Close the SCS screw channel with cotton and sealing compound (i.e. gutta-percha, composite). This allows for later removal of the modified abutment in the event a restoration replacement is required.

#### D Note

Only use an original Straumann® basal screw for ceramic abutment for the final insertion of the Straumann® Anatomic IPS e.max®1 Abutment.

# 3. SCREW-RETAINED CROWNS USING THE PRESS-ON TECHNIQUE

Screw-retained restorations need to fulfill the following criteria (see 2c):

- In the anterior region, screw hole access must be located in the palatal/lingual area of the restoration.
- The screw hole position in the incisal or labial area is contraindicated.
- In the posterior area, screw hole position must be located in the center of the occlusal area of the restoration.
- Before veneering or press-on procedure the individualized abutment must have a reduced anatomically supporting design (cusp and marginal support).
- The maximum thickness of the veneering material on top of the individualized abutments (layering ceramic and/or press-on ceramic) must not exceed a maximum of 2.0 mm in all directions of the screw retained restoration.

#### 3.1 Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment – Lab procedure

The following case describes the fabrication of a screw-retained crown when using the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment in combination with the press-on technique. In this case IPS e.max<sup>®</sup> ZirPress<sup>1</sup> has been used.



#### Step 1 - Fabricating the master cast and wax-up

• Fabricate the master cast including a gingival mask with the corresponding implant analog (see instructions in chapter 5 in brochure Art. No. 152.810).

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 For optimal esthetic planning, design a full anatomical wax-up.

- lc
- Make a silicone key over the full wax-up in order to define the optimal shape of the modified abutment.



#### Step 2 – Preparing the Straumann® Anatomic IPS e.max®1 Abutment

 Place the abutment on the polishing aid / analog and hand tighten the screw using the SCS screwdriver.



For the individualization of the Straumann® Anatomic IPS e.max®1 Abutment, it is recommended to work with a water-cooled turbine and abrasive instruments that are appropriate for grinding sintered ZrO<sub>2</sub> material. Work with a low grinding pressure and avoid any spark formation. The Ivoclar Vivadent grinding instrument recommendations for IPS e.max®1 must be followed.



#### Directly veneered

D Note

In order to keep sufficient stability of the abutment, **do not deviate** from the dimensions shown in the following graphics (2c). The height of the abutment must achieve at least 65 % of the complete restoration.

• The final geometry of the abutment has to meet the requirements of the framework and veneering material.



 After grinding and/or polishing the abutment a regeneration firing has to be conducted in a firing furnace: 65 °C (117 °F) per minute heating up to 1050 °C (1922 °F) / 15 minutes holding time and long-term cooling down with 25 °C (45 °F) per minute to 750 °C (1382 °F). 3a





#### 3c



#### Step 3 - Process of press-on technique

- For pressing onto the Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup>
  Abutment, use conventional press-on material synchronized to the thermal expansion coefficient of the abutment.
- Coefficient of thermal expansion<sup>2</sup> (CTE) (100-500 °C) 10.80±0.25 10<sup>-6</sup>K<sup>-1</sup>
- In this case IPS e.max<sup>®</sup> ZirPress<sup>1</sup> has been used. For further details please consult the brochure "Instructions for use IPS e.max<sup>®</sup> ZirPress<sup>1</sup>" (www.ivoclarvivadent.com).
- Steam clean the abutment and apply the IPS e.max<sup>®</sup> Ceram ZirLiner<sup>1</sup> only where IPS e.max<sup>®</sup> ZirPress<sup>1</sup> will be applied later on.
- The implant configuration must be protected with the polishing aid while applying the IPS e.max<sup>®</sup> Ceram ZirLiner<sup>1</sup>.

#### De Note

Do not sandblast the abutment before applying the IPS e.max<sup>®</sup> Ceram Liner<sup>1</sup>. Avoid any application of IPS e.max<sup>®</sup> Ceram ZirLiner<sup>1</sup> into the screw channel.

#### Der Note

Do not apply IPS e.max<sup>®</sup> Ceram ZirLiner<sup>1</sup> on the inner configuration. In case of an adaptation of the emergence profile it is recommended to place the abutment upside down on the firing tray to prevent the ZirLiner<sup>1</sup> from flowing towards the inner configuration during firing.



 Observe the respective material thickness (minimum 0.7 mm up to 2 mm) in order to ensure a proper press-on restoration.



#### Den Note

In order to prevent IPS e.max<sup>®</sup> ZirPress<sup>1</sup> to intrude into the screw channel of the abutment do not cover the screw channel with wax.



Sprueing



• Cover the whole abutment with investment material and ensure that the screw channel is also completely filled.

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- Before pressing, ensure that the pressing furnace is sufficiently preheated.

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3h



 The implant configuration must be protected with the polishing aid (e. g. sandblasting).





#### **Note**

The long-term success of the prosthetic work depends on the accurate fit of the restoration. Therefore the following recommendations must be observed:

- Allow for enough cooling time of the press-on abutment before divestment
- Rough divestment is carried out with glass polishing beads at 4 bar (60 psi) pressure
- Fine divestment is carried out with glass polishing beads at 2 bar (30 psi) pressure
- Do not use  $Al_2O_3$  for rough or fine divestment
- Do not sandblast the conical portion of the abutment and always protect the implant/abutment interface with the polishing aid



- Immerse the pressed objects into the IPS e.max<sup>®</sup> Press Invex Liquid<sup>1</sup> (min. 5 minutes, max. 10 minutes) and ensure that they are completely covered.
- Carefully remove the white reaction layer on the pressed objects with Al<sub>2</sub>O<sub>3</sub> (type 100 microns) at 1 2 bar (15 30 psi) pressure.



 Veneer, shade and glaze the restoration according to the individual situation.

#### D Note

The implant configuration must be protected with the polishing aid while applying the IPS e.max<sup>®</sup> Ceram<sup>1</sup>.

Final restoration

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#### 3.2 Straumann<sup>®</sup> Anatomic IPS e.max<sup>®1</sup> Abutment – Prosthetic procedure

The final restoration is delivered to the doctor's office on the master cast.

#### Step 1 – Preparation

- Remove the healing cap or temporary restoration.
- Remove the overpressed abutment from the master cast.
- Clean and dry the interior of the implant and the abutment thoroughly.



#### Step 2 - Final insertion

Position the cleaned abutment in the implant. Tighten the screw to 35 Ncm using the SCS screwdriver along with the ratchet and the torque control device (see instructions in chapter 7.5 in brochure Art. No. 152.810).



 Close the SCS screw channel with cotton and sealing compound (i.e. gutta-percha, composite). This allows a later removal of the modified abutment in the event a restoration replacement is required.

#### Note

Only use an original Straumann® basal screw for ceramic abutment for the final insertion of the Straumann® Anatomic IPS e.max®1 Abutment.

3. Screw-retained crowns using the press-on technique

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# IMPORTANT GUIDELINES

#### Please note

Practitioners must have appropriate knowledge and instruction in the handling of the Straumann CADCAM products or other Straumann products ("Straumann Products") for using the Straumann Products safely and properly in accordance with the instructions for use.

The Straumann Product must be used in accordance with the instructions for use provided by the manufacturer. It is the practitioner's responsibility to use the device in accordance with these instructions for use and to determine, if the device fits to the individual patient situation.

The Straumann Products are part of an overall concept and must be used only in conjunction with the corresponding original components and instruments distributed by Institut Straumann AG, its ultimate parent company and all affiliates or subsidiaries of such parent company ("Straumann"), except if stated otherwise in this document or in the instructions for use for the respective Straumann Product. If use of products made by third parties is not recommended by Straumann in this document or in the respective instructions for use, any such use will void any warranty or other obligation, express or implied, of Straumann.

#### Availability

Some of the Straumann Products listed in this document may not be available in all countries.

#### Caution

In addition to the caution notes in this document, our products must be secured against aspiration when used intraorally.

#### Validity

Upon publication of this document, all previous versions are superseded.

#### Documentation

For detailed instructions on the Straumann Products contact your Straumann representative.

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#### Explanation of the symbols on labels and instruction leaflets



Straumann® Anatomic IPS e.max®1 Abutment is available in the following shades: MO 0 and MO 1 (MO = Medium Opacity)

<sup>1</sup> IPS e.max<sup>®</sup>, IPS e.max<sup>®</sup> Ceram, IPS e.max<sup>®</sup> ZirPress, IPS e.max<sup>®</sup> Ceram ZirLiner, IPS e.max<sup>®</sup> Ceram Liner, IPS e.max<sup>®</sup> Press Invex Liquid are registered trademarks of Ivoclar Vivadent AG, Liechtenstein

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