DEDICAM®
DIGITAL CONCEPTS

Design Guide for selected DEDICAM® restorations and attachments with 3Shape® Dental Designer

November 2023

M-1732-PRT-EN-INT-BHCL-00-112023

biohorizons
camlog

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Design of one-piece titanium abutments and hybrid abutments

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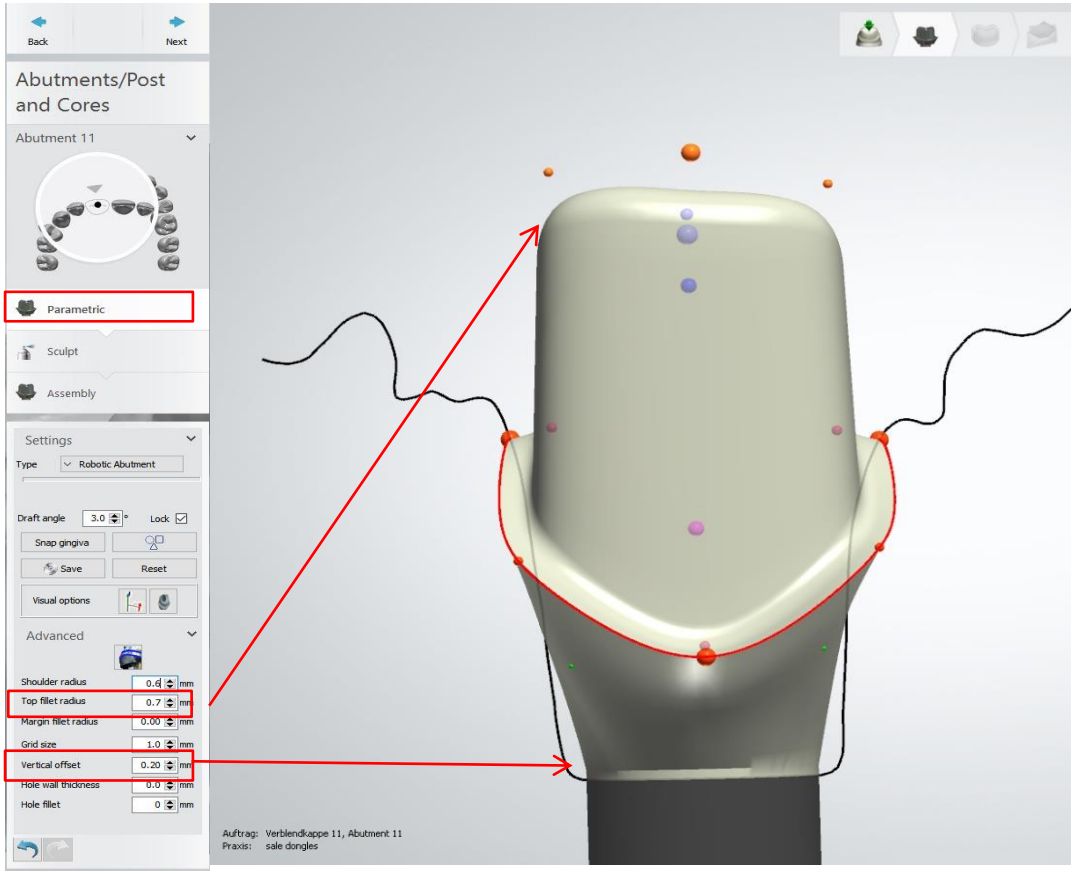
Design of one-piece titanium abutments and hybrid abutments

Important values for abutment designs to ensure a perfect cement gap for the corresponding structures.

Abutment design: „Parametric“



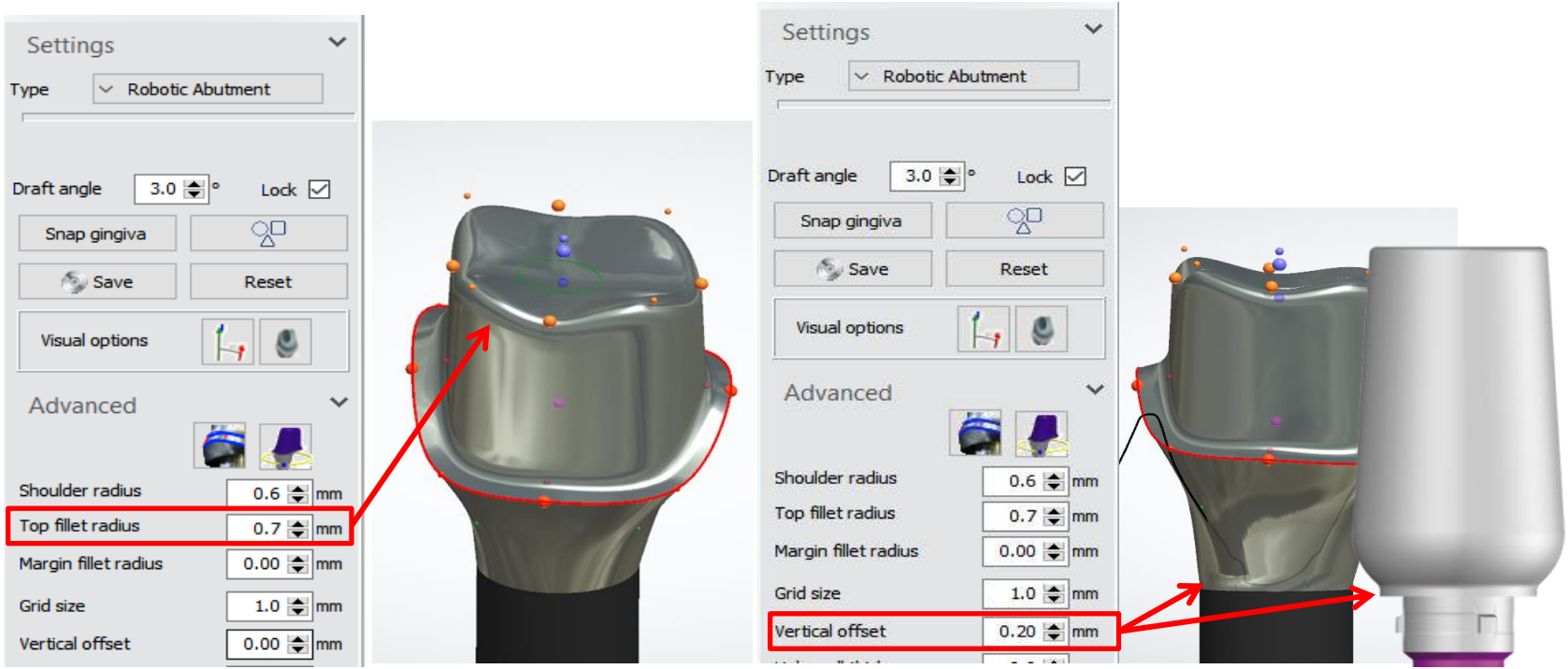
Top fillet radius: 0.7mm

<u>Tip:</u> only for one-piece abutments
vertical offset: recommended 0.20mm

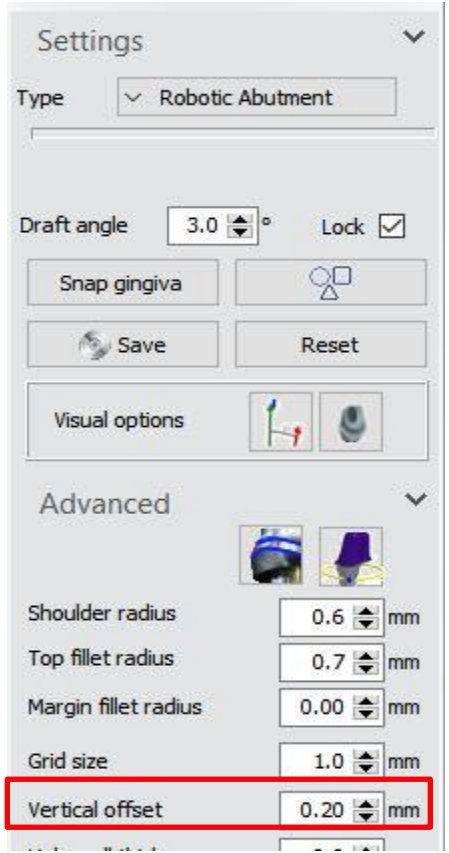
Design of one-piece titanium abutments and hybrid abutments

Value 0.7mm or more of top fillet radius ensures perfect cement gap for the corresponding structure.

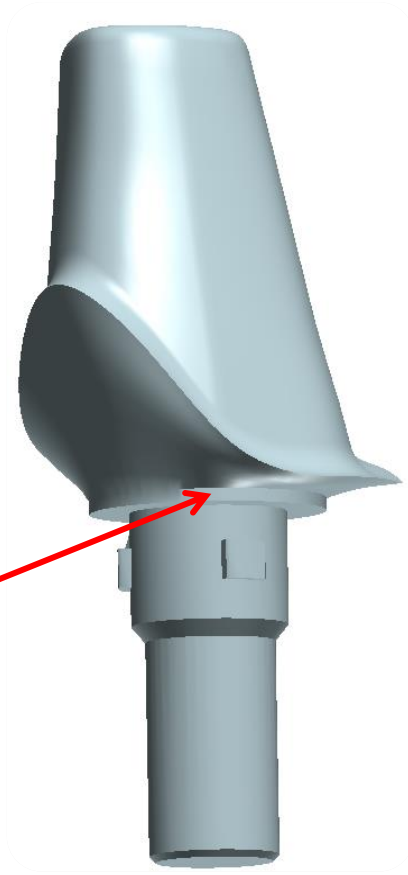
Use vertical offset value only for one-piece abutments.



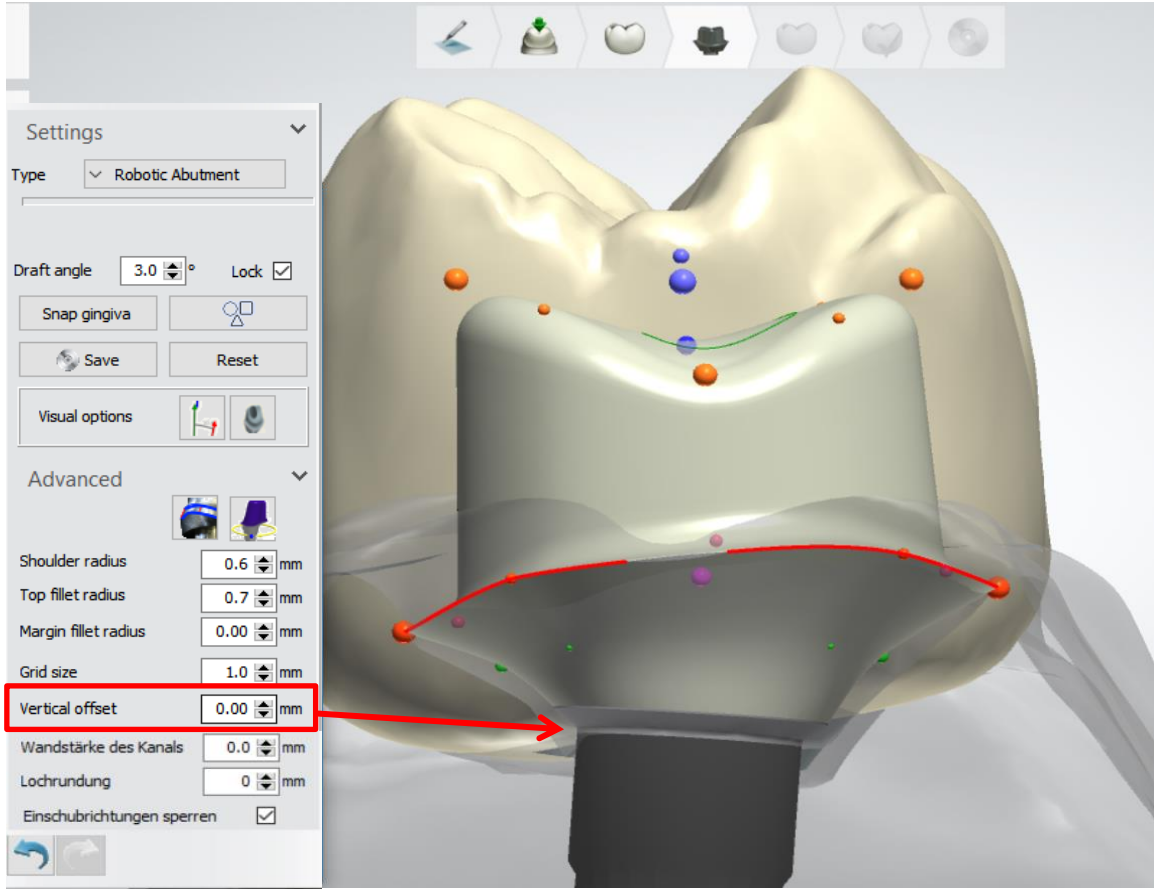
Design of one-piece titanium abutments and hybrid abutments



Vertical offset for one-piece abutments:
Adjust value in terms of low gingiva height
(according situation: 0.15 / 0.10 / 0.05mm)



Design of one-piece titanium abutments and hybrid abutments

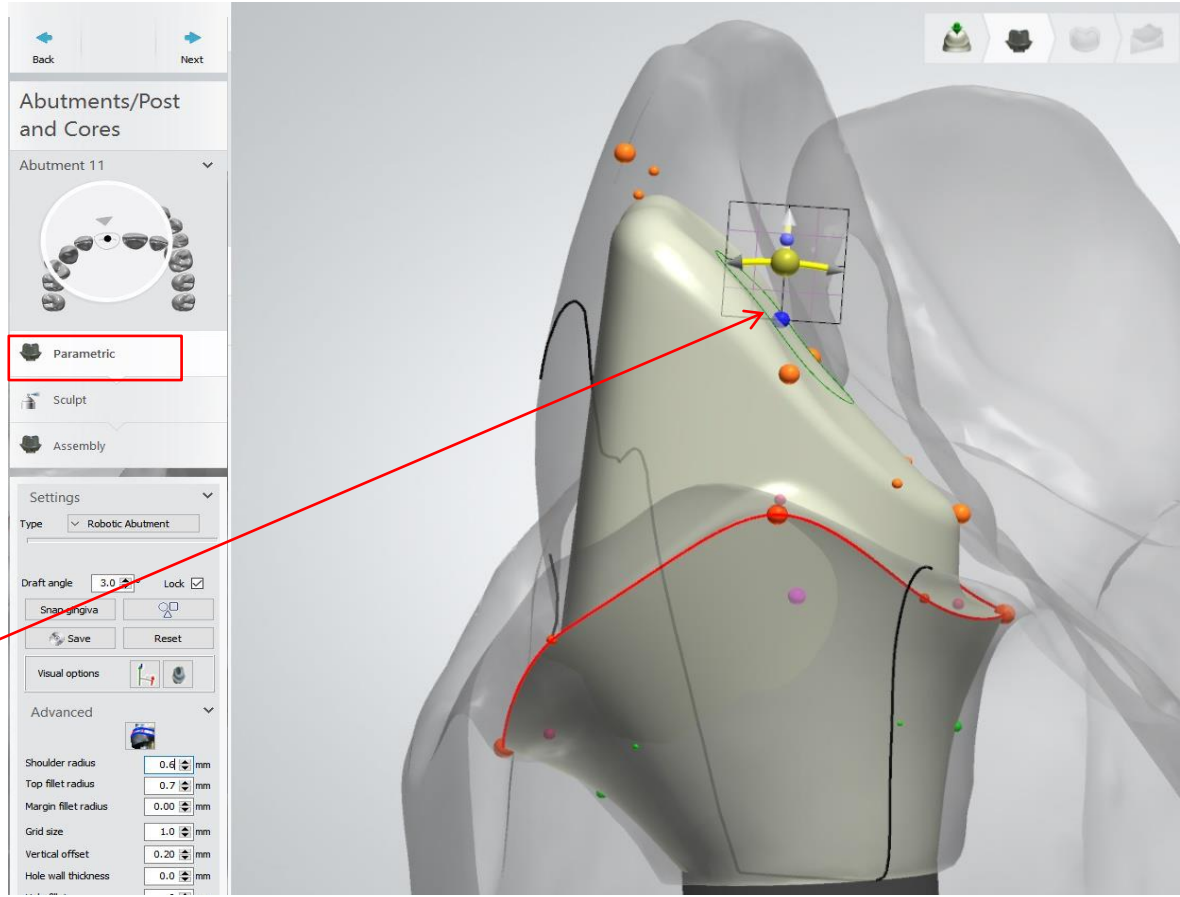


Vertical offset for hybrid abutments is given by the Ti-Base.

Design of one-piece titanium abutments and hybrid abutments

Abutment design: „Parametric“

Adapt abutment angle according to the present situation and antagonist.



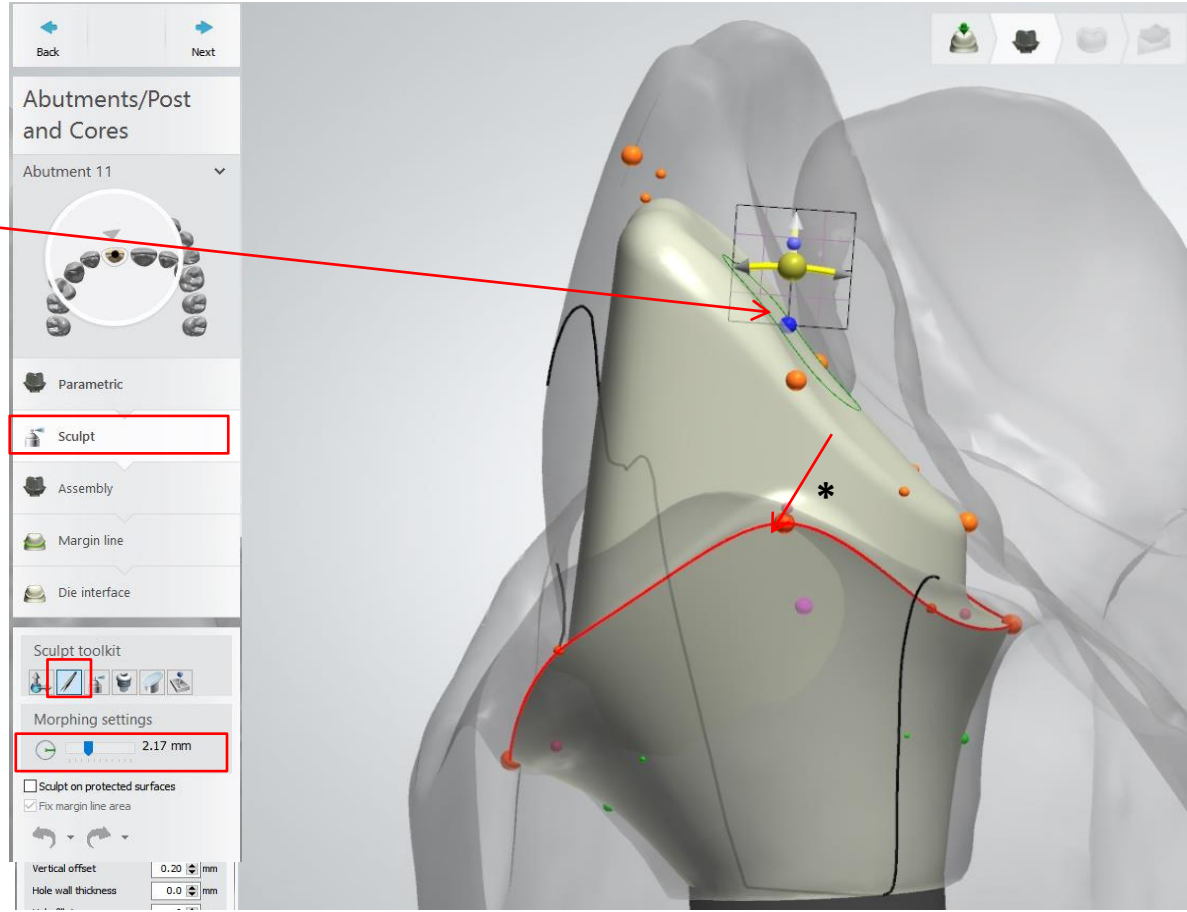
Design of one-piece titanium abutments and hybrid abutments

Use morphing settings only on anterior teeth.

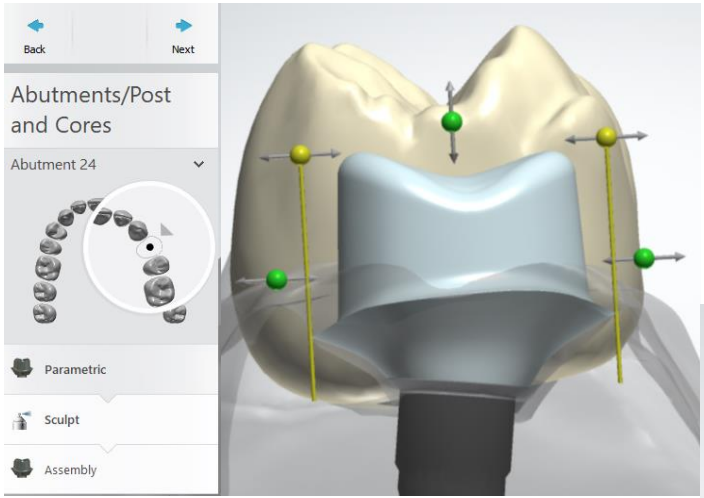
Shaping of the abutment like a shovel should only be used for abutments in the anterior region.

Abutment „Sculpt“

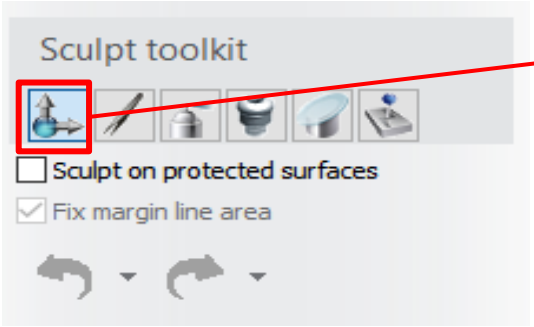
„Sculpt toolkit“; „Morphing settings“; direction of use: towards cervical-labial *

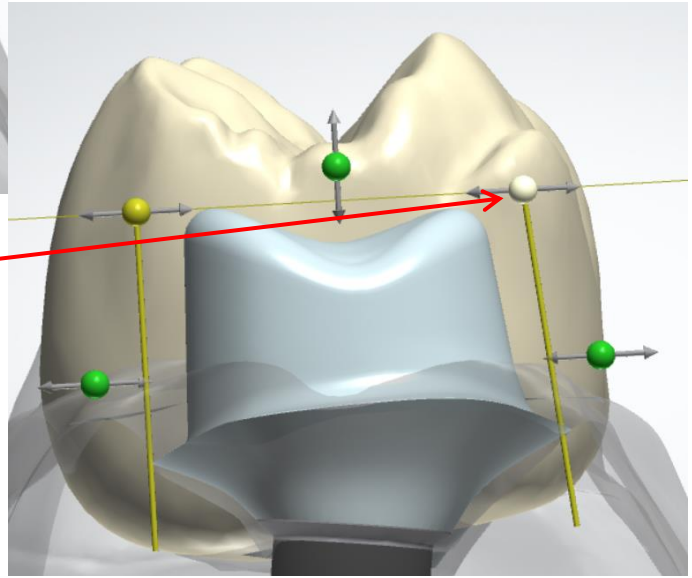


Design of one-piece titanium abutments and hybrid abutments



Adaption of surfaces on abutments (premolars & molars) by using global transformation from sculpt toolkit.

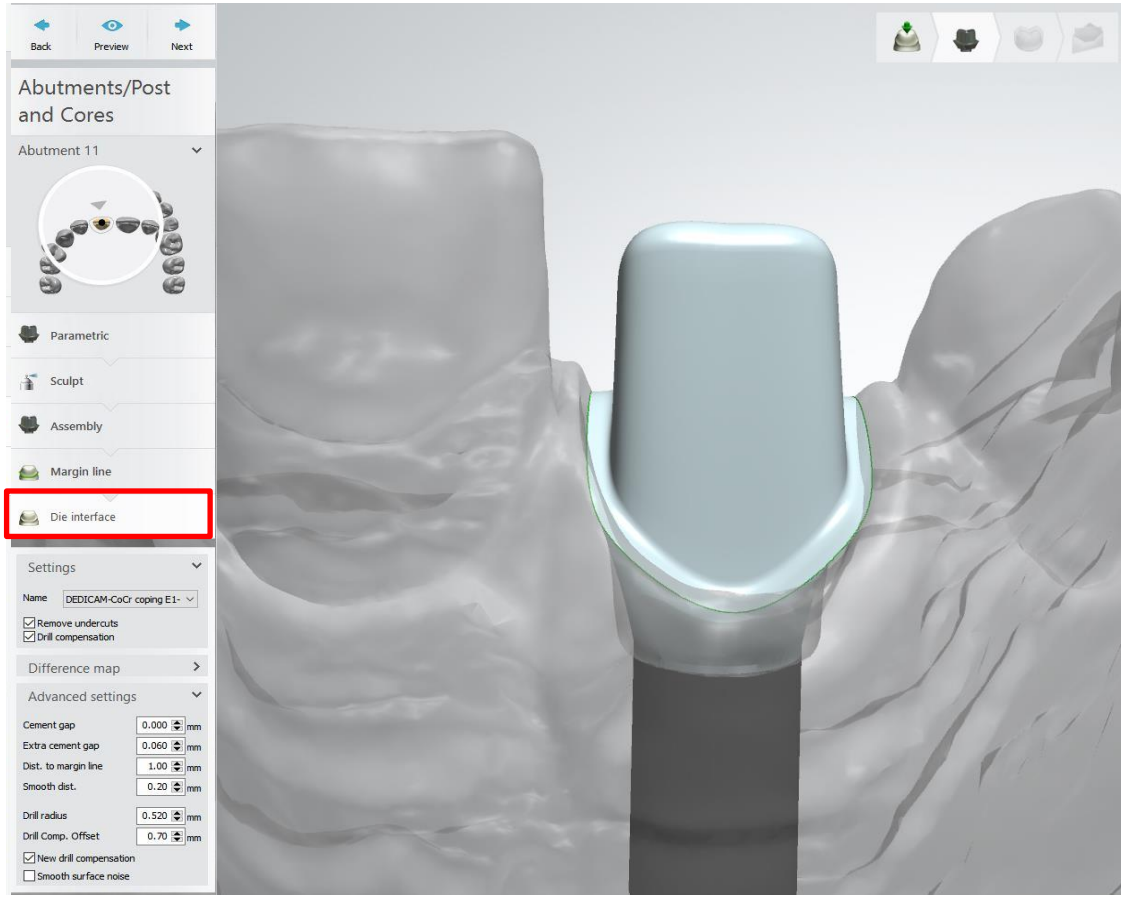




Design of one-piece titanium abutments and hybrid abutments

Important values for abutment designs to ensure a perfect cement gap.

Die interface values to control the fitting of the corresponding structure.



Design of one-piece titanium abutments and hybrid abutments

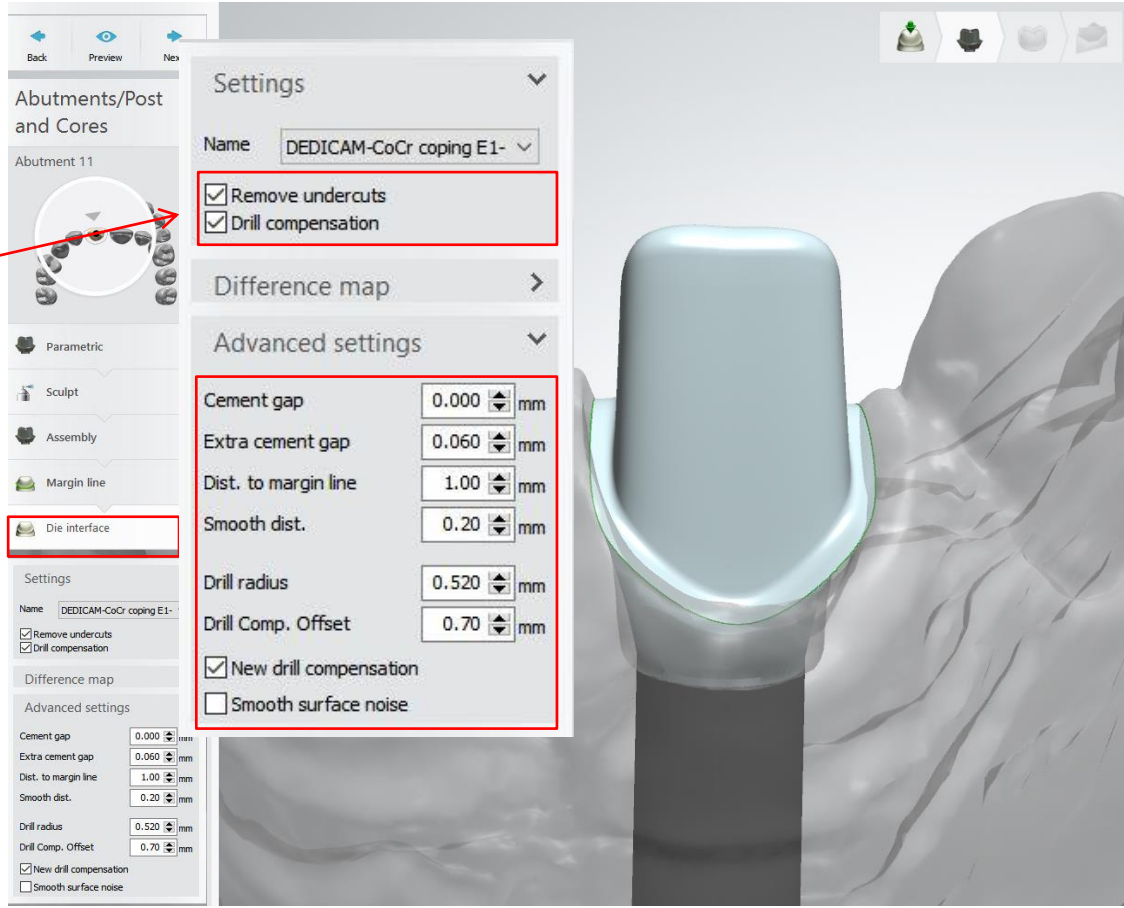
Important values for abutment designs to ensure a perfect cement gap.

Note:
Important for file-splitting

Settings which must be activated:
- Remove undercuts
- Drill compensation

Advanced settings:
- Cement gap
- Extra cement gap
- Distance to margin line
- Smooth distance
- Drill radius
- Drill compensation offset

These values are driven by the material and shouldn`t be changed.

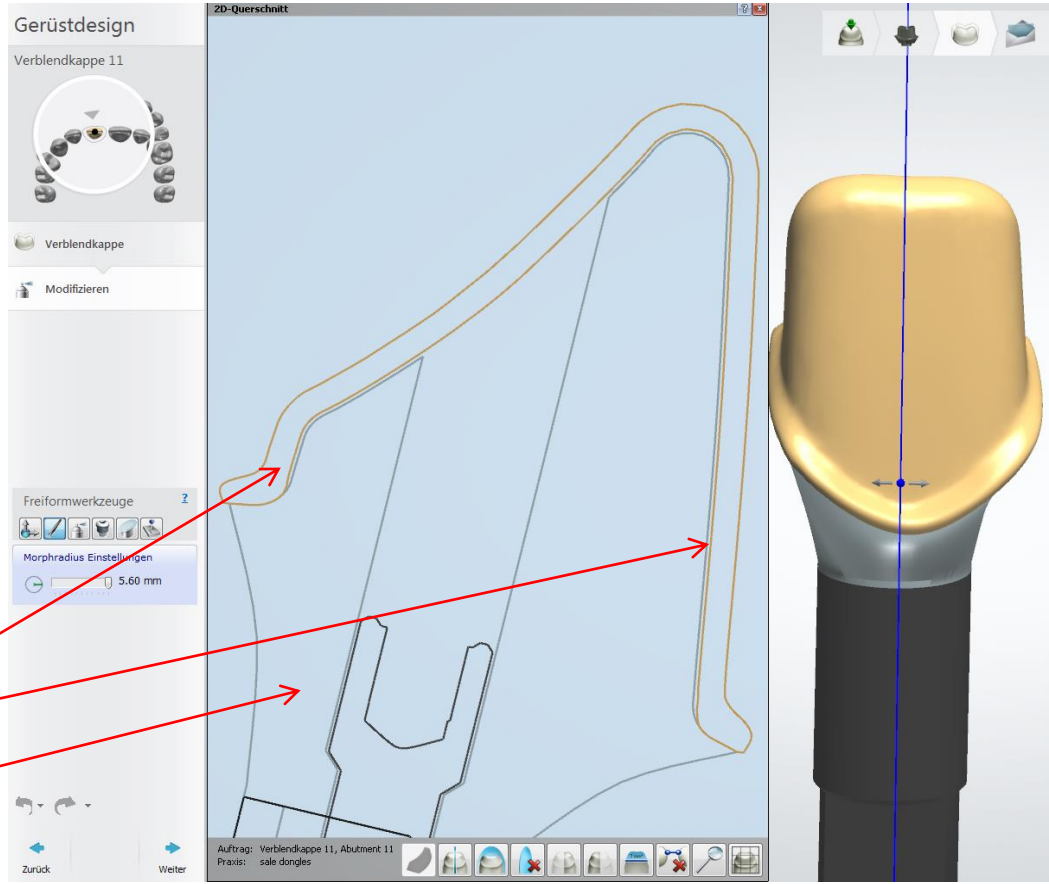


Design of one-piece titanium abutments and hybrid abutments

Important values for abutment designs to ensure a perfect cement gap.

2D-cross-section
Example: Coping on abutment 11

Correct top fillet radius and die interface parameter ensures uniform cement gap and perfect fit of corresponding frame/anatomy.



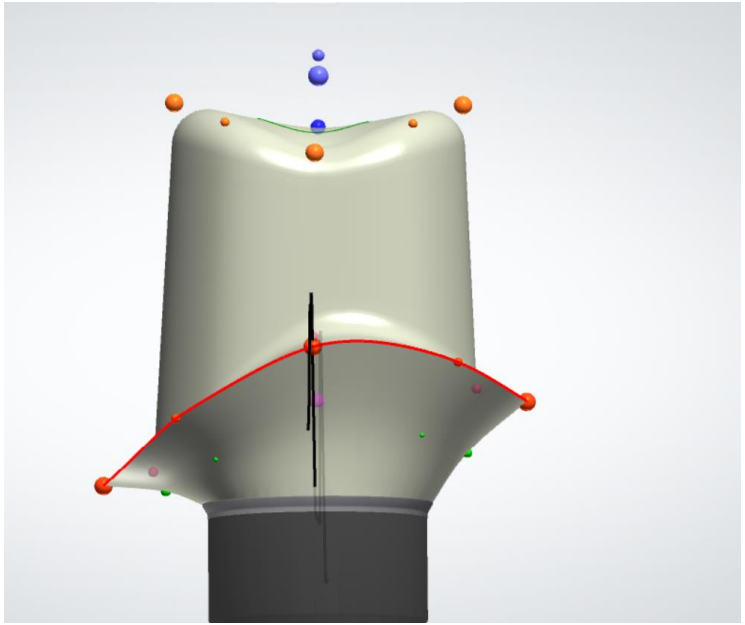
Frame / crown layer

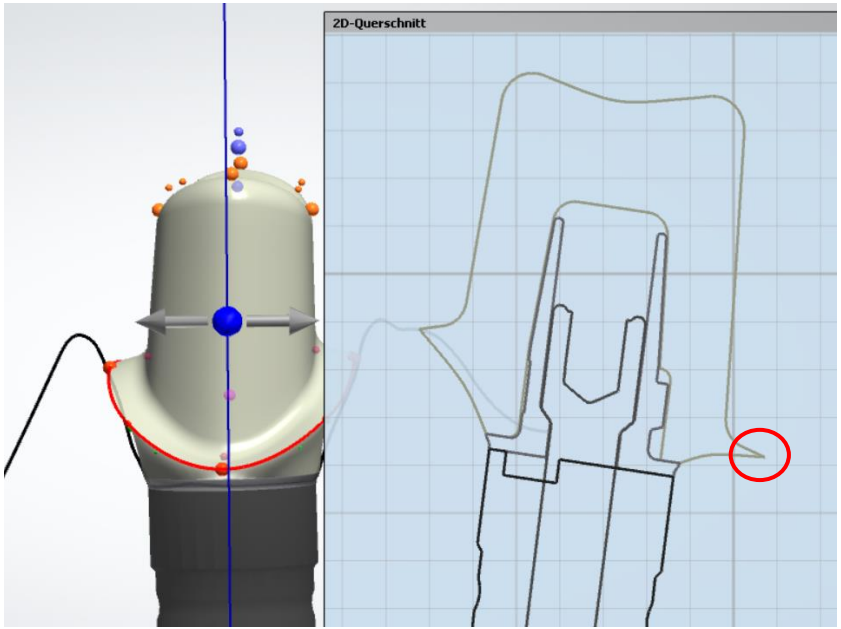
Cement gap

Abutment

Design of one-piece titanium abutments and hybrid abutments

Margin design for "thin" tapered margin line

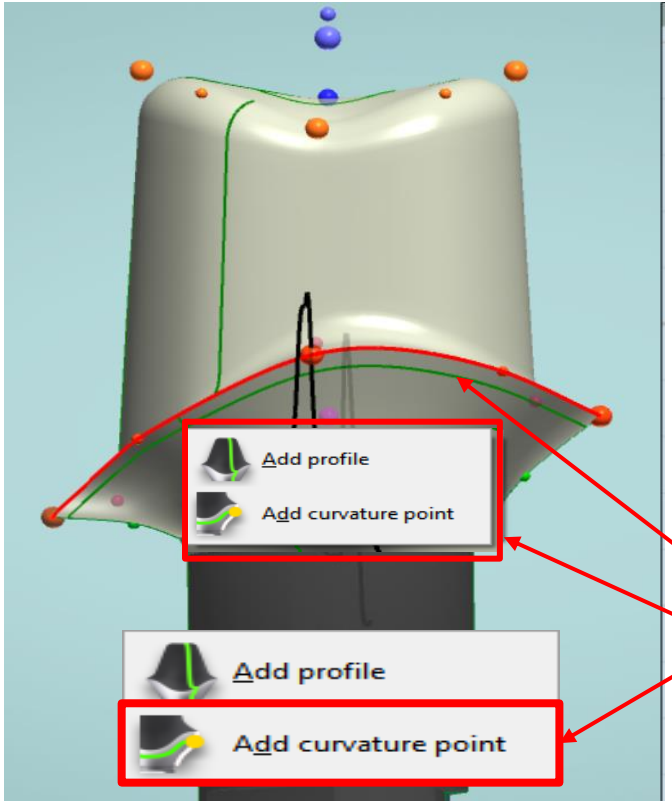


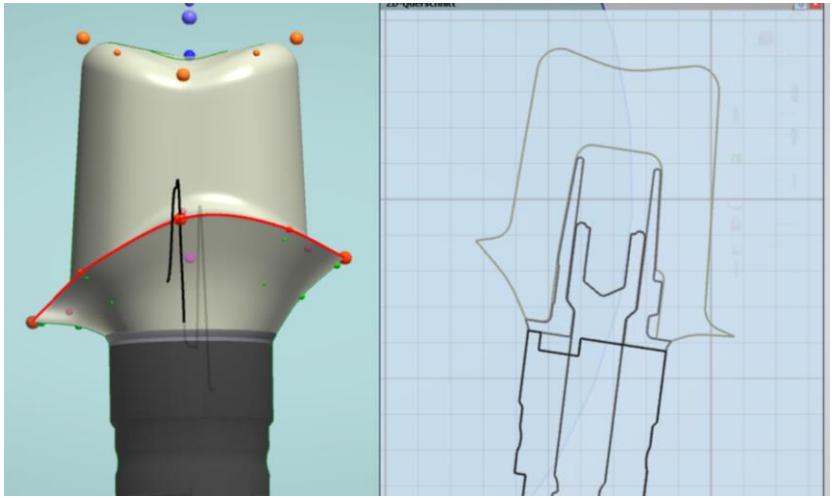


Problem: Thin margin line can negatively influence the milling result (partial chipping at the edges) and lead to redesign and re-milling of the structure as a possible cause of delivery delays.

Design of one-piece titanium abutments and hybrid abutments

Margin design for "thin" tapered margin line



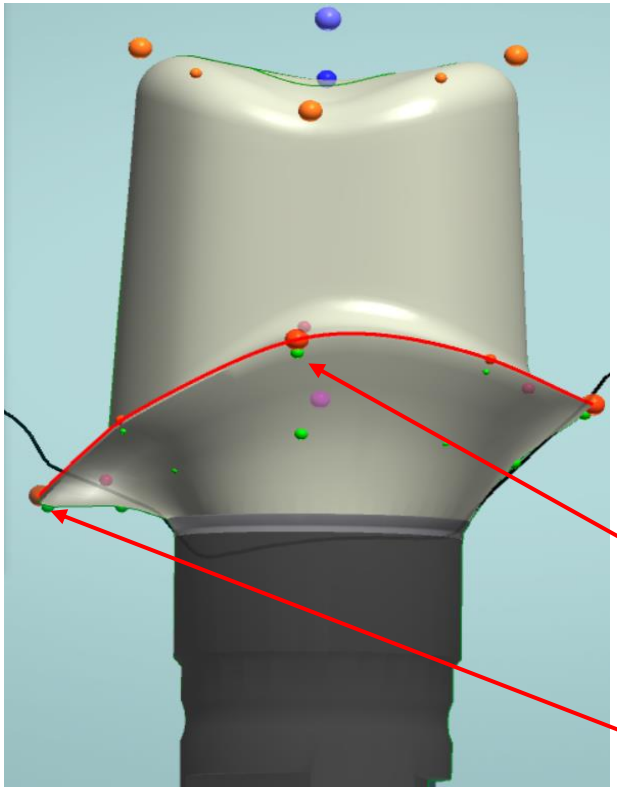


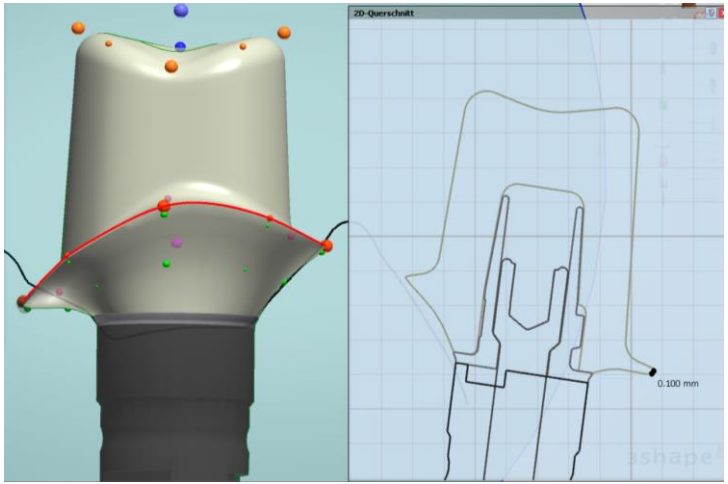
Tip: targeted edge reinforcement

- Position the mouse pointer slightly below the margin line
- Right mouse button - selection menu appears
- Select menu item "Add curvature point”
- Another horizontal row of green dots is created slightly below the abutment shoulder

Design of one-piece titanium abutments and hybrid abutments

Margin design for "thin" tapered margin line





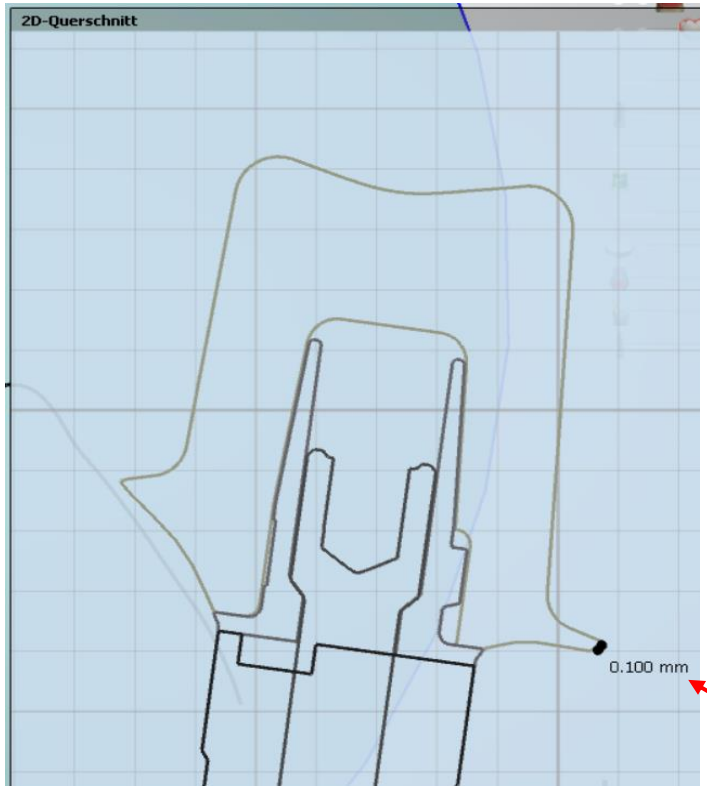
Tip: targeted edge reinforcement

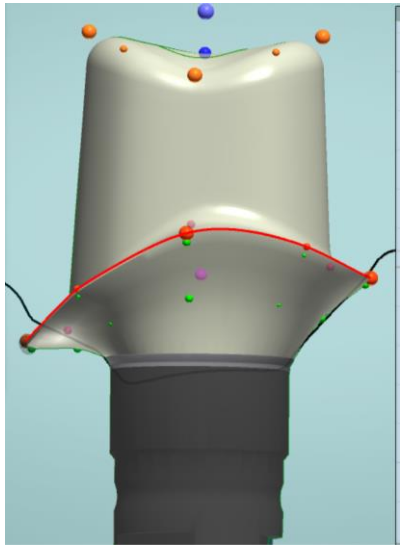
Use curvature points to reinforce the margin line. Position mouse pointer on green dot. When activated with left mouse button all points on this curvature line change color to yellow

Drag curvature line with activated "ctrl" key together to the outside and pull to the level of the abutment shoulder and position it in height

Design of one-piece titanium abutments and hybrid abutments

Margin design for "thin" tapered margin line





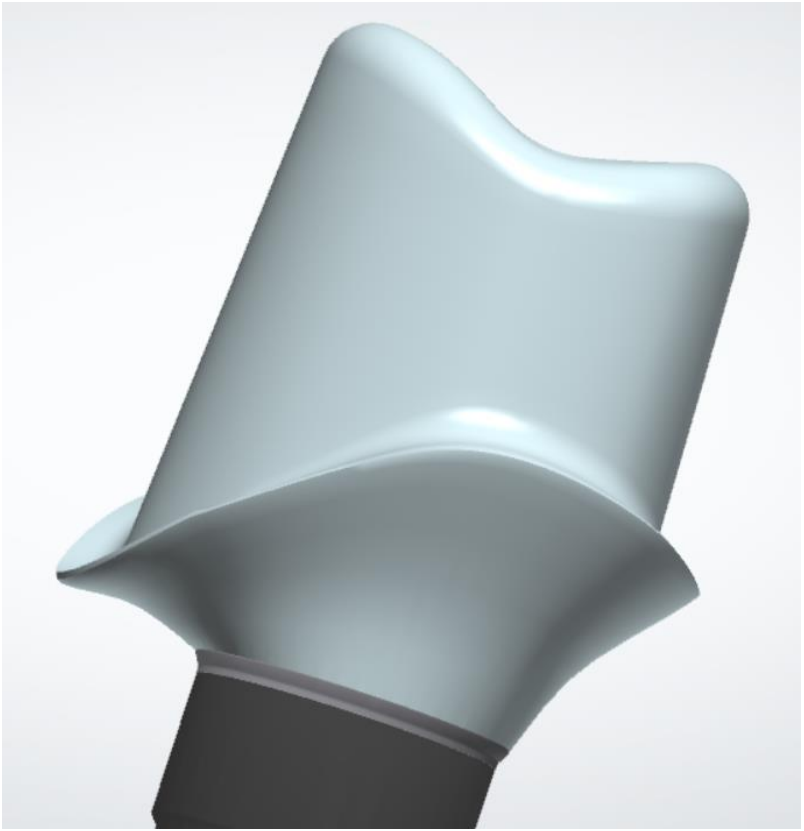
<u>Tip: targeted edge reinforcement</u>

Use curvature points to reinforce the margin line

The step can be reinforced to approx. 0.10 - 0.15mm without loss of the shoulder contour

Design of one-piece titanium abutments and hybrid abutments

Margin design for "thin" tapered margin line



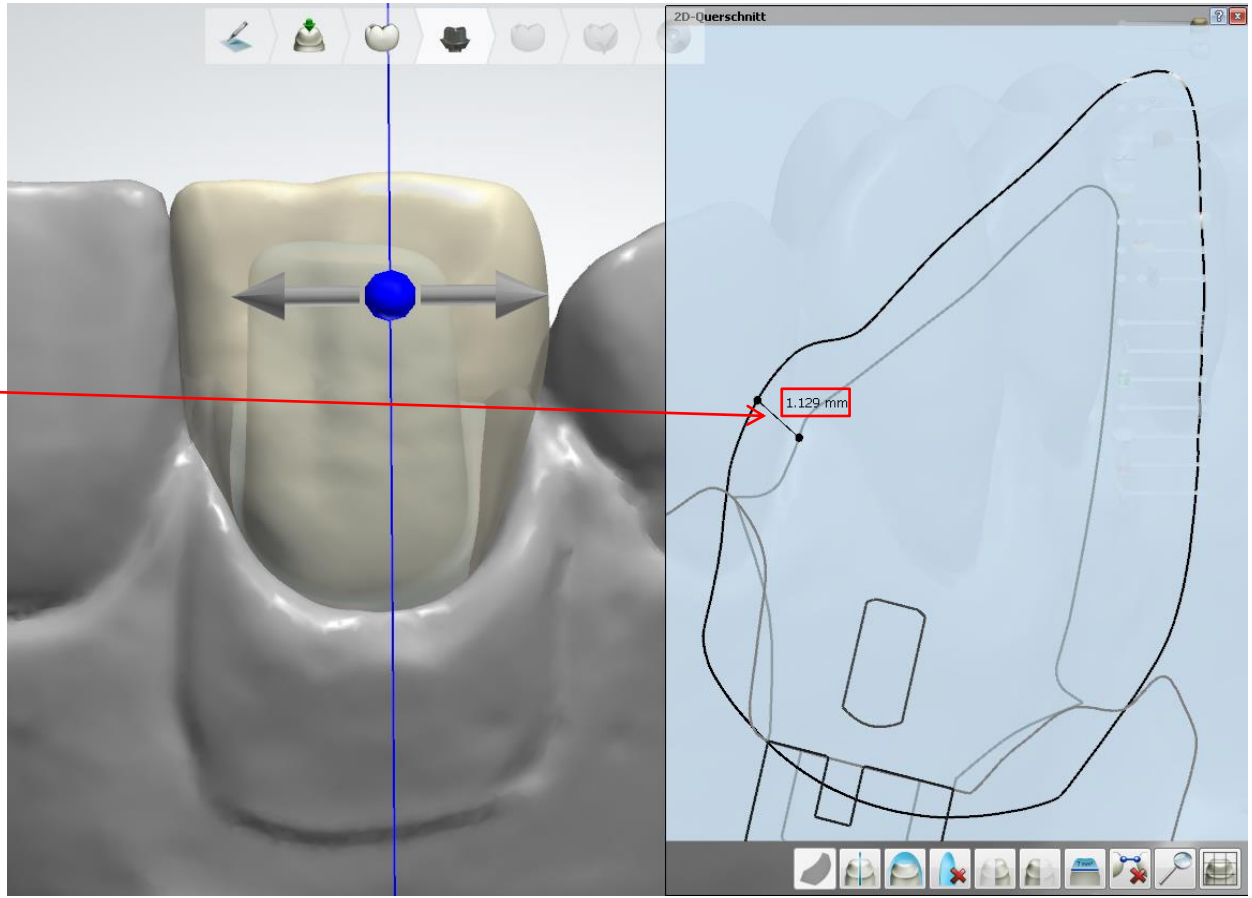
Design of threaded holes M1.4 on one-piece titanium abutments for horizontal screwed crowns, fixed with the “Bredent screw”

Design of threaded holes M1.4 on one-piece titanium abutments

Abutment design step

Wax up or virtual tooth makes it easier to create individual tooth.

Minimum wall thickness for frame or crown: 0.9mm



Design of threaded holes M1.4 on one-piece titanium abutments

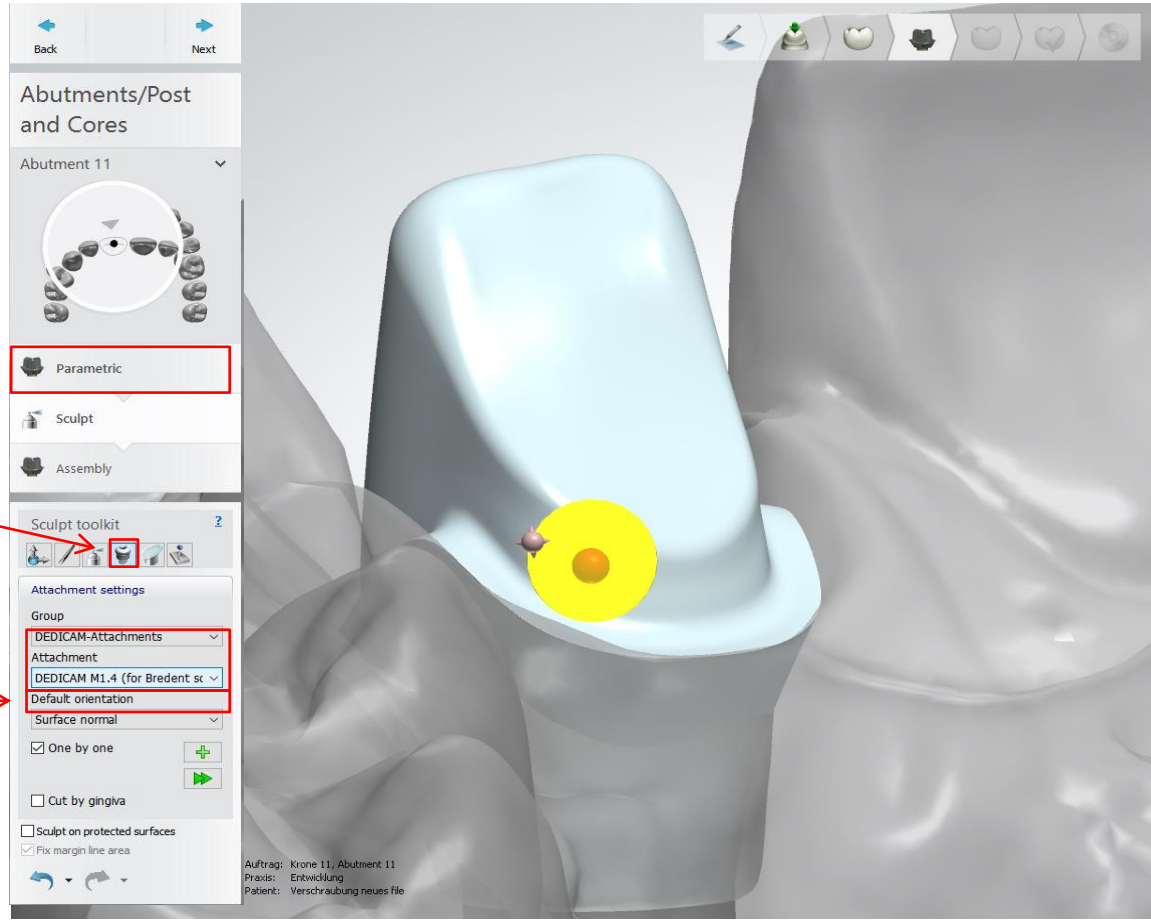
Design abutment and create horizontal screw connection:

Design of abutment should be parametrically completed

Modify – Sculpt toolkit:
Activate attachment

Type: DEDICAM M1.4 (for Bredent screw)

Adjust attachment position:
Correct view: facing the planned position of horizontal screw connection



Design of threaded holes M1.4 on one-piece titanium abutments

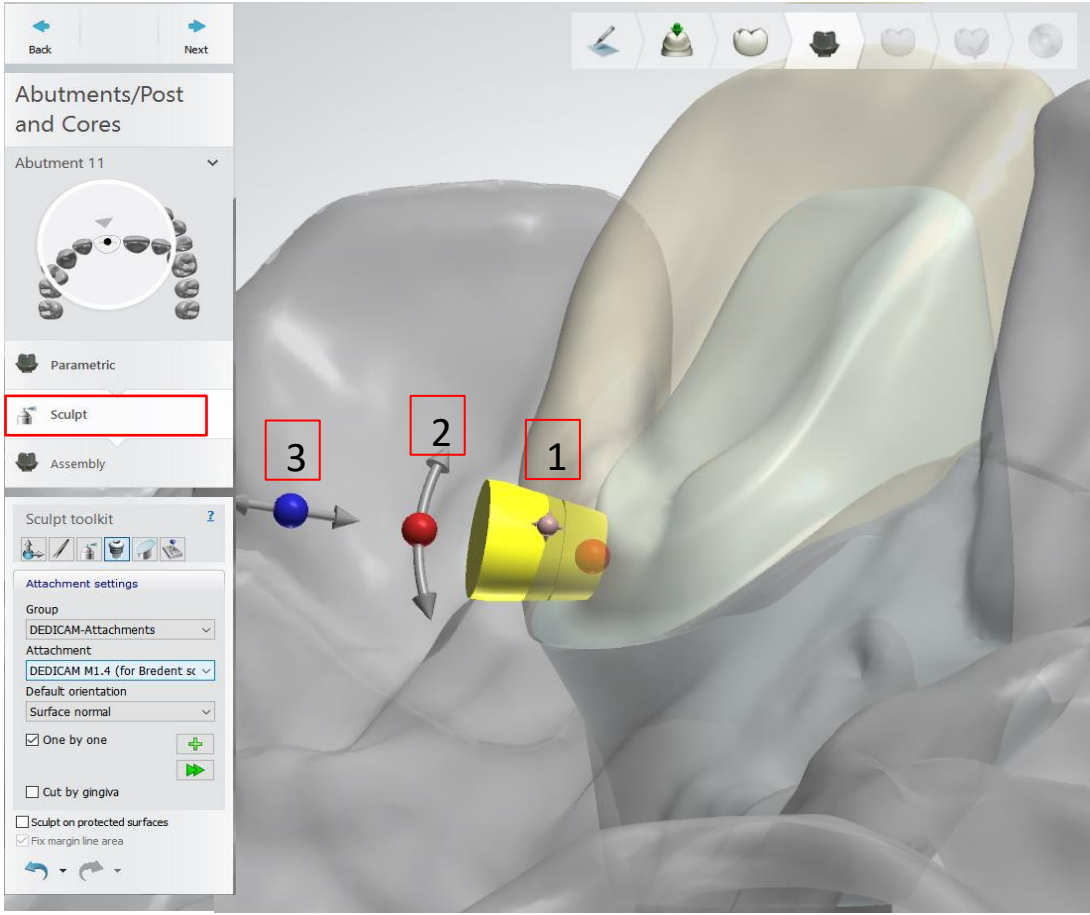
Design abutment and create horizontal screw connection:

Adjust attachment position
Correct view: facing the planned position of horizontal screw connection

Note:
Wax up or virtual tooth makes it easier to create individual tooth.

Fine adjustment of the attachment possible:

- Position (1)
- Angle (2)
- Depth into the abutment (3)



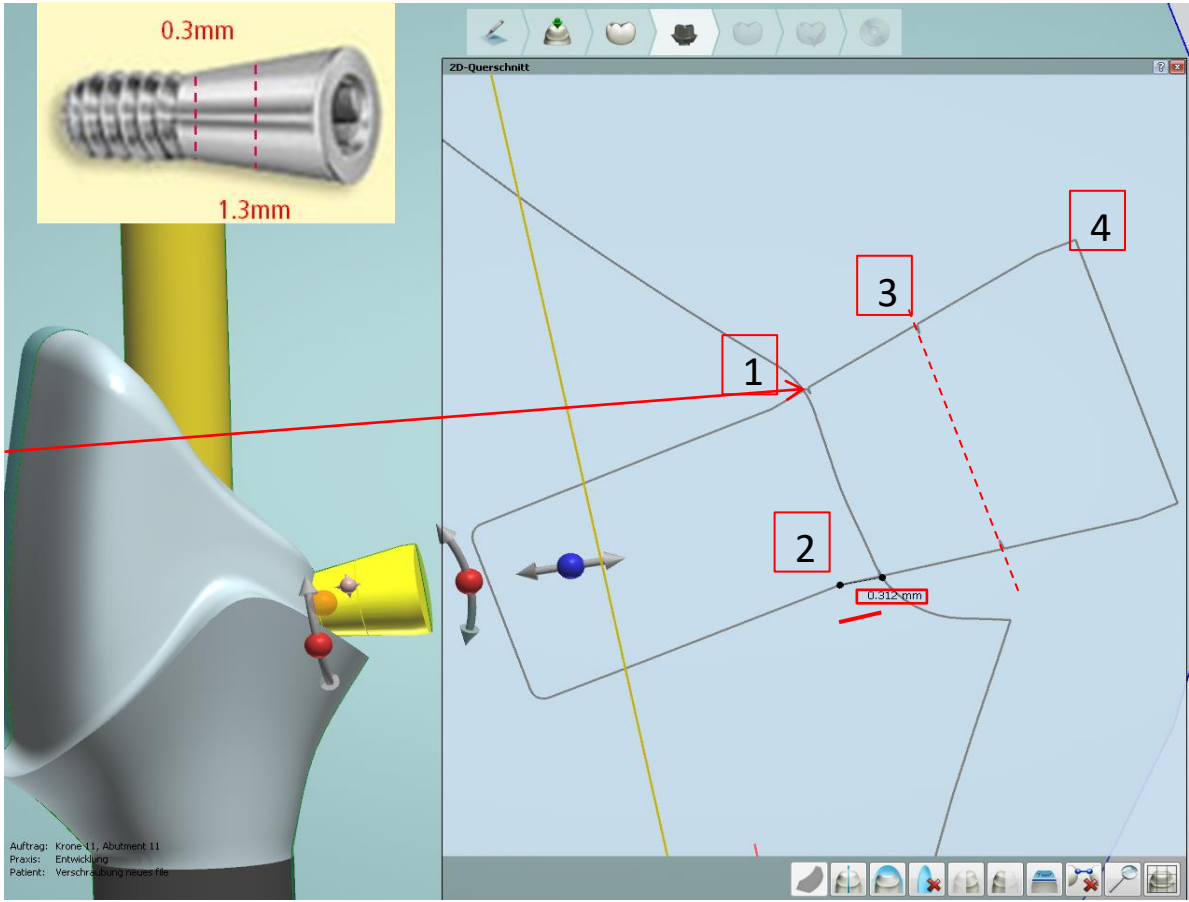
Design of threaded holes M1.4 on one-piece titanium abutments

Design abutment and create horizontal screw connection:

DEDICAM Attachment „Horizontal screw connection“:
Marking for correct usage of bredent screw M1.4 (according to the instructions for use)

Marking on DEDICAM attachment:

- Marking has to be positioned into the abutment (1)
- Conical, part of screw head 0.3mm into the abutment (2)
- Screw can be shortened (max. 1.3mm) (3)
- Total length of screw (4)



Design of threaded holes M1.4 on one-piece titanium abutments

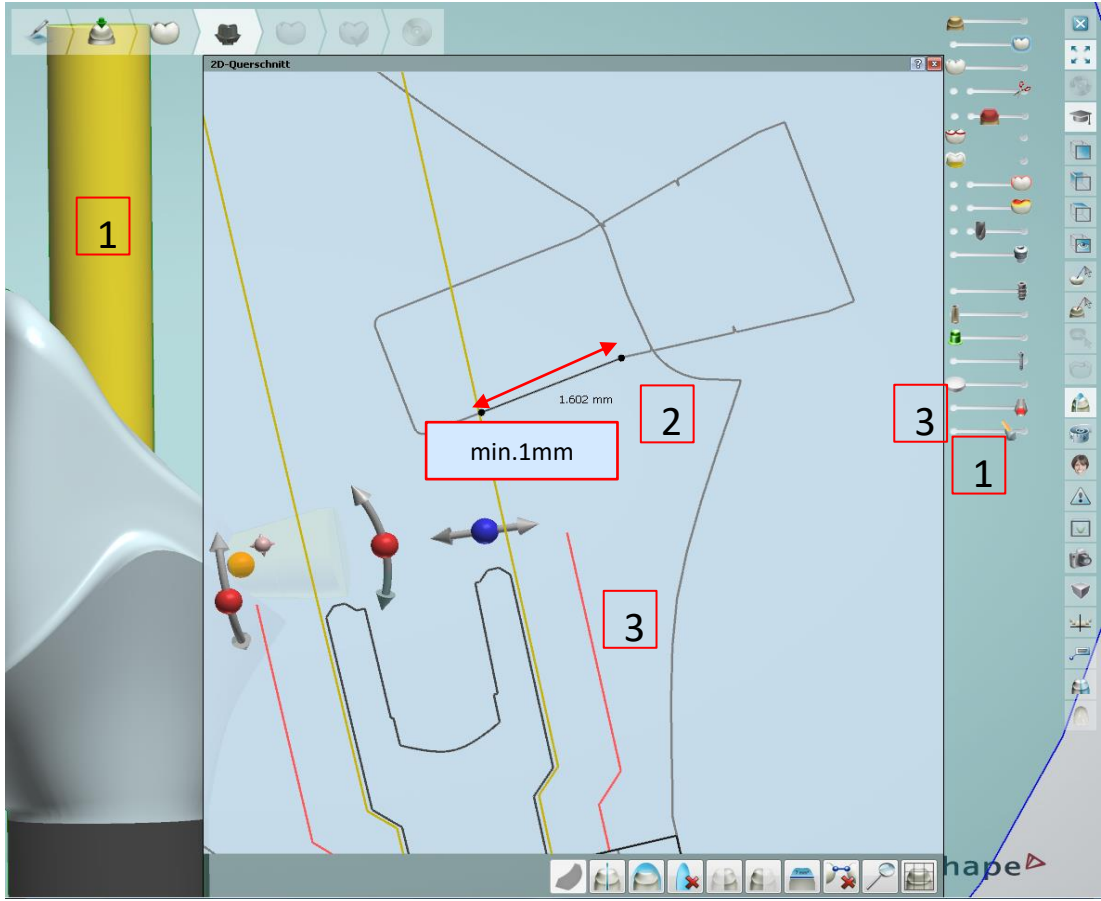
Design abutment and create horizontal screw connection:

Check correct positioning of DEDICAM attachment:

- Show screw channel (1)
- Screw thread needs to be positioned at least 1mm into the abutment (2)
- Show minimum geometry and screw (3)

Notes:

- The horizontal screw has to be positioned above the minimum geometry and abutment screw.
- Don‘t position the screw inside the screw channel if possible.



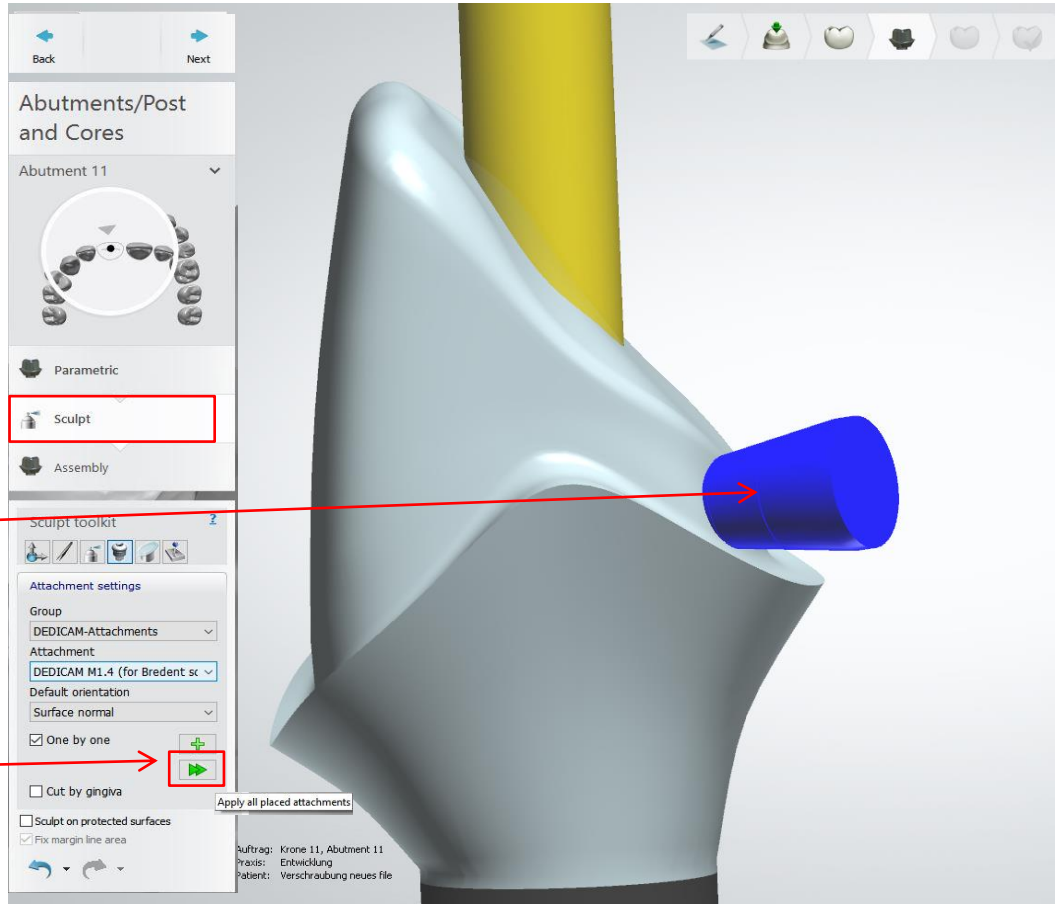
Design of threaded holes M1.4 on one-piece titanium abutments

Design abutment and create horizontal screw connection:

Complete positioning of „DEDICAM horizontal screw connection“:

Marking for orientation can be seen

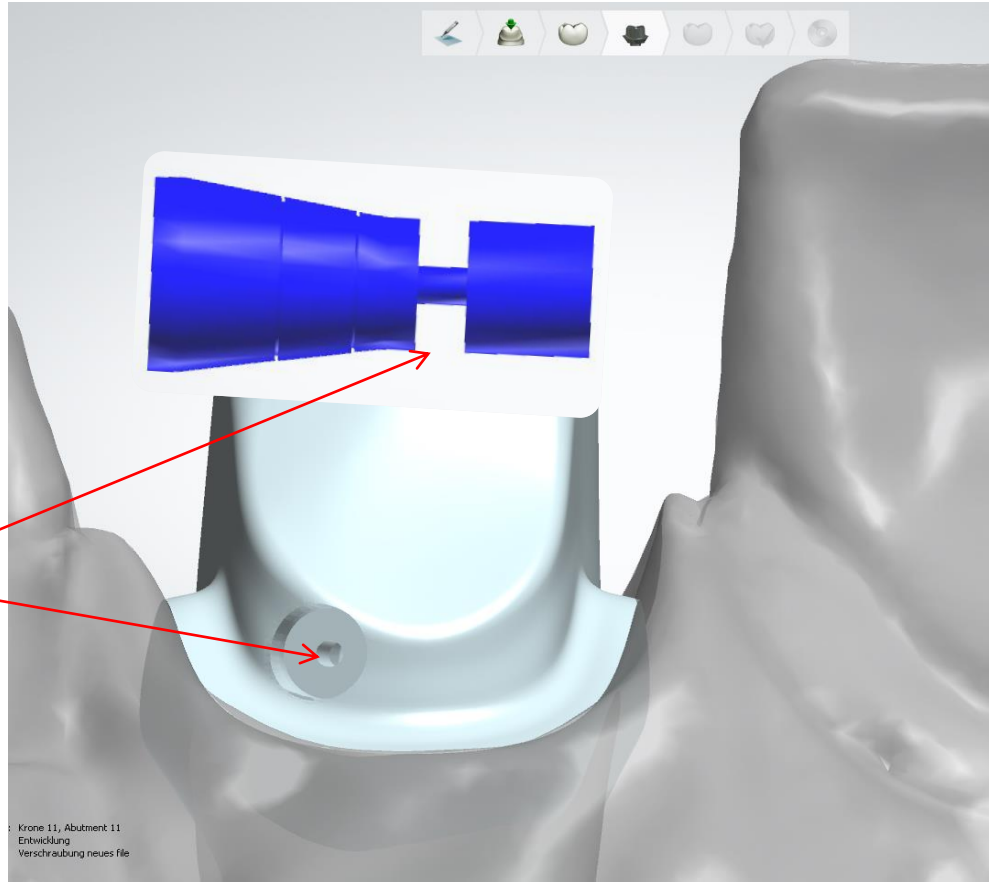
„Apply all placed attachments“



Design of threaded holes M1.4 on one-piece titanium abutments

Notes:

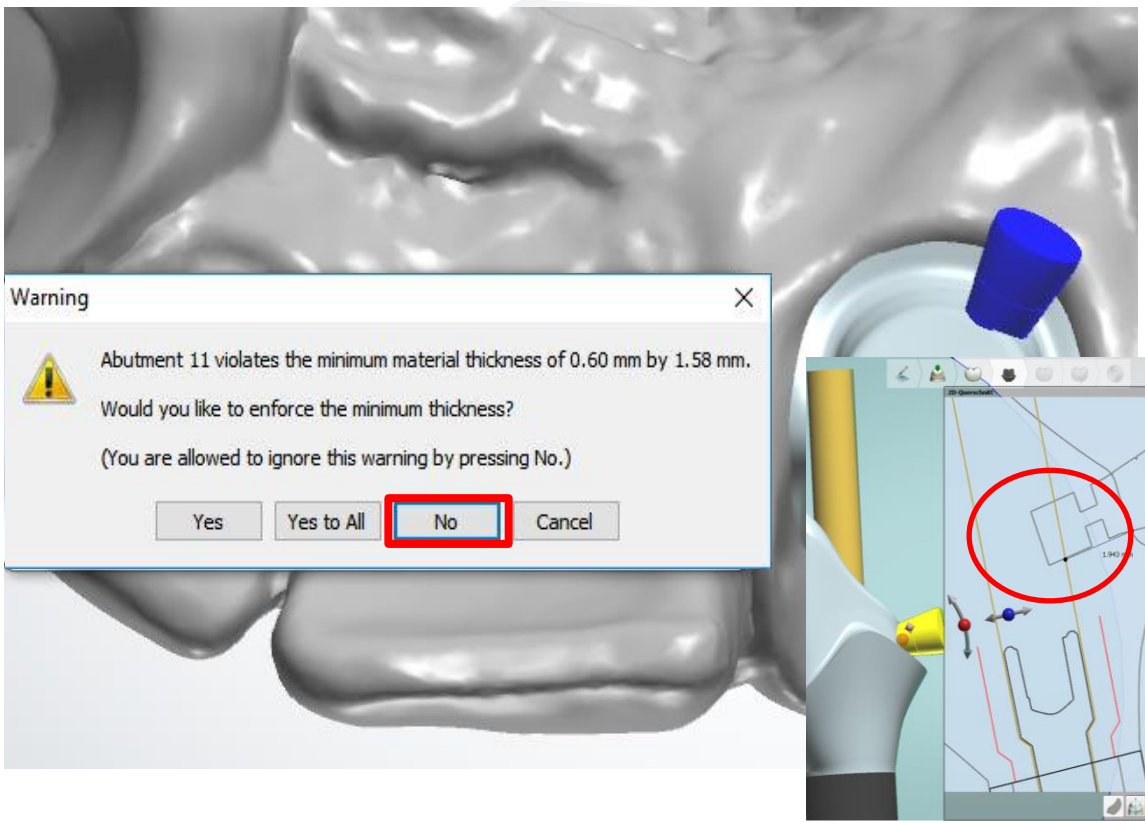
- The screw hole is not displayed authentically. This is necessary and has qualitative benefits in the production.
- Furthermore it is not possible to produce screw holes in frames or crowns.



Design of threaded holes M1.4 on one-piece titanium abutments

Notes:

- If the position of the horizontal screw has been complied according to the guidelines, the warning “Enforce minimum wall thickness" can be ignored or confirmed with “No”.
- Make sure that the warning only refers to the position of the screw.



Design of one-piece zirconia abutments for CERALOG® Hexalobe implants

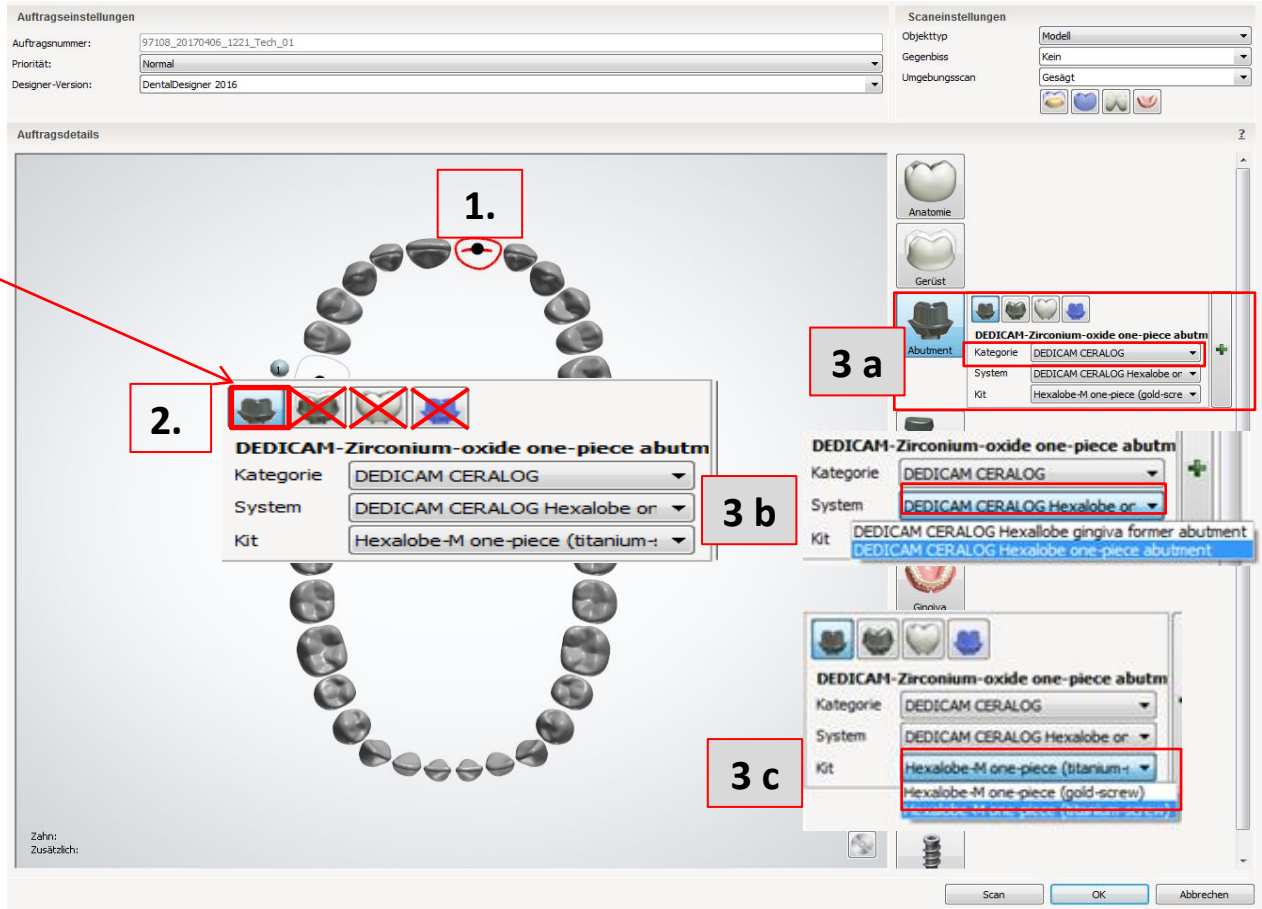
Design of one-piece zirconia abutments for CERALOG ® Hexalobe implants

Order form:

1. Select tooth position
2. Select abutment type

Important: Only individual abutment available

3. Select CAD library
   a. Categorie: „DEDICAM CERALOG“
   b. System: „DEDICAM CERALOG Hexalobe one-piece abutment“
   c. Kit: „Hexalobe-M one-piece“
      optionally:
      - gold-screw
      - titanium-screw

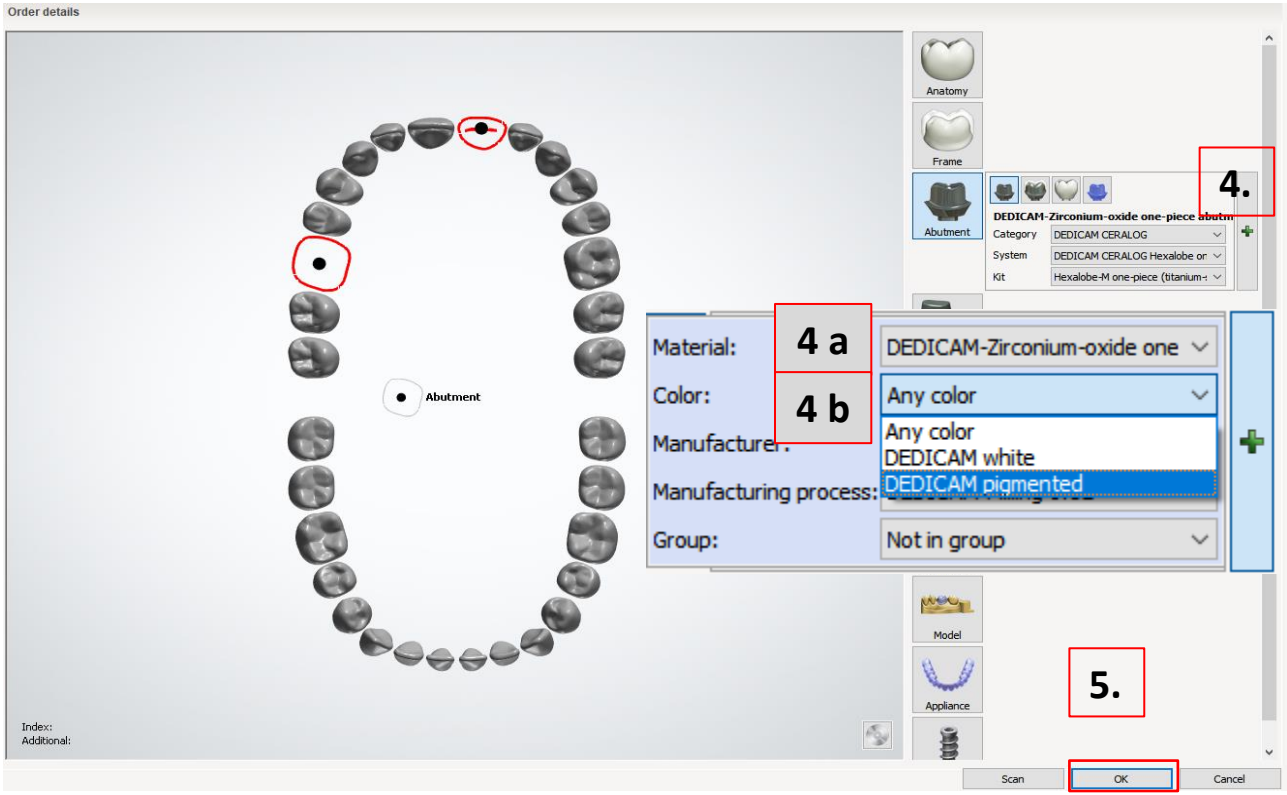


Design of one-piece zirconia abutments for CERALOG ® Hexalobe implants

Order form:

4. Material definition
   a. Material: „DEDICAM-Zirconium-oxide one-piece“
   b. Color optionally:
      - „DEDICAM white“
      - „DEDICAM pigmented“ (= A1 / A2)

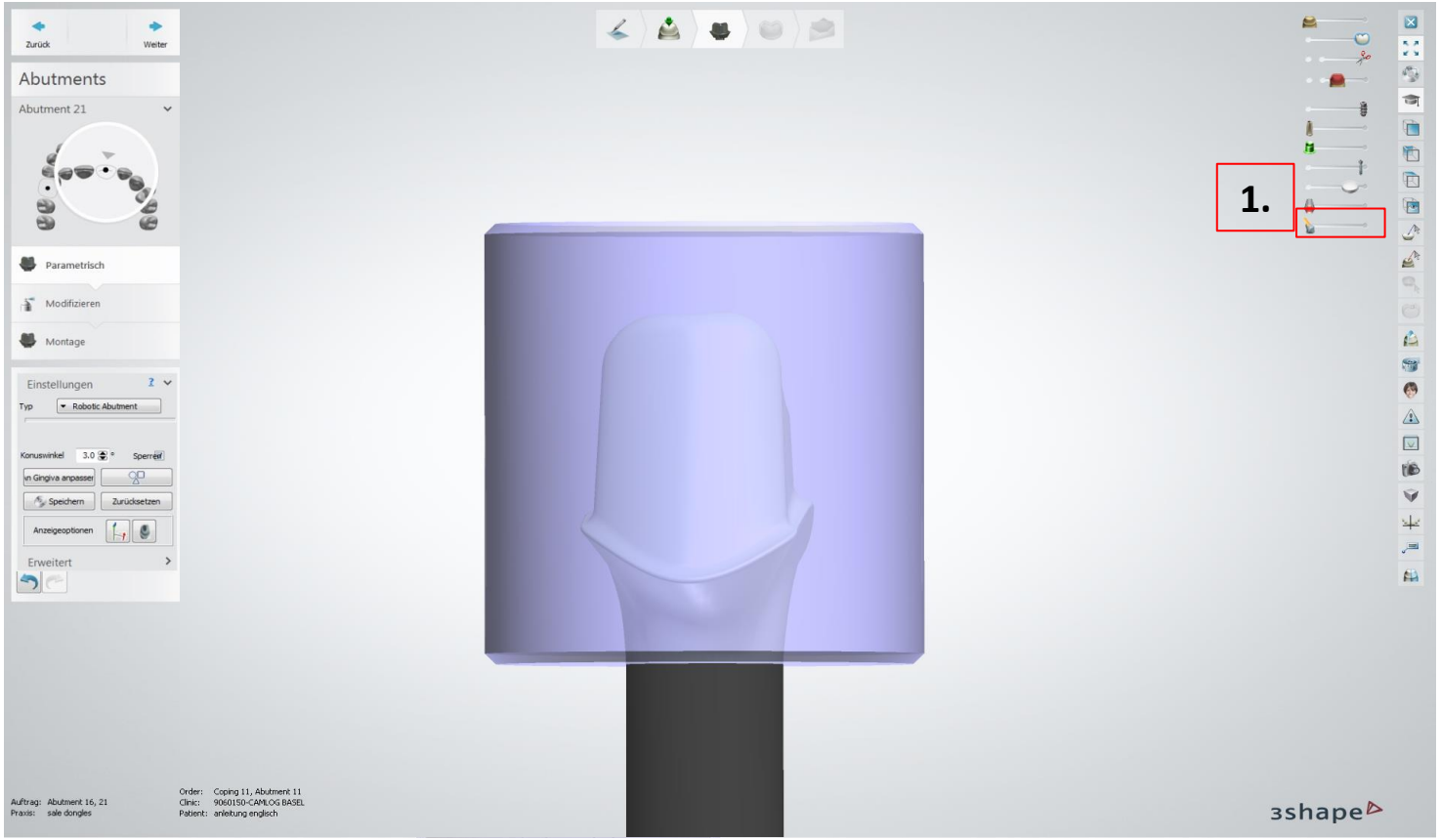
5. „OK“ to save and close the order form



Design of one-piece zirconia abutments for CERALOG ® Hexalobe implants

Abutment design: classic design (no sharp edges)

1. Check blank dimension by using the slider because it differs from Ti-blank size



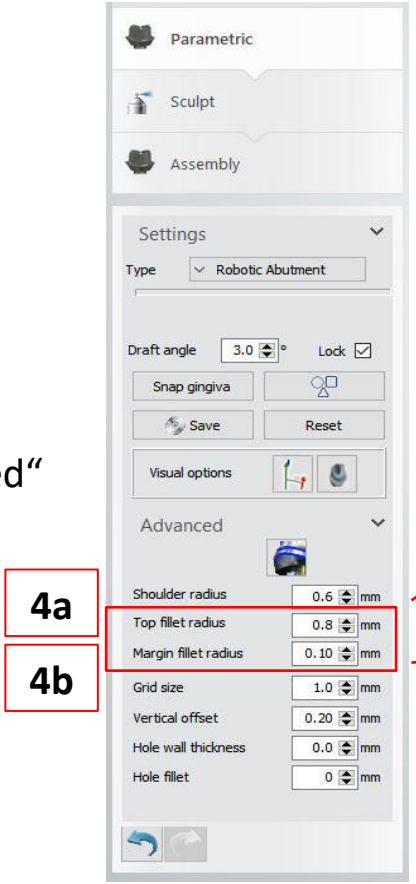
Design of one-piece zirconia abutments for CERALOG ® Hexalobe implants

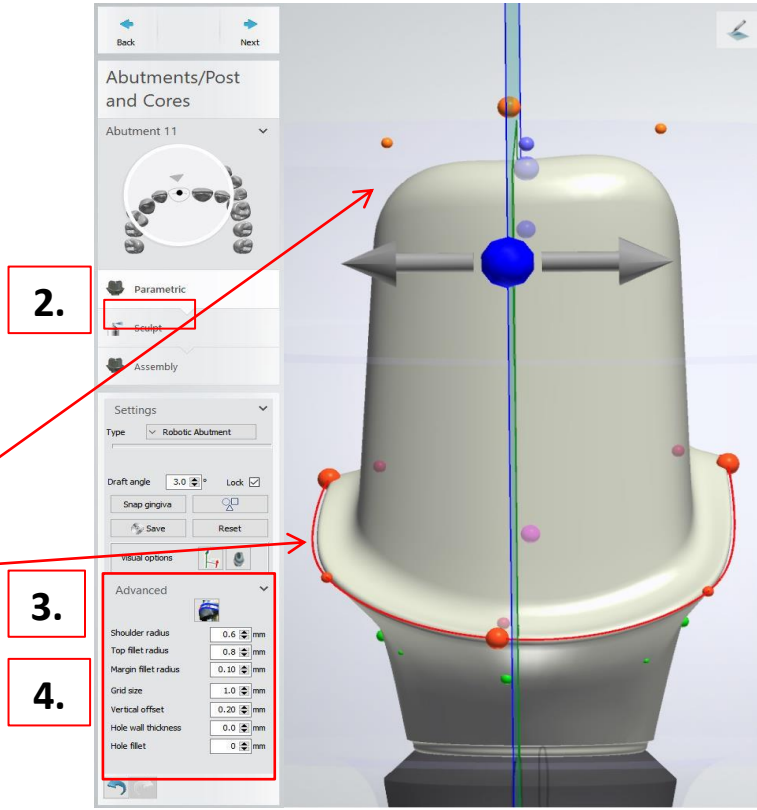
Abutment design: classic design (no sharp edges)

2. Parametric abutment

3. Open drop down menu „Advanced“

4. Adjust the value for:
   - Top fillet radius: **0.8mm**
   - Margin fillet radius: **0.10mm**



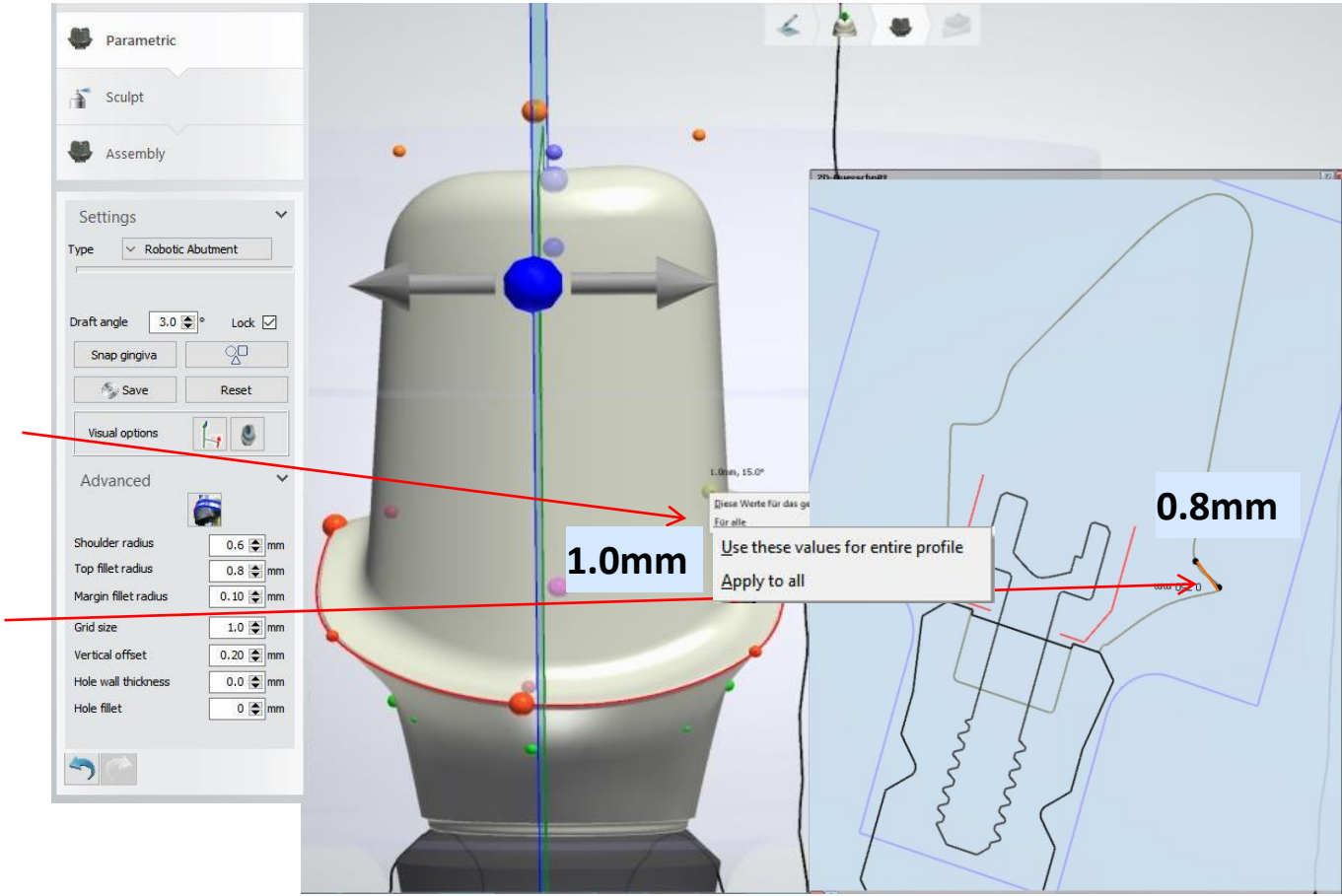


Design of one-piece zirconia abutments for CERALOG ® Hexalobe implants

Abutment design: classic design (no sharp edges)

Note:

- Expand shoulder width from 0.8 to 1.0mm
- Right click on purple dot: *„Use these values for entire profile“*
- Due to rounding radius the shoulder width is approximately 0.8mm



Design of one-piece zirconia abutments for CERALOG ® Hexalobe implants

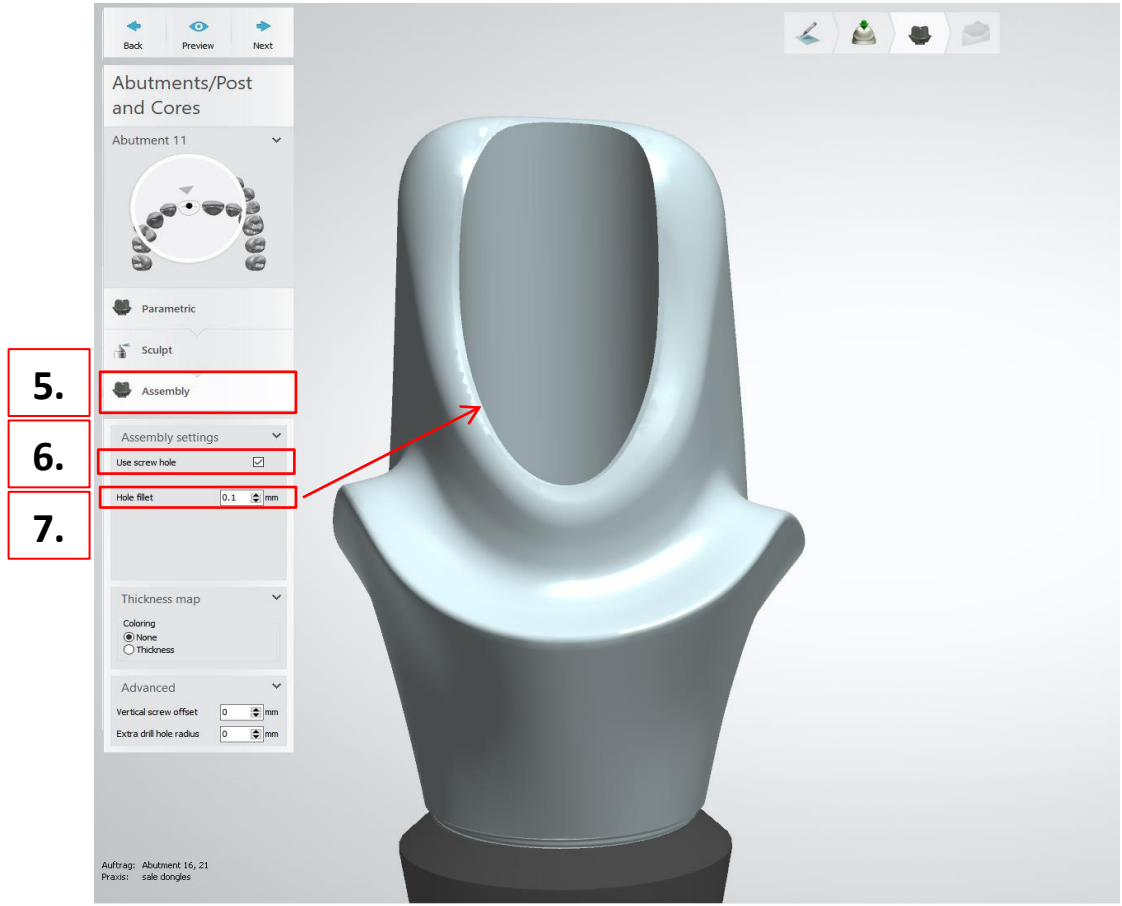
Abutment design: classic design
(no sharp edges)

5. Abutment „Assembly“

6. Flag „Use screw hole“

7. Adjust value „Hole fillet“ to 0.1mm

Edges on screw hole
These edges might be slightly adapted on production site if pull-outs occur due to its sharp design.



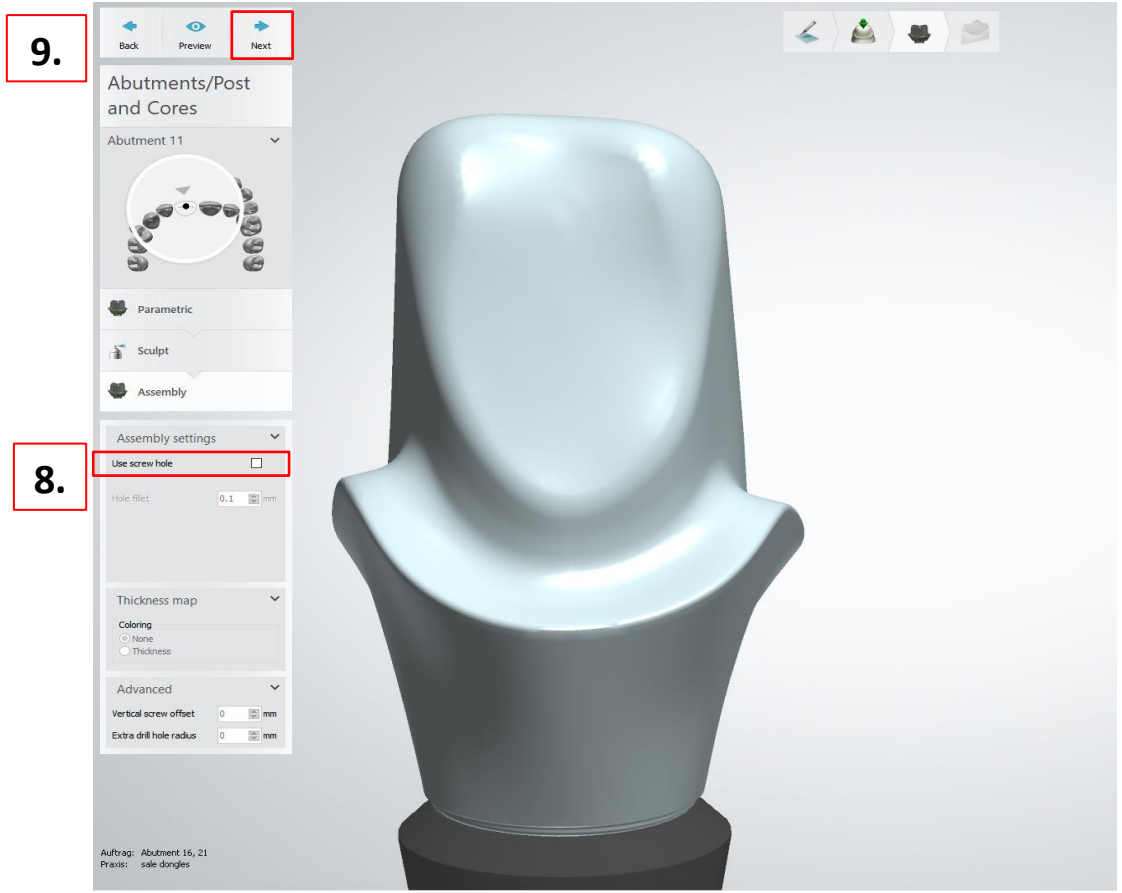
Design of one-piece zirconia abutments for CERALOG ® Hexalobe implants

Abutment design: classic design
(no sharp edges)

8. Unflag „Use screw hole“
→ **The screw hole will not be saved**

9. Press „Next“ to display the final design and dispatch to DEDICAM®

<u>Attention:</u>
The displayed hexalobe-connection is distorted and not millable locally.



Adding a MK1 attachment to a bridge or crown block

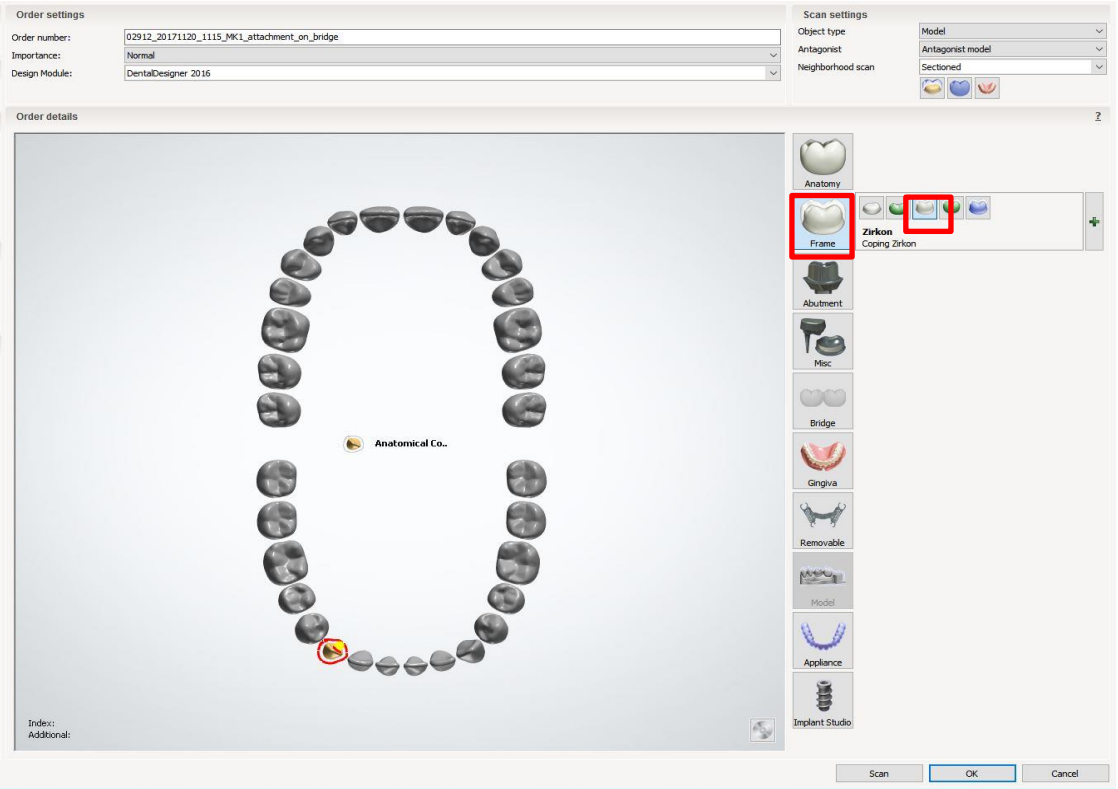
Adding a MK1 attachment to a bridge or crown block

In order to position attachments to fixed bridges or crown blocks or to cut them by the gingiva, note the explanations with the example designs.

For the design of attachments it is necessary to use the up-to-date DEDICAM® CAD library.

Adding a MK1 attachment to a bridge or crown block

Example: tooth 43 + 44 frame, blocked / MK1 distal on tooth 44

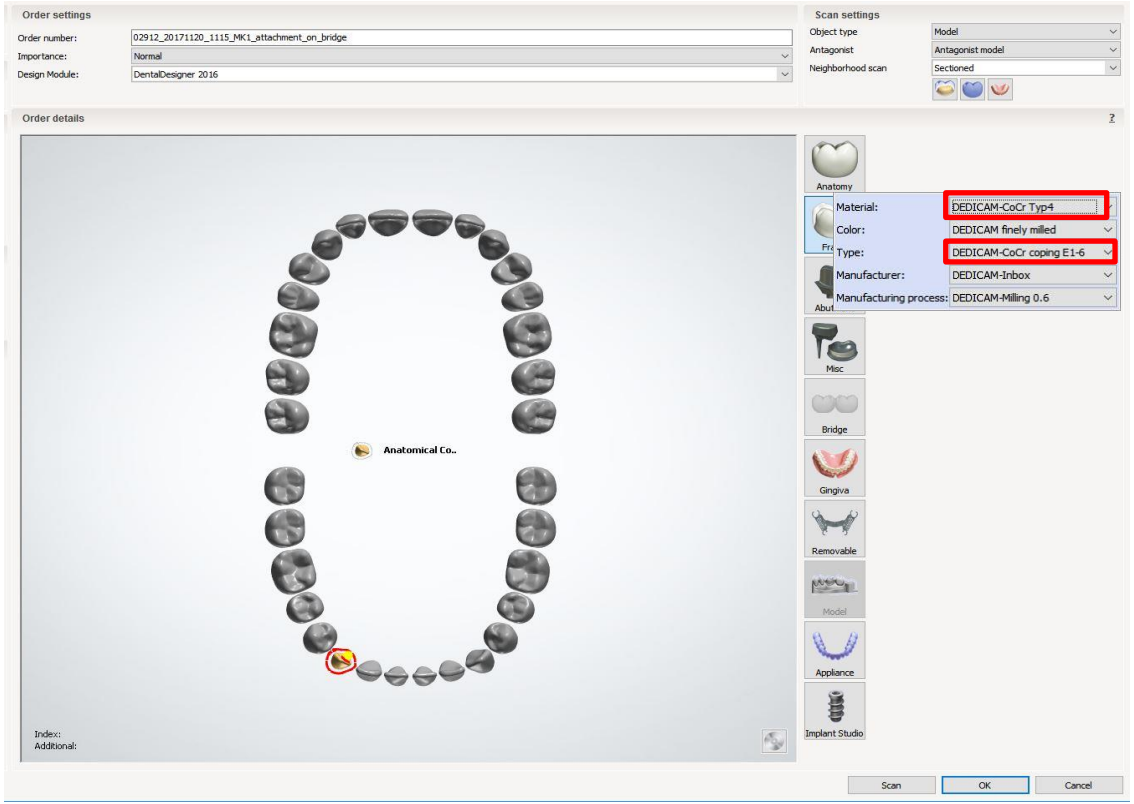


Order creation: tooth 43

- “frame”
- “Anatomical coping”

Adding a MK1 attachment to a bridge or crown block

Example: tooth 43 + 44 frame, blocked / MK1 distal on tooth 44

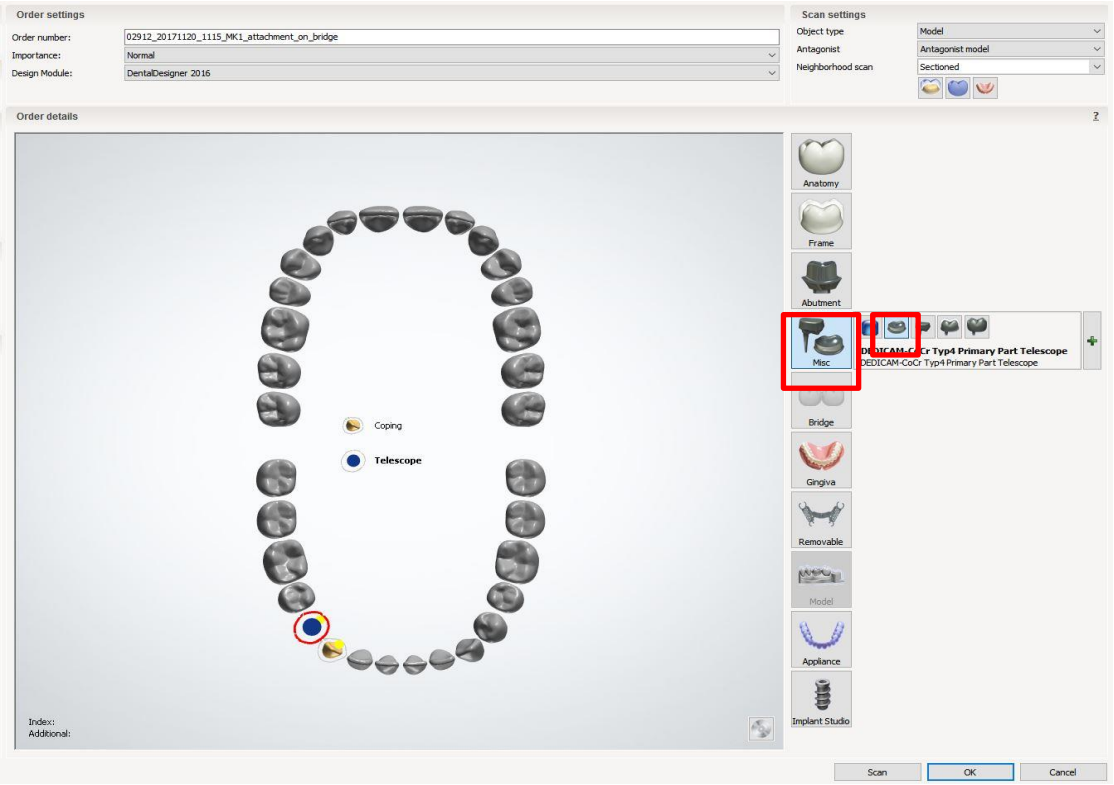


Order creation: tooth 43

- Material: e.g. “DEDICAM- CoCr Typ4”
- Type: “DEDICAM-CoCr coping E1-6”

Adding a MK1 attachment to a bridge or crown block

Example: tooth 43 + 44 frame, blocked / MK1 distal on tooth 44

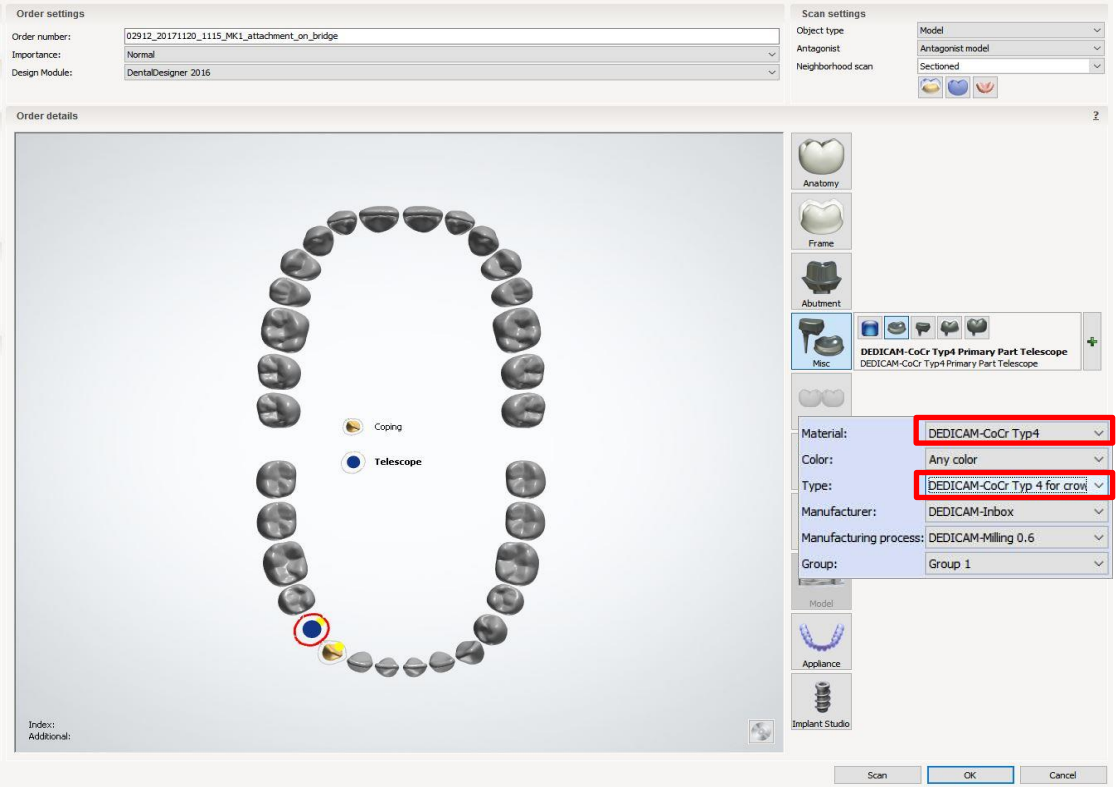


Order creation: tooth 44

- “Miscellaneous”
- “Robotic Telescope”

Adding a MK1 attachment to a bridge or crown block

Example: tooth 43 + 44 frame, blocked / MK1 distal on tooth 44

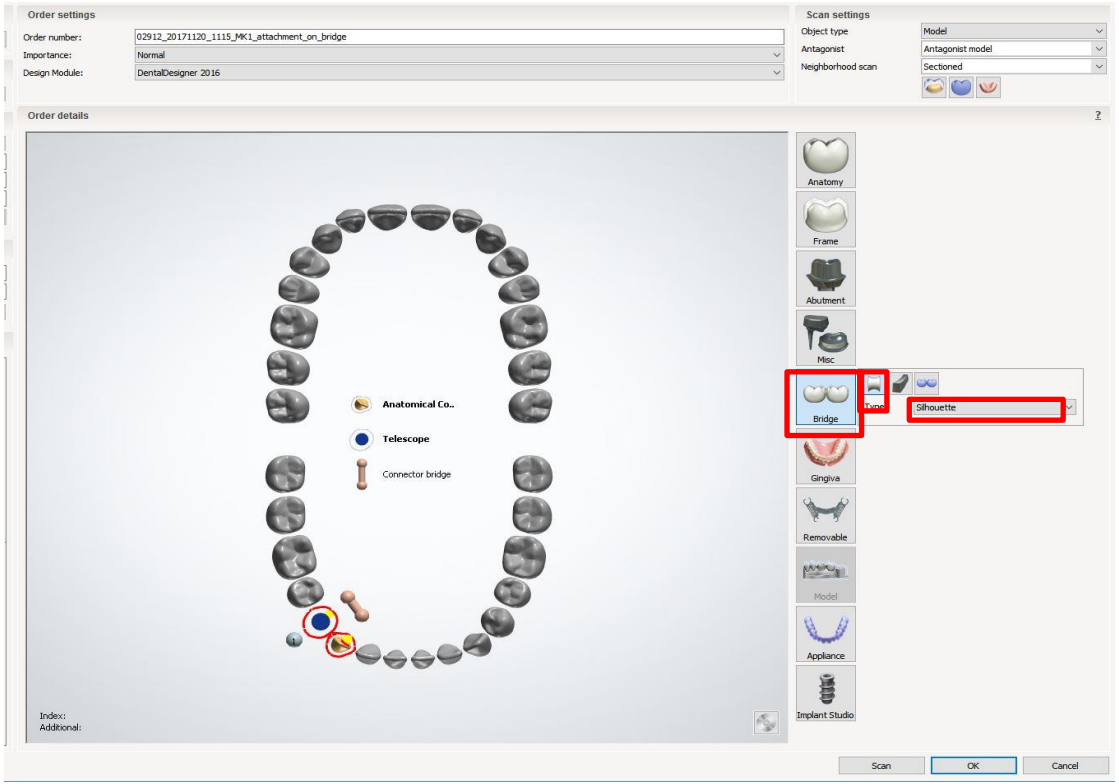


Order creation: tooth 44

- Material: e. g. “DEDICAM-CoCr Typ4”
- Type: “DEDICAM-CoCr Typ 4 for crown and pontic with attachments“

Adding a MK1 attachment to a bridge or crown block

Example: tooth 43 + 44 frame, blocked / MK1 distal on tooth 44

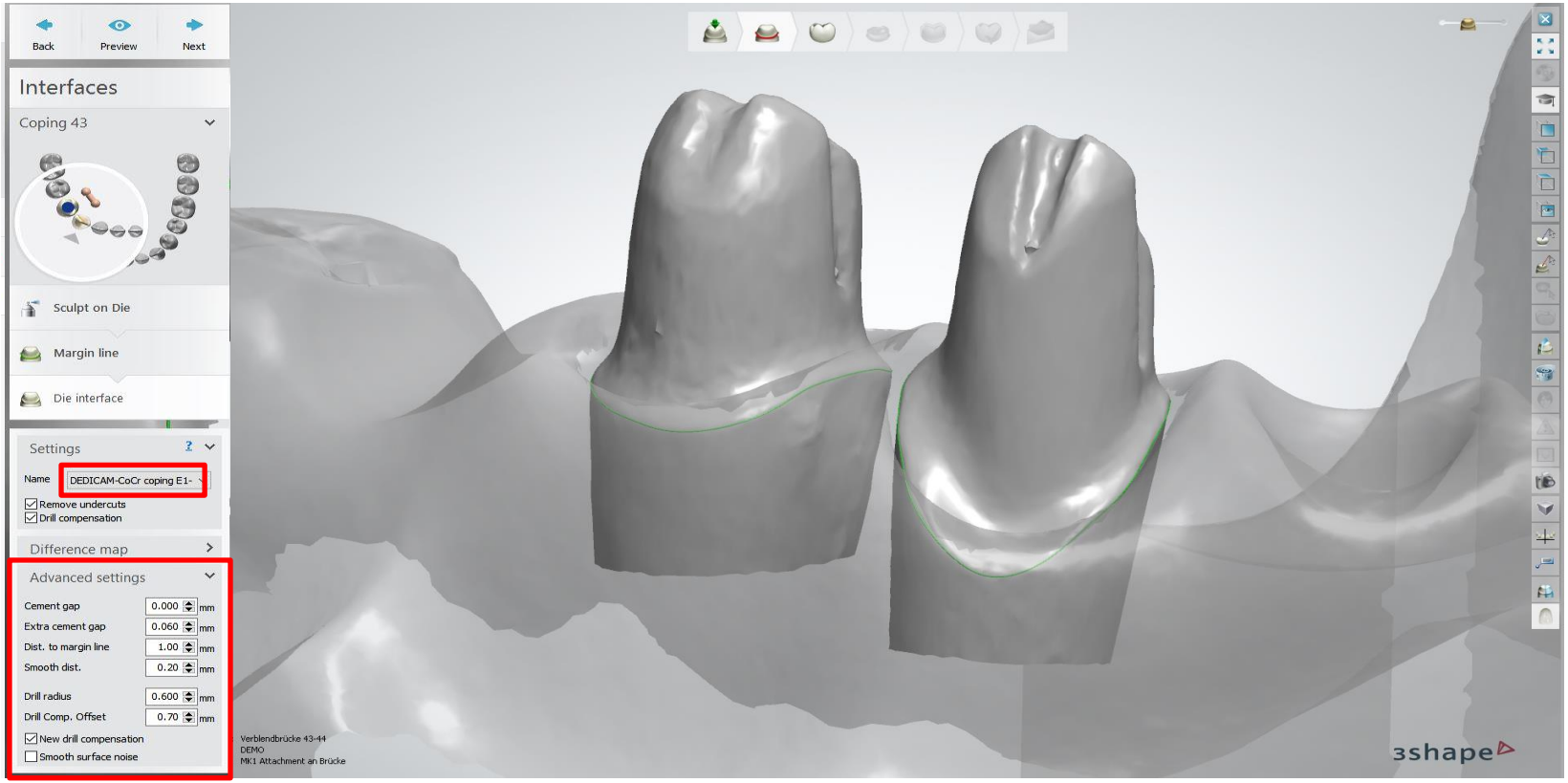


Order creation: bridge

- highlight 43 + 44
- “bridge”
- “connecting bridge”
- Type: e. g. “Silhouette”

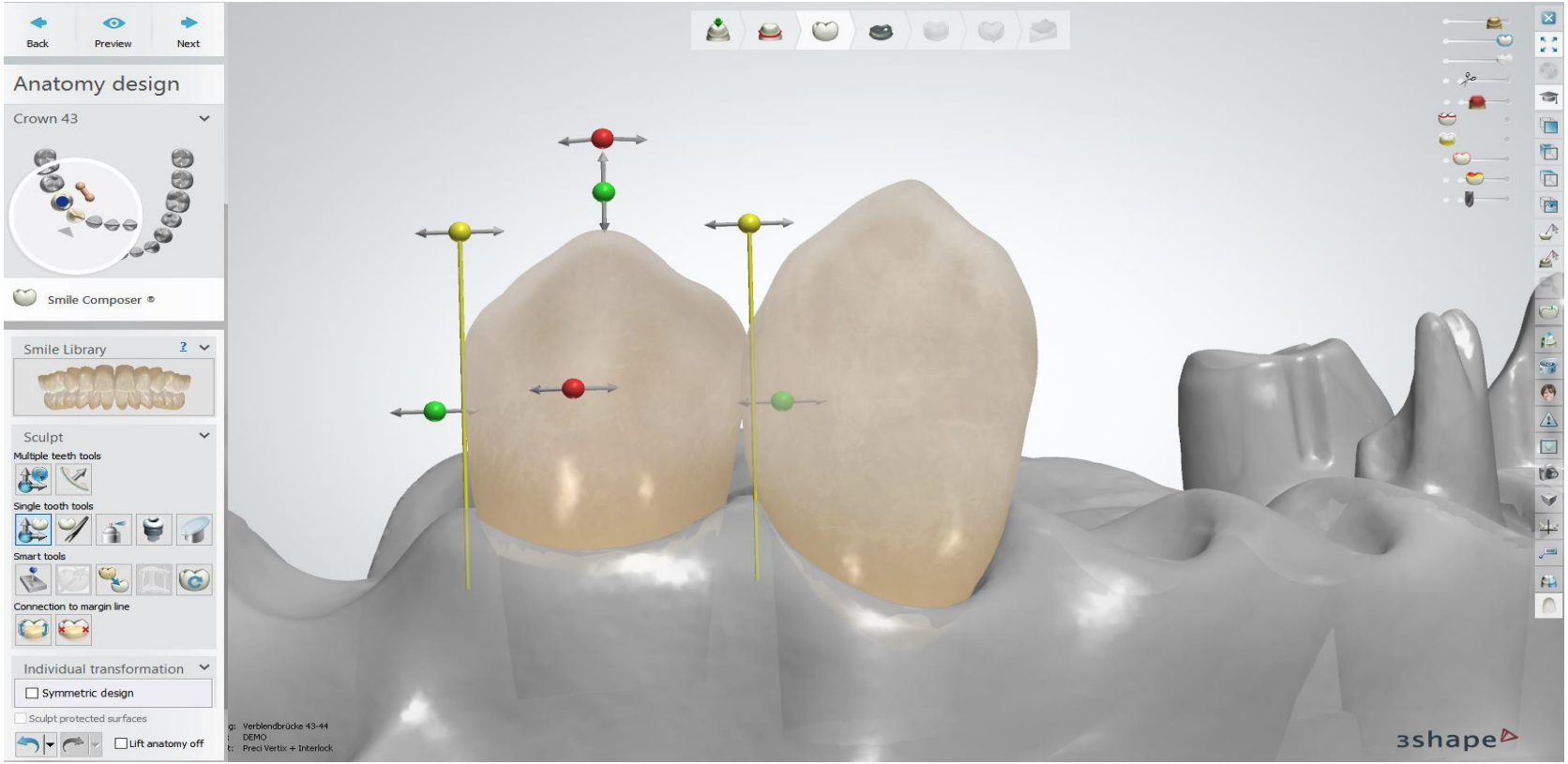
Adding a MK1 attachment to a bridge or crown block

Stump fit tooth 43 and 44: values should be identical



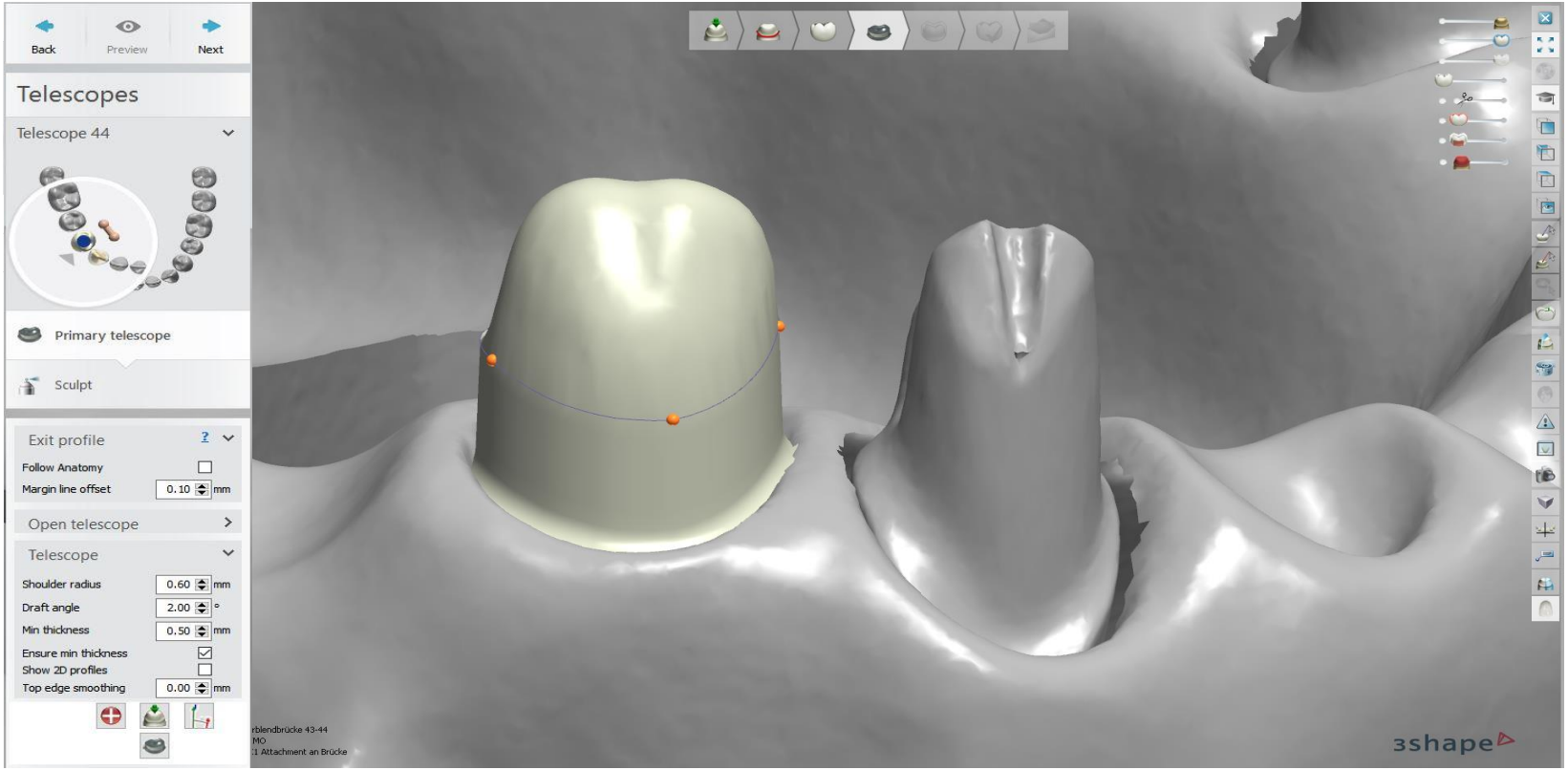
Adding a MK1 attachment to a bridge or crown block

Match the anatomical design to the case



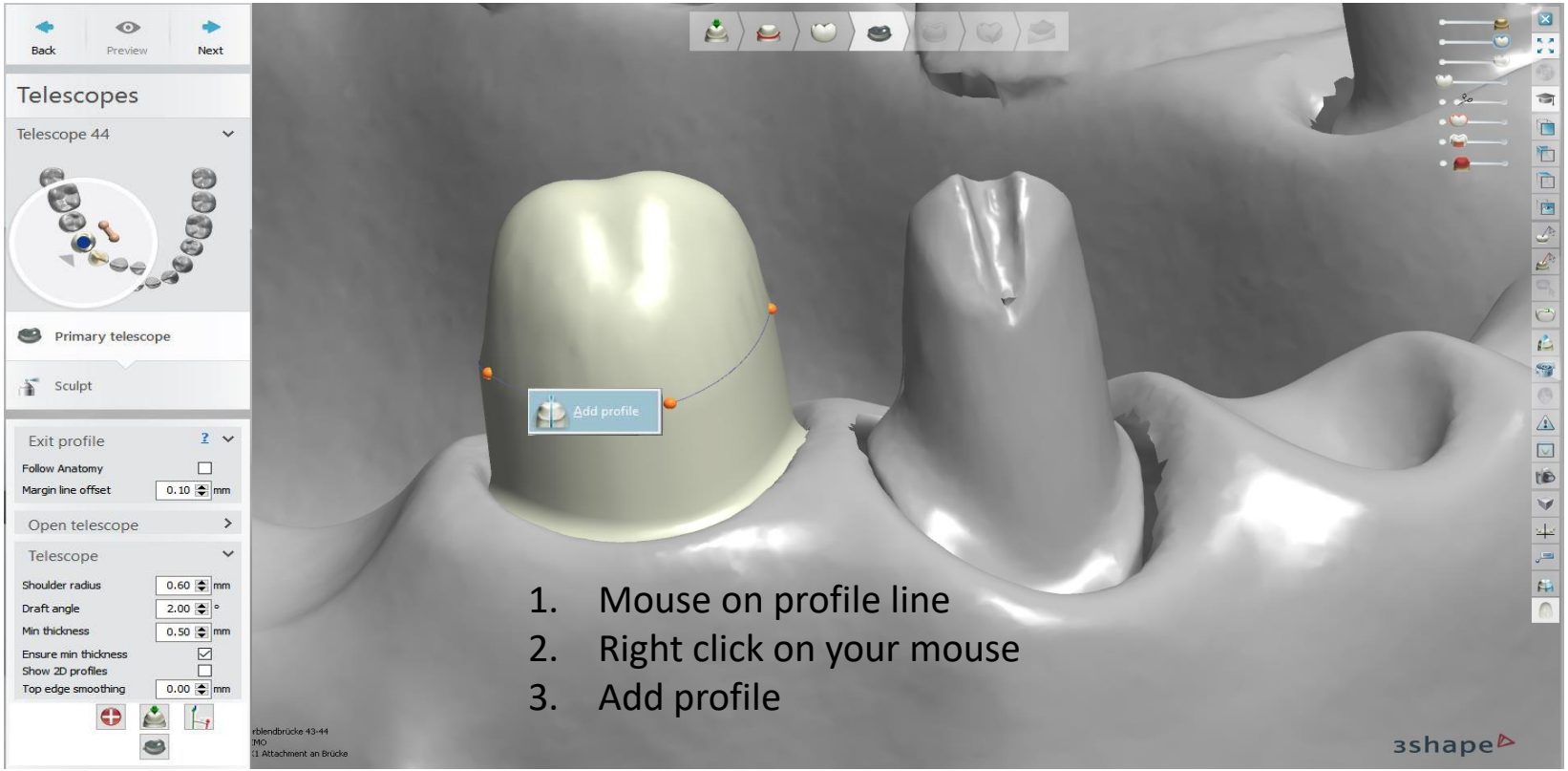
Adding a MK1 attachment to a bridge or crown block

Telescope module: edit parallel surfaces



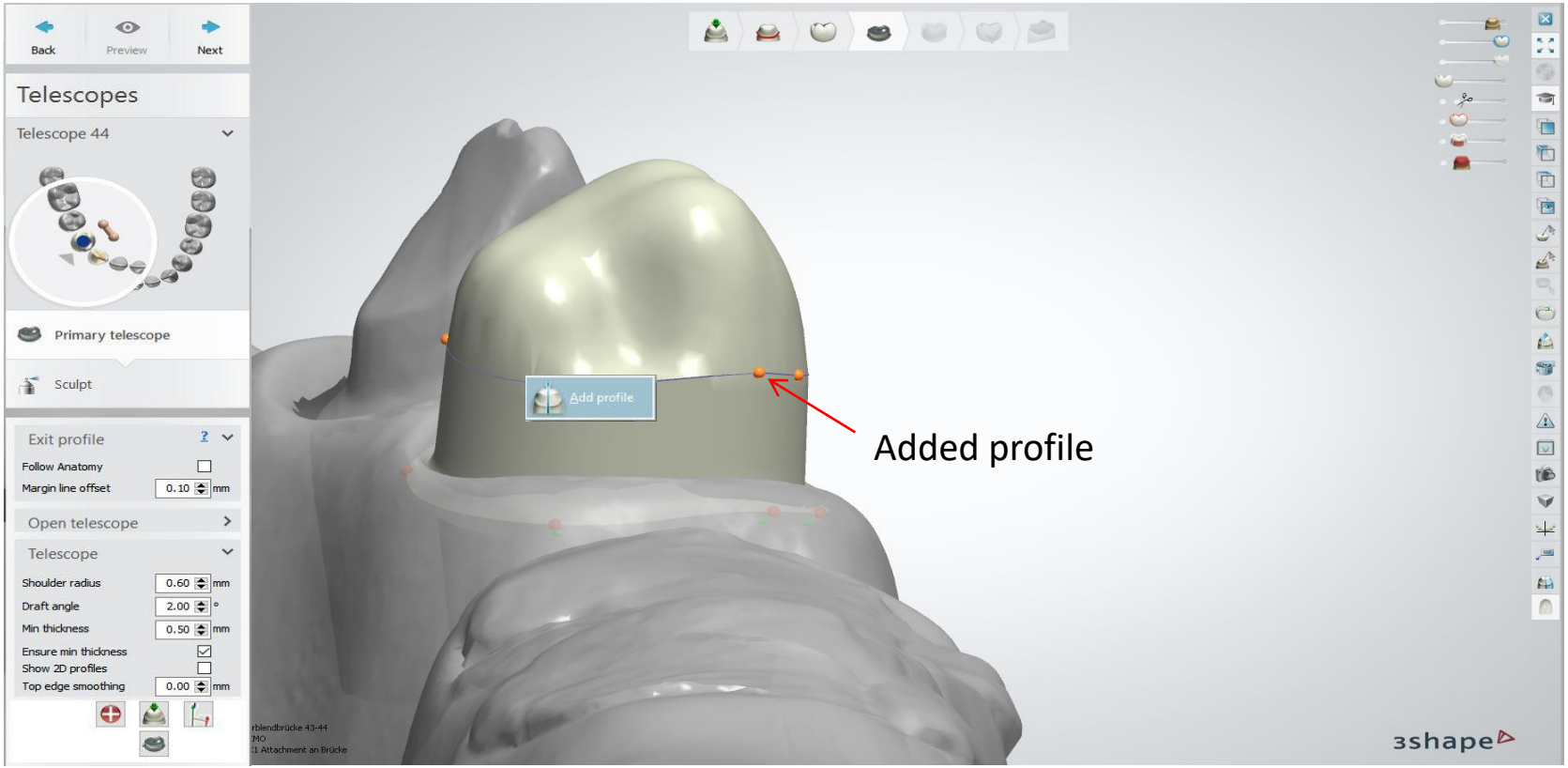
Adding a MK1 attachment to a bridge or crown block

Telescope module: add profile in order to create a distal surface for the MK1 Attachment



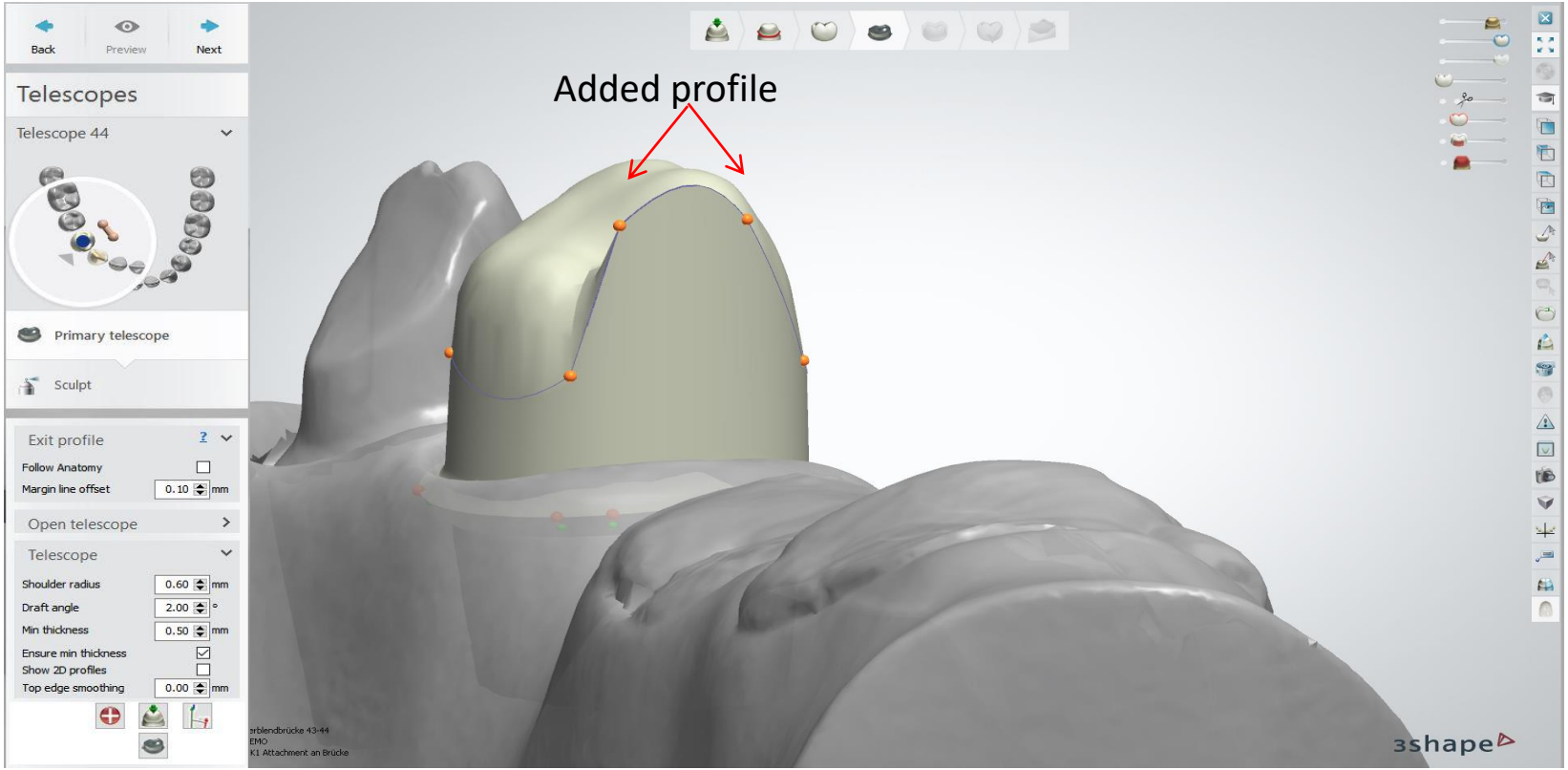
Adding a MK1 attachment to a bridge or crown block

Telescope module: add profile in order to create a distal surface for the MK1 Attachment



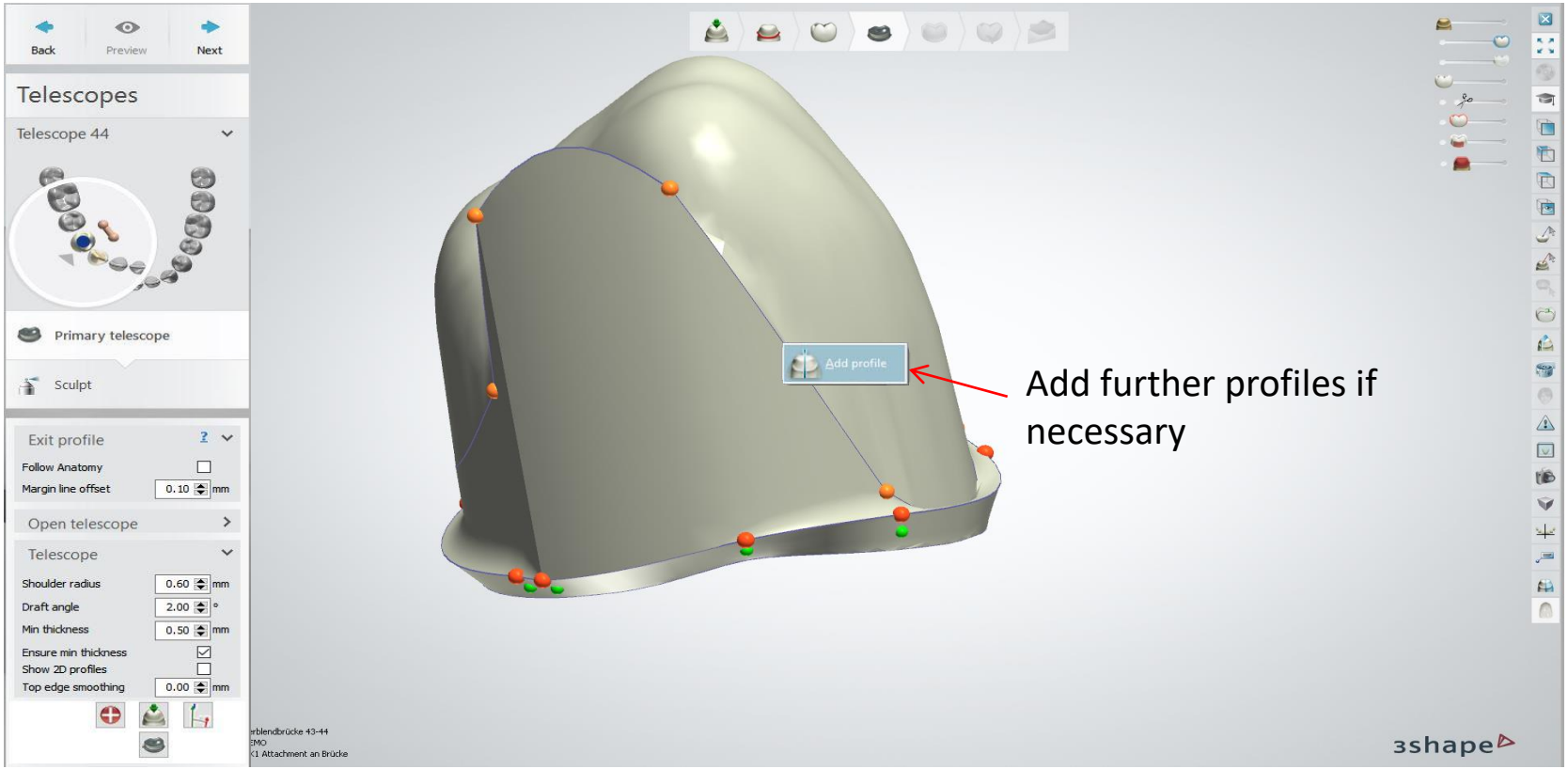
Adding a MK1 attachment to a bridge or crown block

Telescope module: add profile in order to create a distal surface for the MK1 Attachment



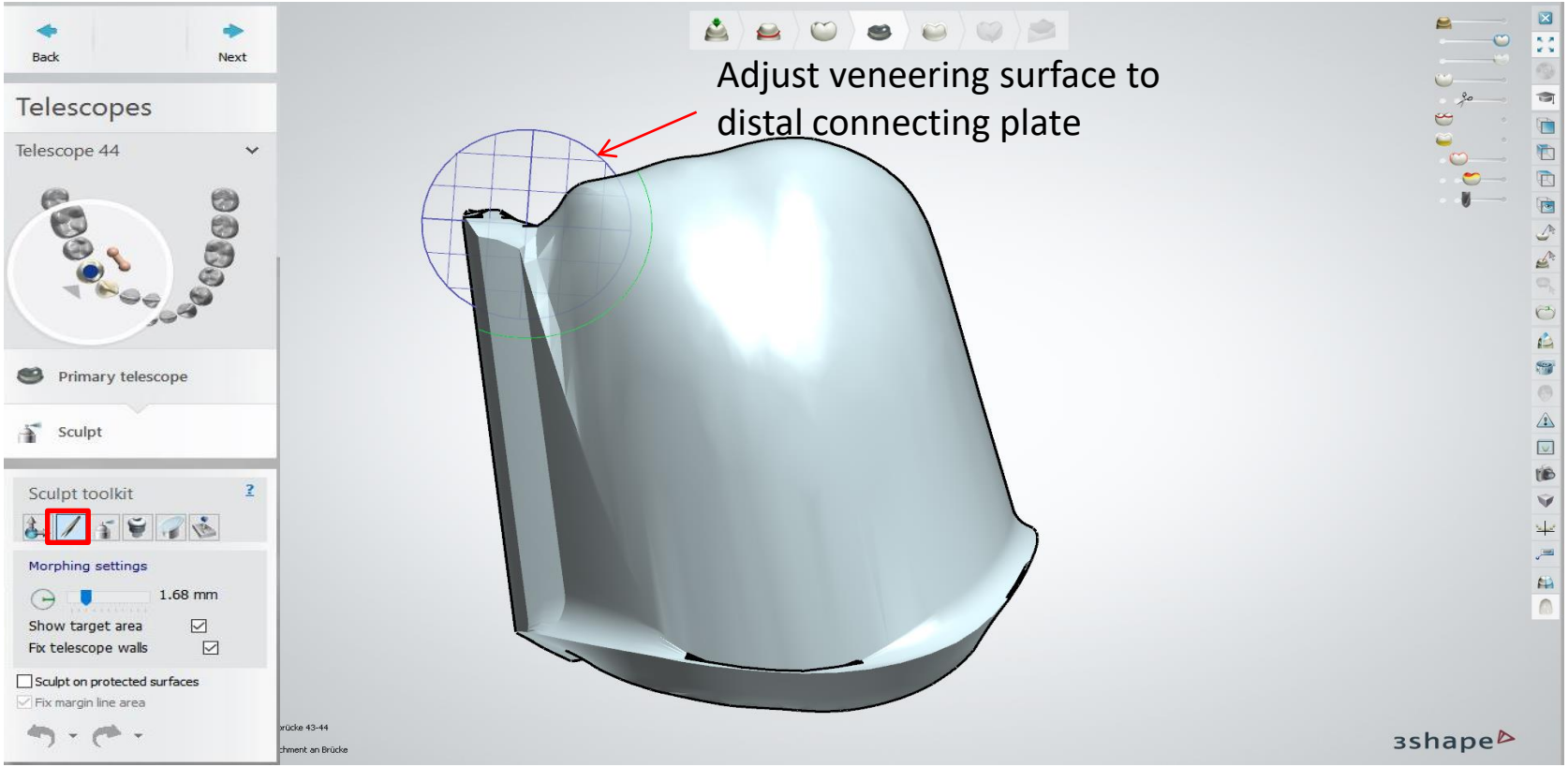
Adding a MK1 attachment to a bridge or crown block

Telescope module: add profile in order to create a distal surface for the MK1 Attachment



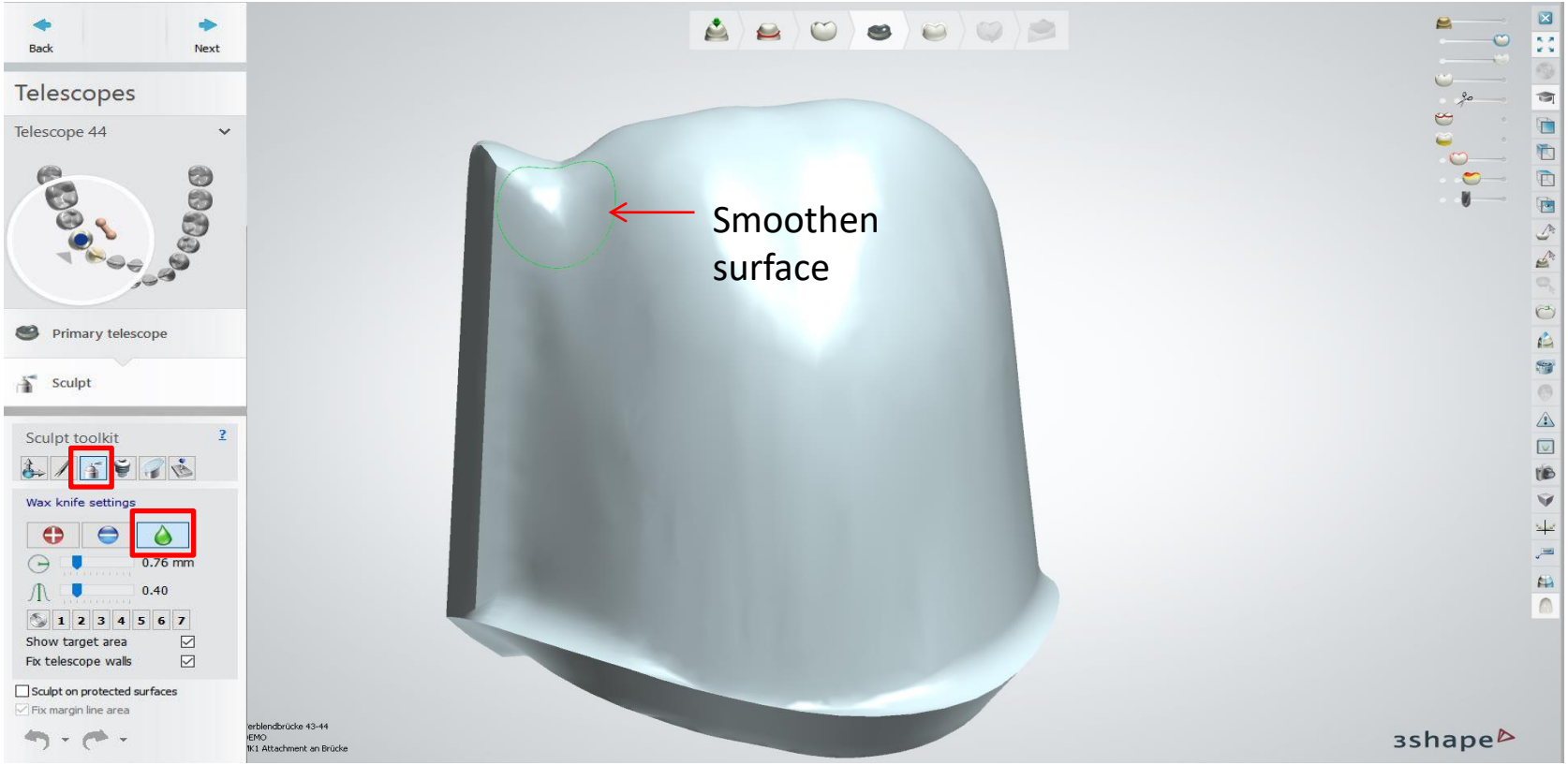
Adding a MK1 attachment to a bridge or crown block

Modify: Sculpt toolkit (Morphing tool)



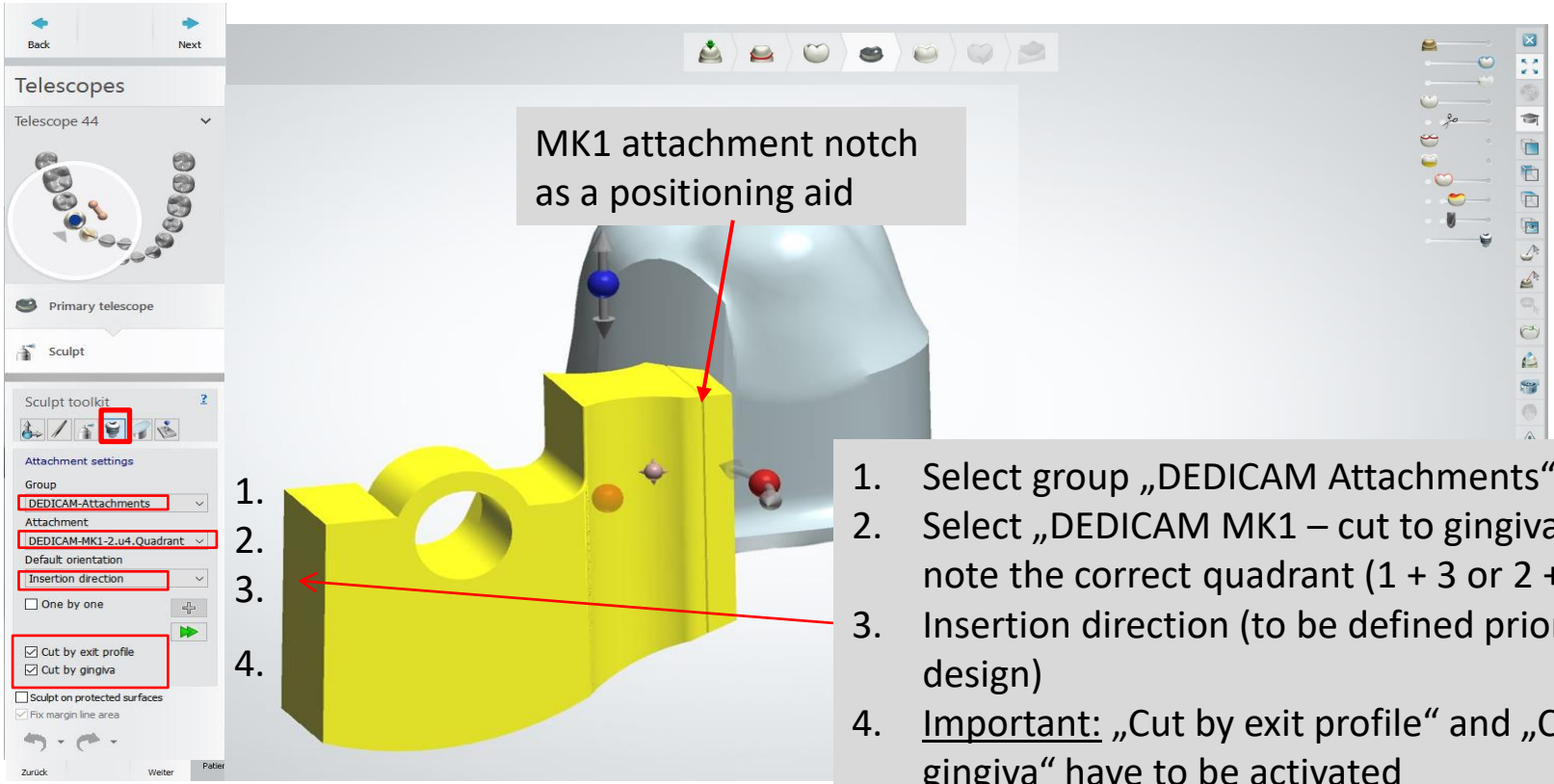
Adding a MK1 attachment to a bridge or crown block

Modify: Sculpt toolkit (smoothen)



Adding a MK1 attachment to a bridge or crown block

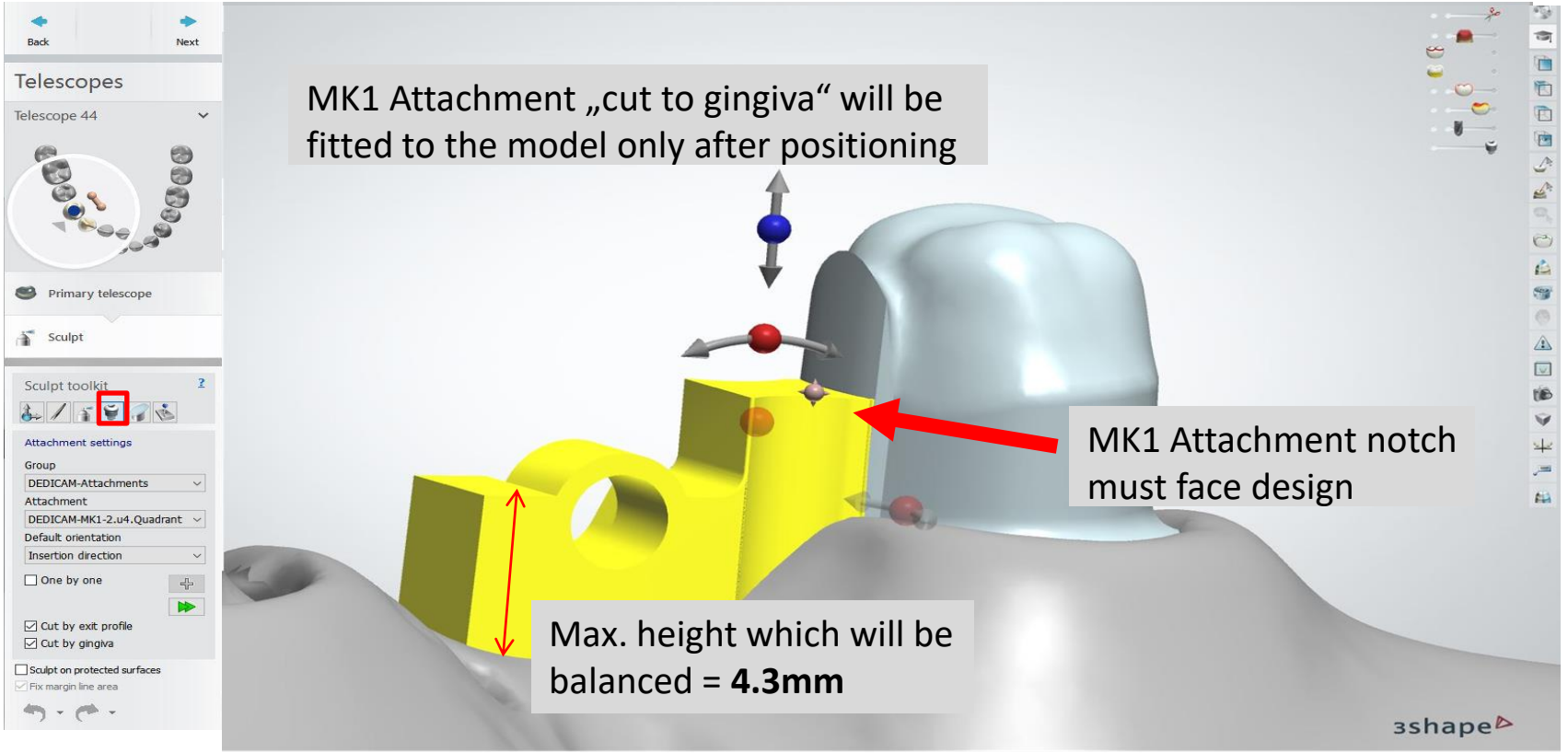
Modify: Attachment – “DEDICAM MK1 cut to gingiva”



1. Select group „DEDICAM Attachments“
2. Select „DEDICAM MK1 – cut to gingiva“ <u>Attention:</u> note the correct quadrant (1 + 3 or 2 + 4)
3. Insertion direction (to be defined prior to the design)
4. <u>Important:</u> „Cut by exit profile“ and „Cut by gingiva“ have to be activated

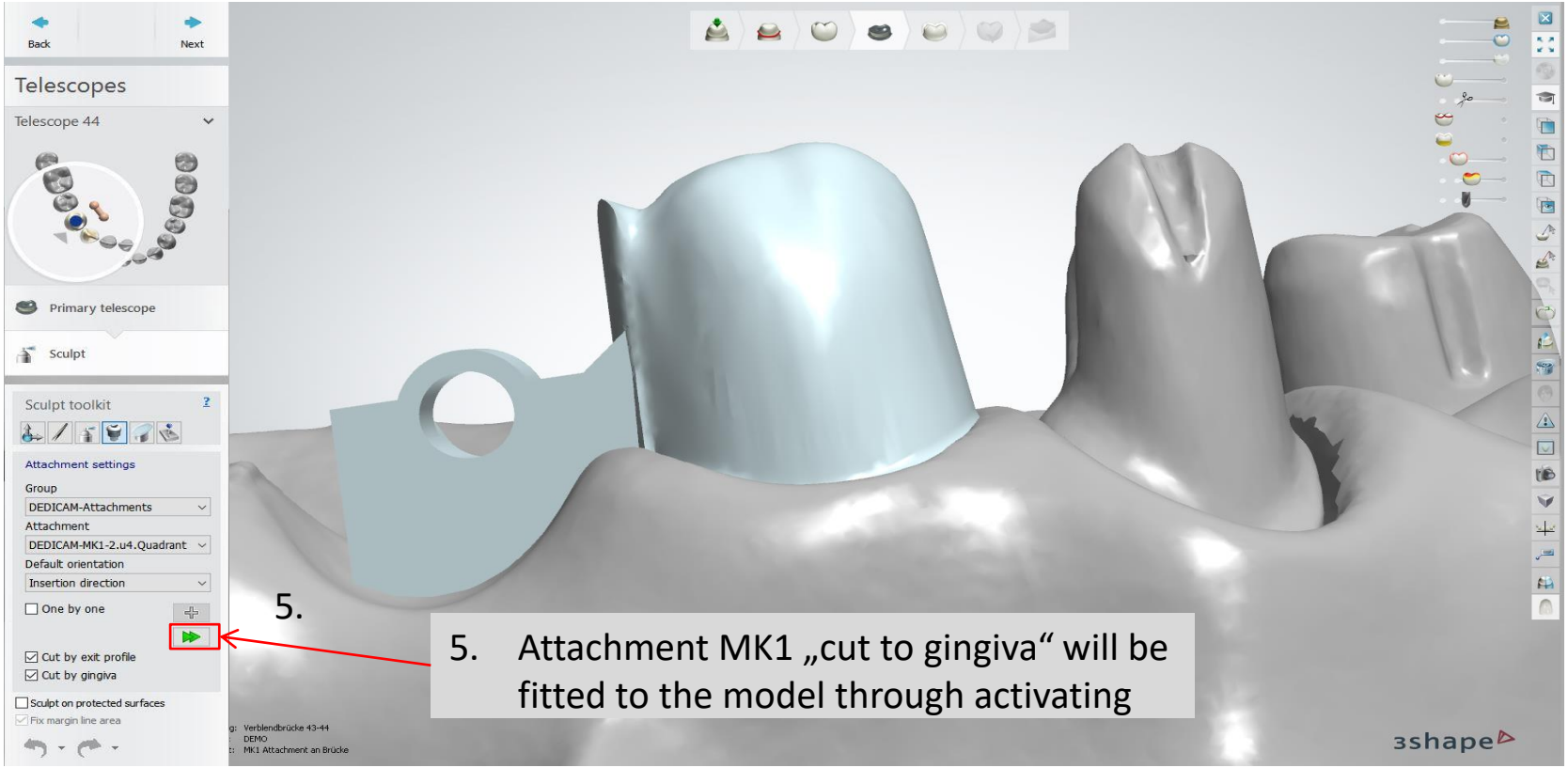
Adding a MK1 attachment to a bridge or crown block

Modify: Attachment – “DEDICAM MK1 cut to gingiva”



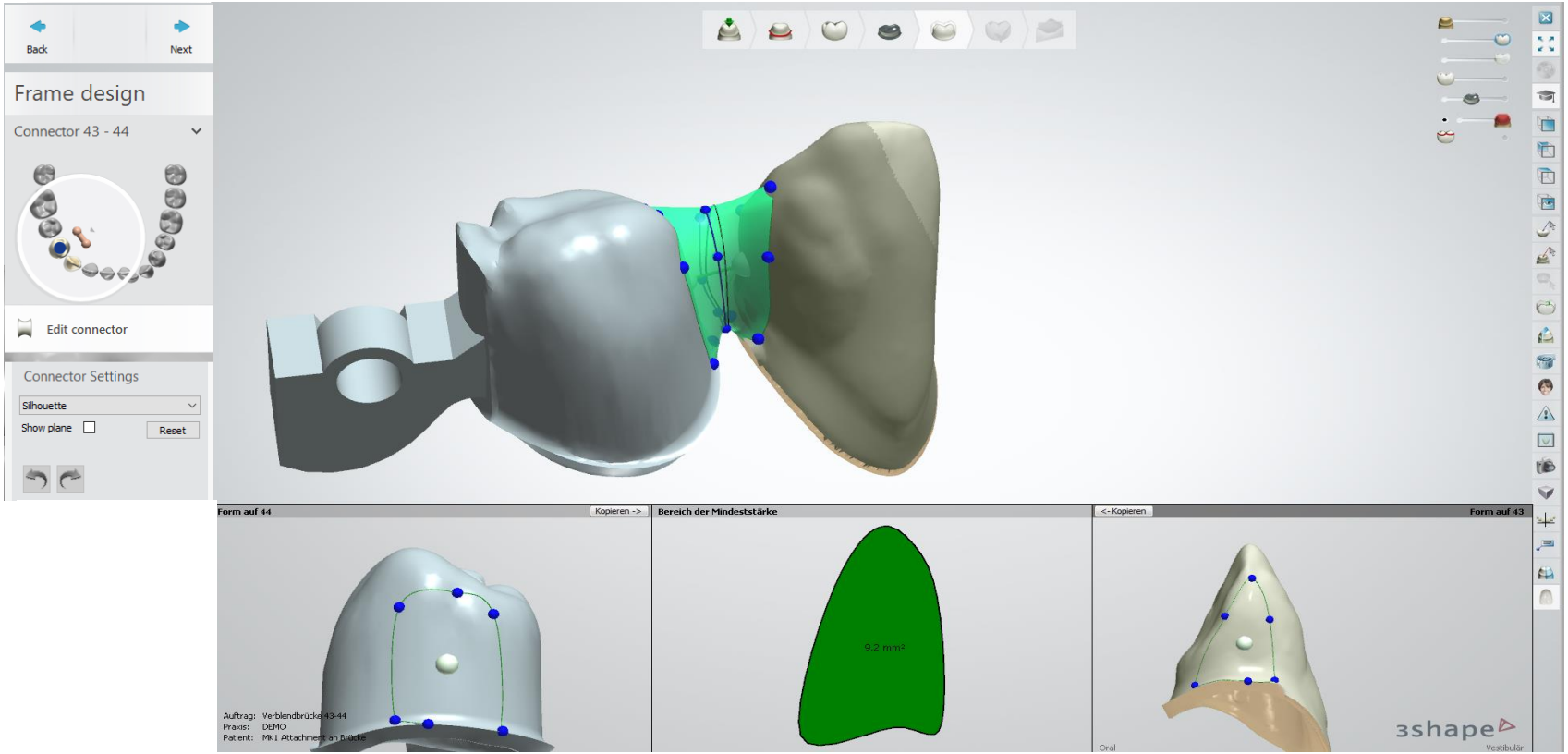
Adding a MK1 attachment to a bridge or crown block

Modify: Attachment – “DEDICAM MK1 cut to gingiva”



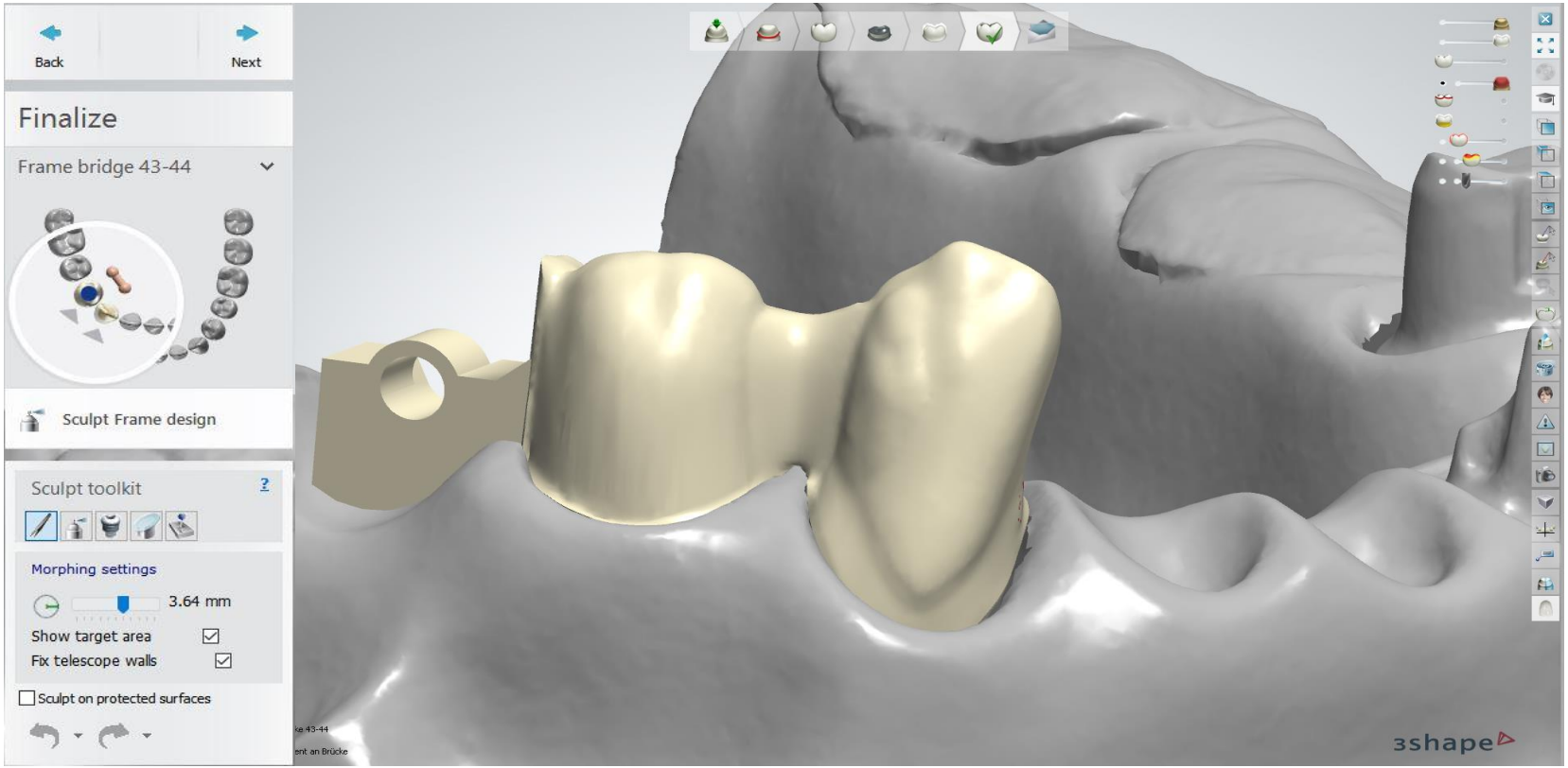
Adding a MK1 attachment to a bridge or crown block

Complete frame design on tooth 43 incl. connector



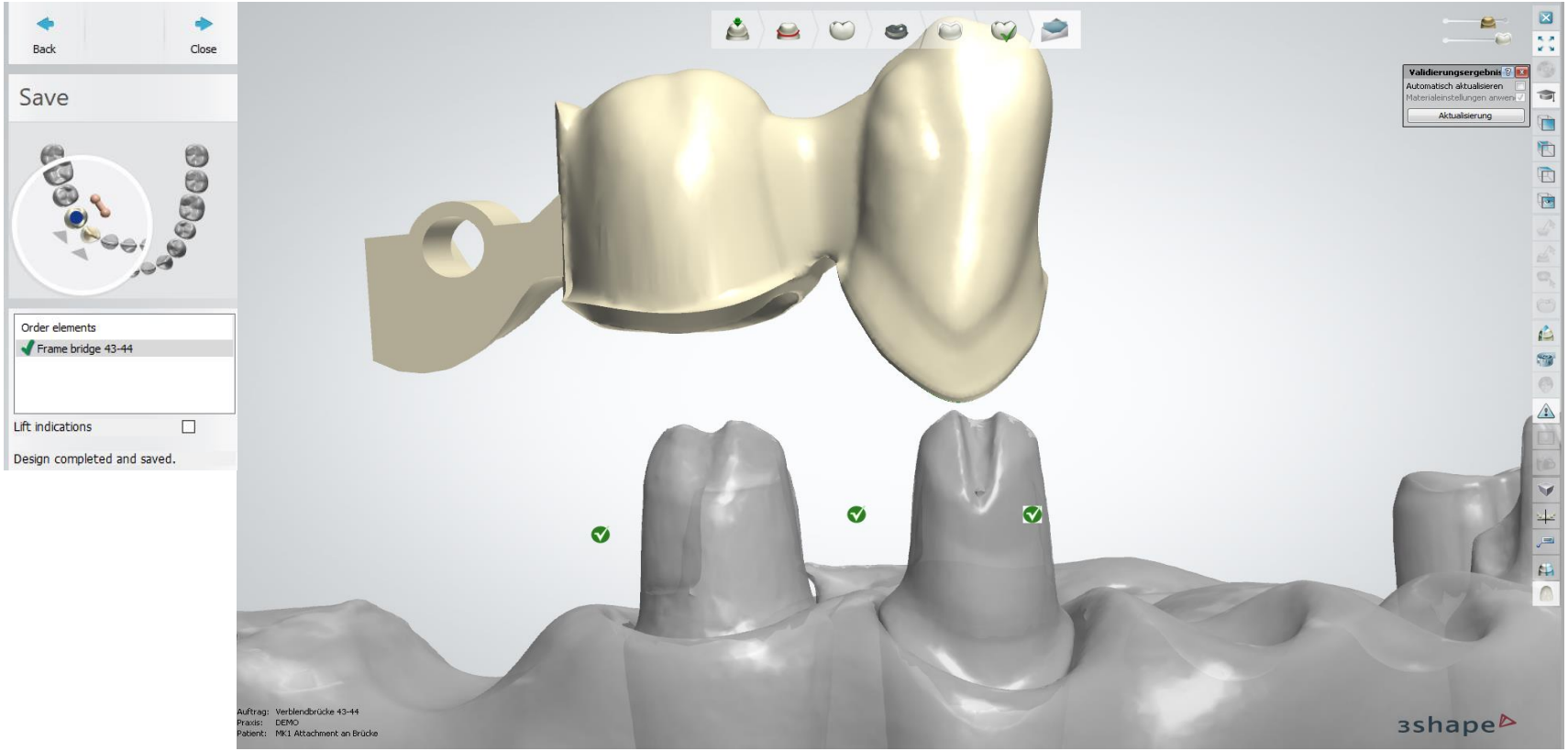
Adding a MK1 attachment to a bridge or crown block

Completion of the design: minor corrections with sculpt toolkit possible



Adding a MK1 attachment to a bridge or crown block

Completion of the design: validation passed



Design of anti-rotation protections on abutments

Design of anti-rotation protections on abutments

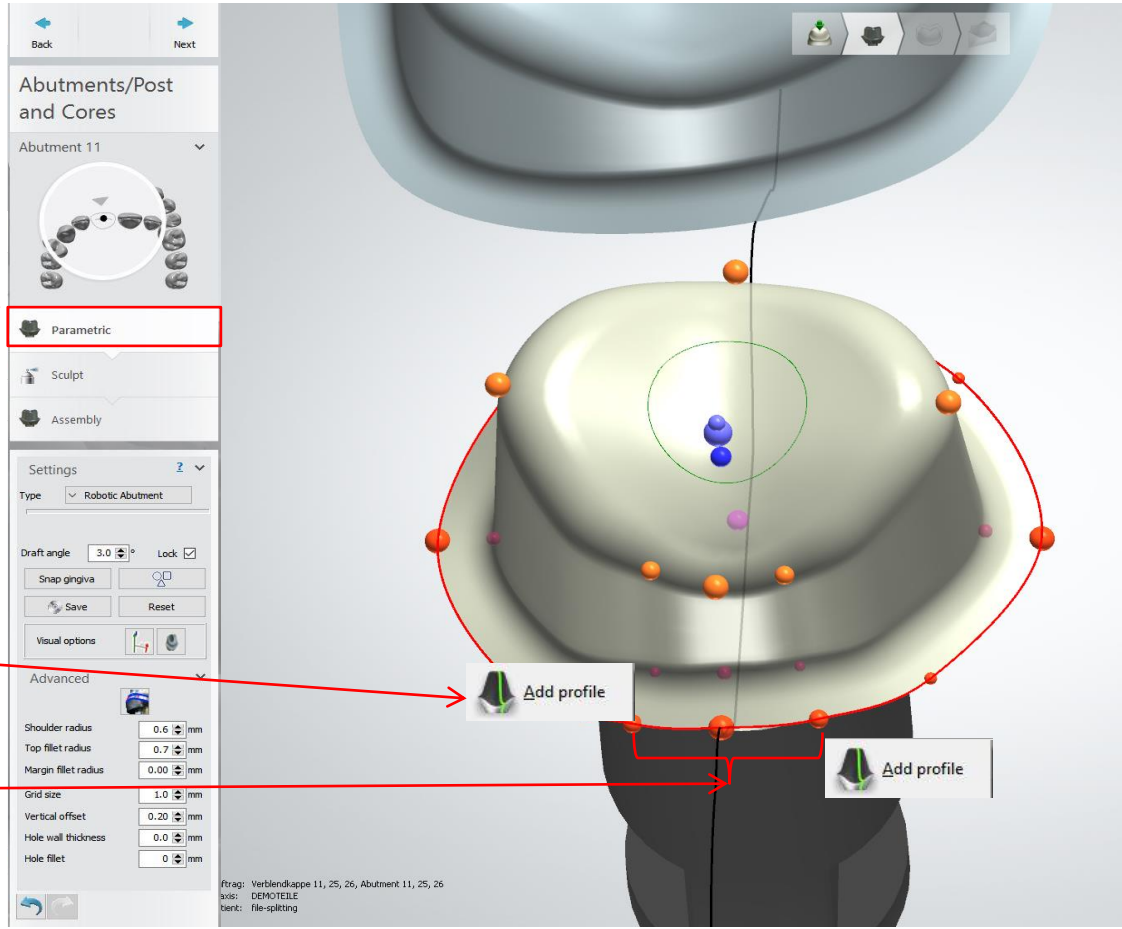
Advantage: Efficient and easy to use

1. Select abutment design „Parametric“

2. Add 2x profile, to the left and right of a main point (interdental)

   Method:
   - Arrow on red line (preparation margin)
   - Right mouse click
   - Add profile

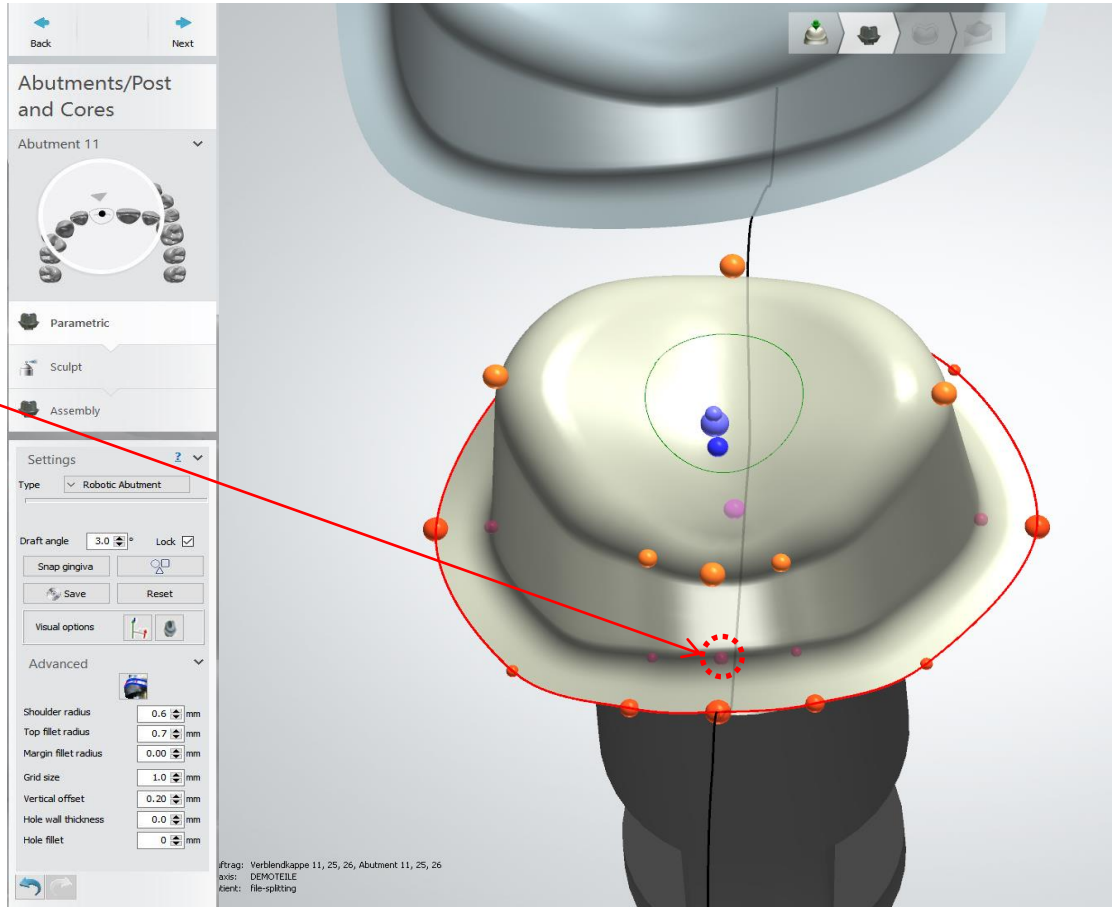
   Note:
   Distance between added profiles: ca. 2.5mm



Design of anti-rotation protections on abutments

Advantage: Efficiency and easy to use

3. Move shoulder width (magenta coloured dot) of the middle main dot from 0.8 to approx. 1.3mm towards central (see also the following page)

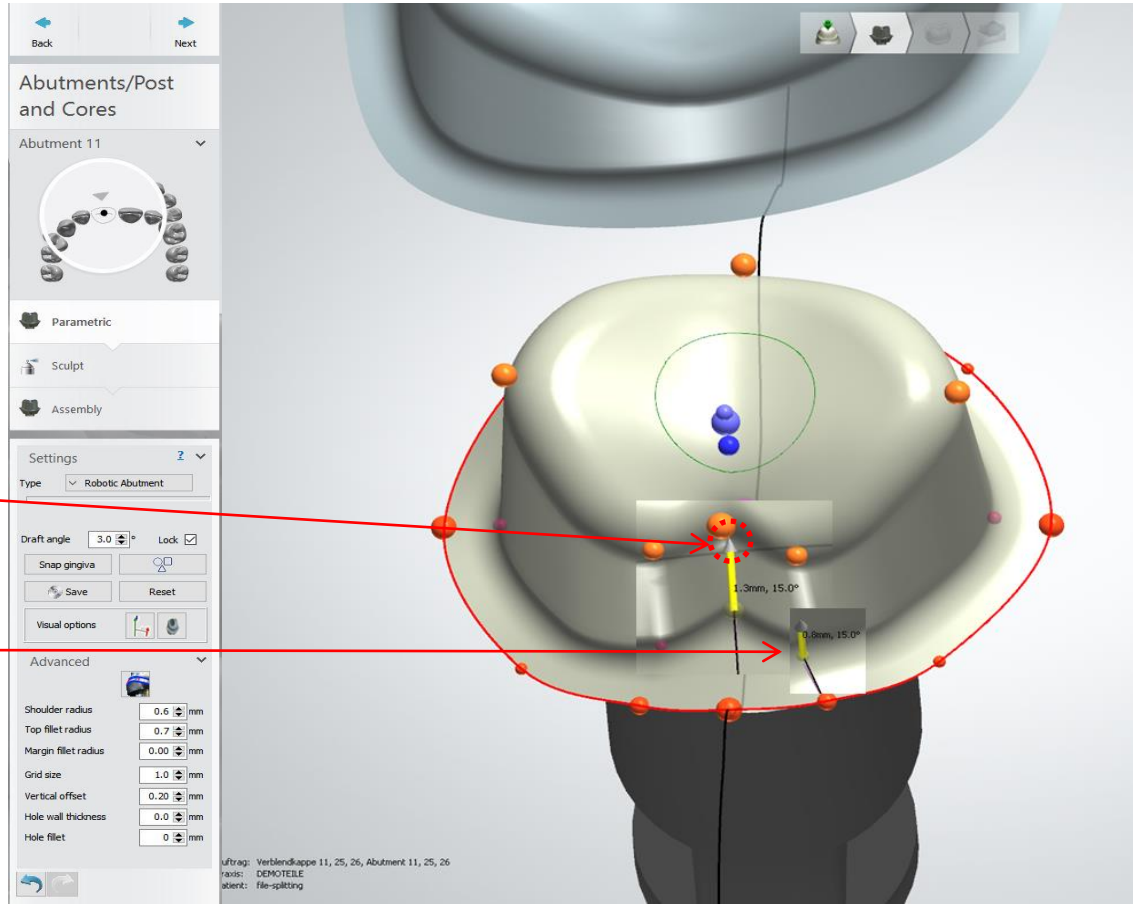


Design of anti-rotation protections on abutments

Advantage: Efficiency and easy to use

3. Move shoulder width (magenta coloured dot) of the middle main dot from 0.8 to ca. 1.3mm towards central

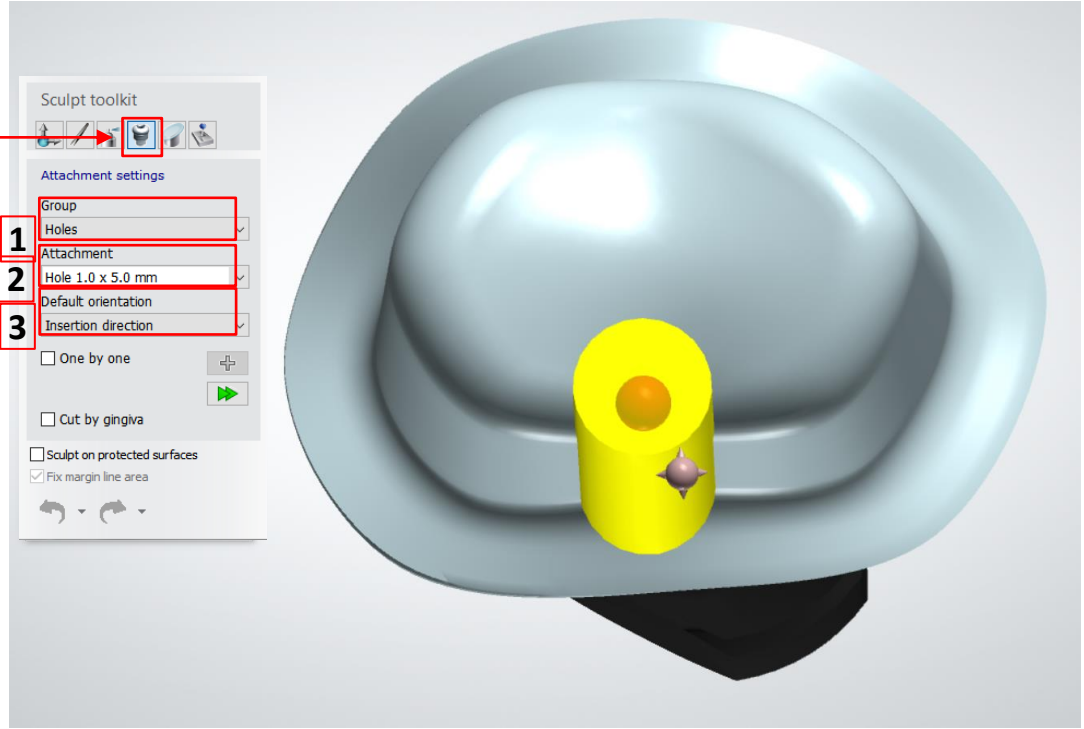
Note:
Angle needs to be approx. 15°



Design of anti-rotation protections on abutments

Alternative to the before mentioned anti-rotation protection

After the initial design of the abutment in "Parametric" mode the anti-rotational is installed in the **“Modify - Attachments"** mode.



The following selection is available

- Group: Holes **1**
- Attachment **2**
- Hole 1.5 x 5.0mm
- Standard insertion direction **3**

→ select the following depending on the situation

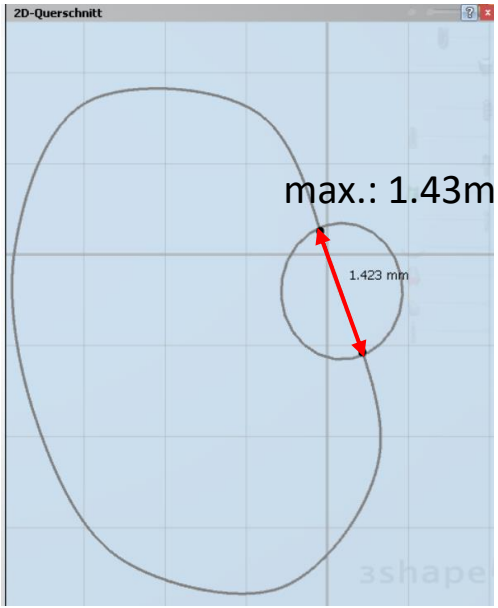
→ Insertion direction

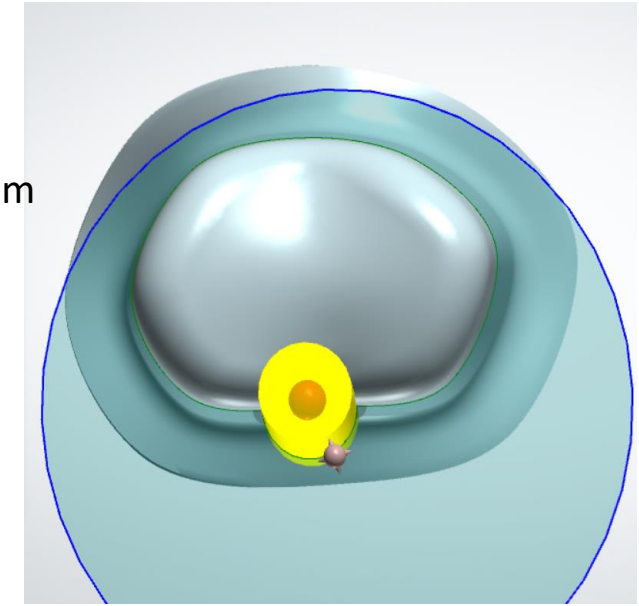
→ Place the attachment at the desired position

Design of anti-rotation protections on abutments

Alternative to the before mentioned anti-rotation protection

- Placing of the attachment at the desired position
- Create 2D cross section – slightly above of the abutment shoulder: To control the correct and technically realizable milling position





Important:

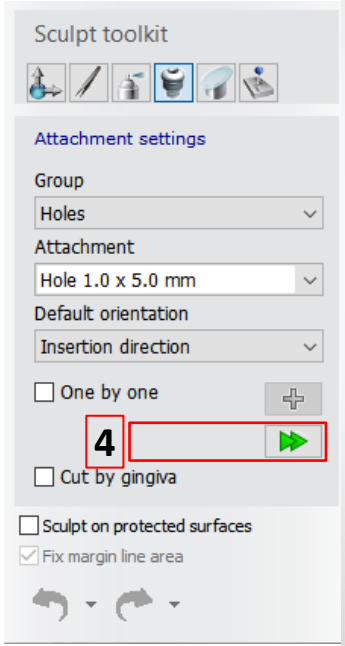
- Place the attachment (hole 1.5 x 5.0mm) less than the maximum diameter into the abutment design
- Hole diameter = 1.5mm
- Max. diameter in the abutment = **1.43mm**

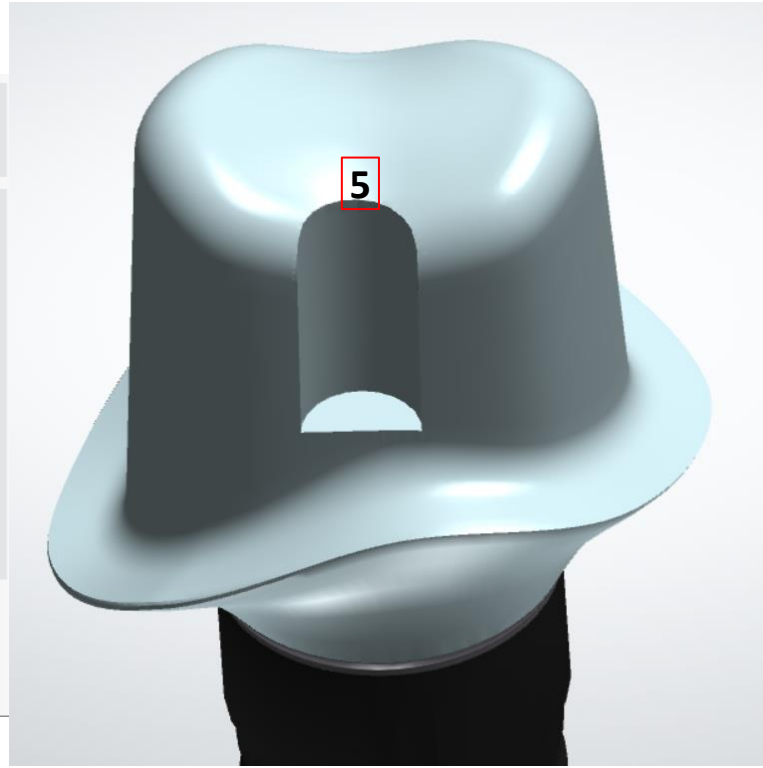
Design of anti-rotation protections on abutments

Alternative to the before mentioned anti-rotation protection

4 Ensure correct position of the attachment before applying subtraction

5 **Important:**
Sharp edges must be smoothened after subtraction (see next page)





Design of anti-rotation protections on abutments

Alternative to the before mentioned anti-rotation protection

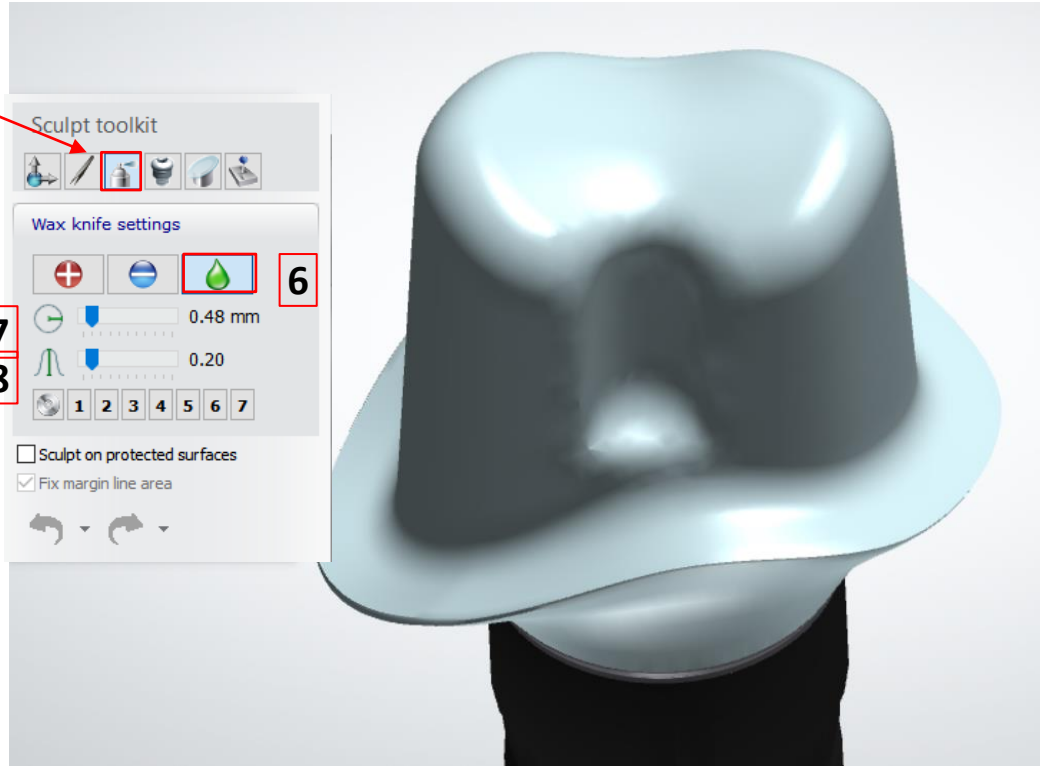
Switch to **„Sculpt toolkit – Wax knife“**

6 Activate „Smooth“

Recommendation:
7 Set radius to lower value
8 Set level to lower value

All sharp edges must be smoothened

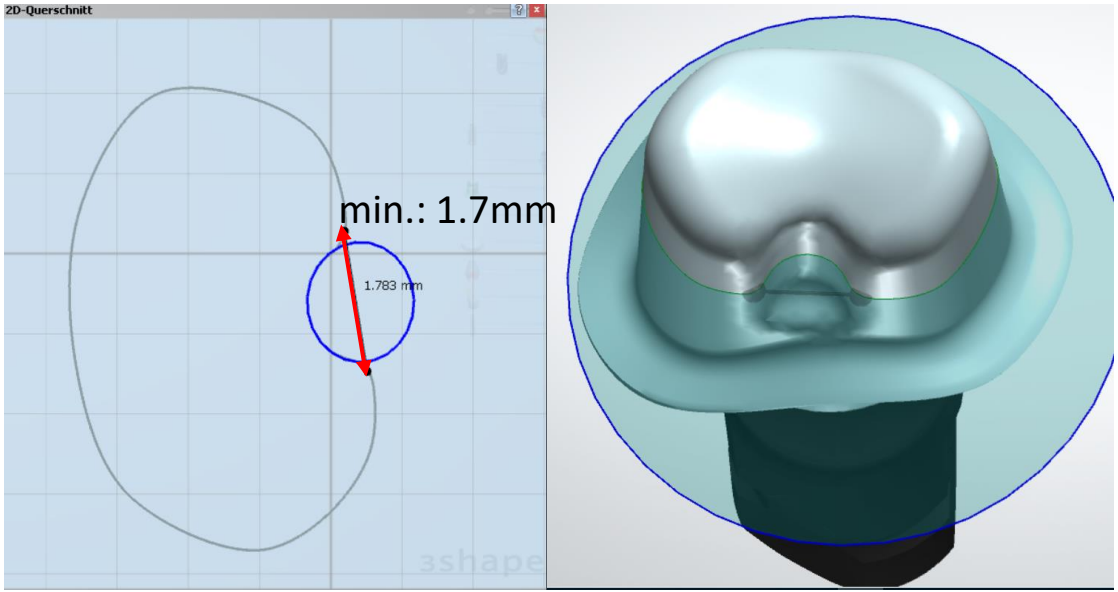
Important:
Due to the burr used in the production the supplied anti-rotation protection on the structure may deviate minimally.



Design of anti-rotation protections on abutments

Alternative to the before mentioned anti-rotation protection

Check again the width of the anti-rotational protection after smoothing using the 2D cross section tool.
The width must be min. **1.7mm.**



Important:
Due to the burs used in the production the supplied anti-rotation protection on the structure may deviate minimally.

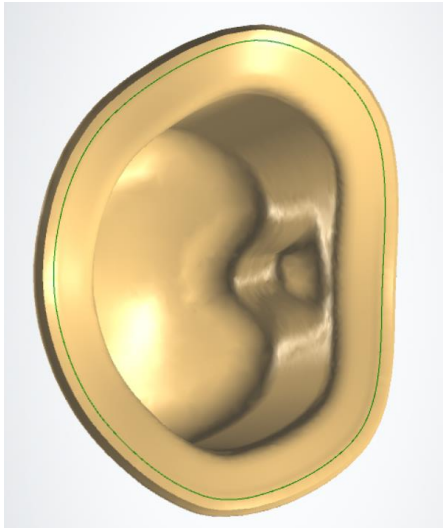
Design of anti-rotation protections on abutments

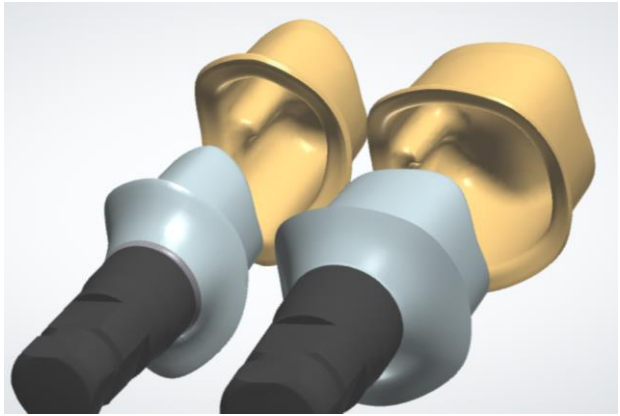
This anti-rotational protection is suitable for a precisely fitting framework / crown whether designed in file-splitting or via second design.

Note:
Orders in file-splitting are only processed with anti-rotation protection ensuring that the milling and the fit of the framework / crown can be guaranteed.

Information:
Under consideration of the minimum wall thickness this anti-rotational protection is recommended for the following abutment types:

- Meso structures for titanium bases CAD/CAM, crown
- Abutments, one-piece (Titanium alloy)
- Abutments, one-piece (Zirconia, for CERALOG)





Design of screw channels with the aim of an attachment

Design of screw channels with the aim of an attachment

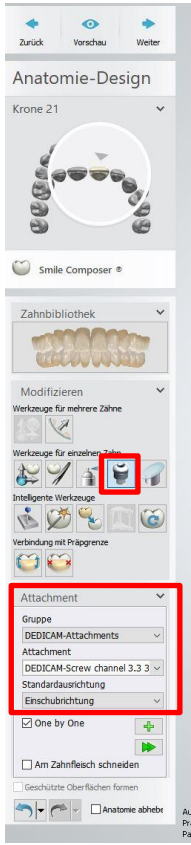
Restrictions:

- Implant parts scanned as dies
- Only for DEDICAM Inbox user
- Not available for IPS e.max CAD

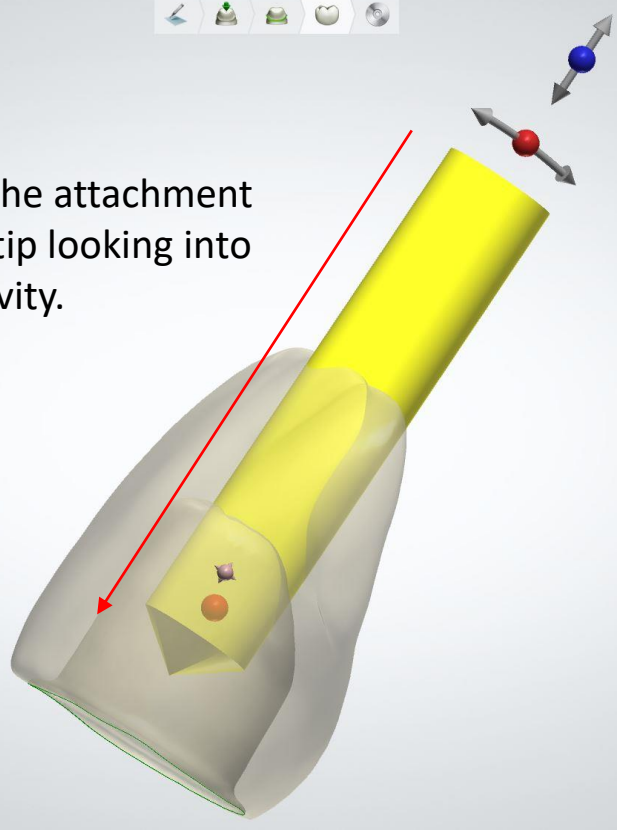
Design of screw channels with the aim of an attachment

Select between
„DEDICAM-Screw channel 3.3/3.8/4.3, iSy, COMFOUR prosth. 4.3“
or
„DEDICAM-Screw channel 5.0/6.0, COMFOUR prosth. 5.0“ from the Attachment category

Select preferred diameter

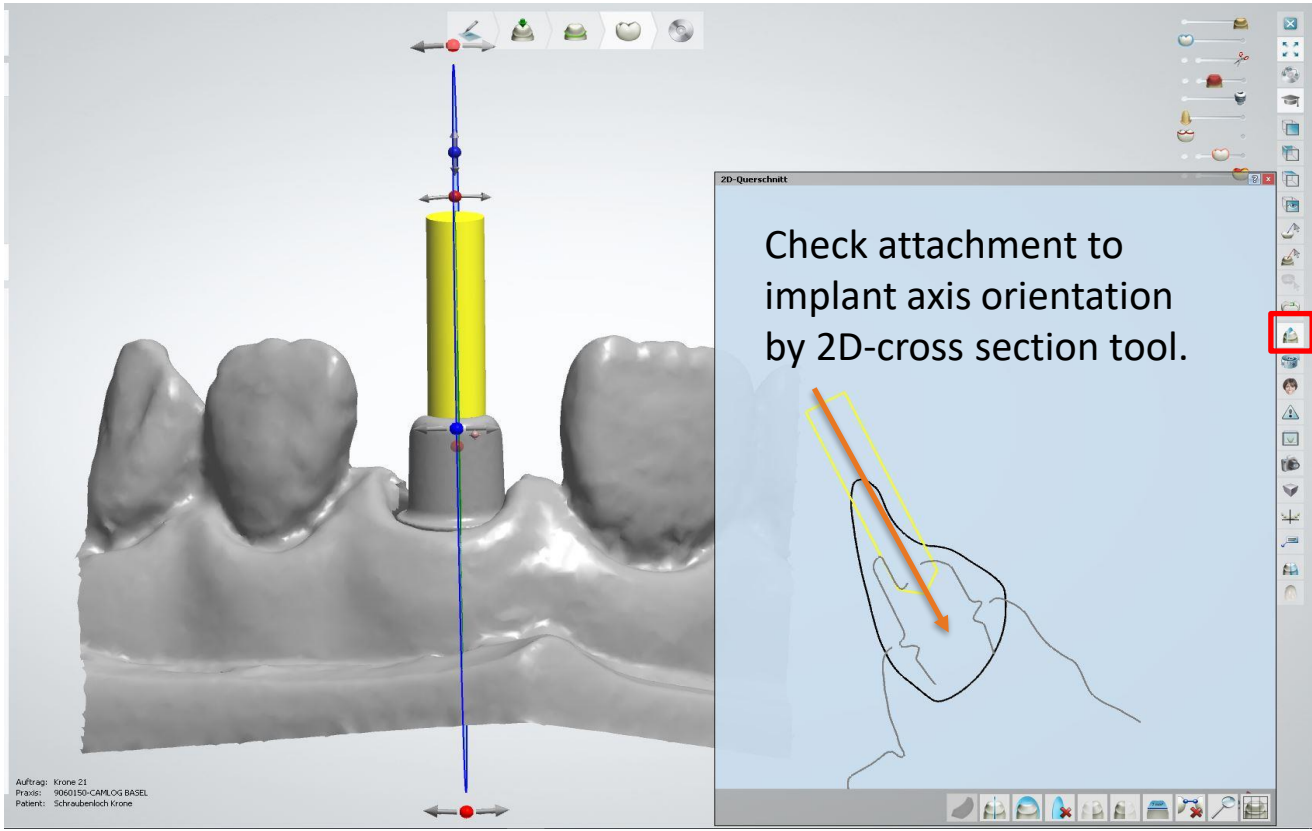


Align the attachment by its tip looking into the cavity.



Design of screw channels with the aim of an attachment

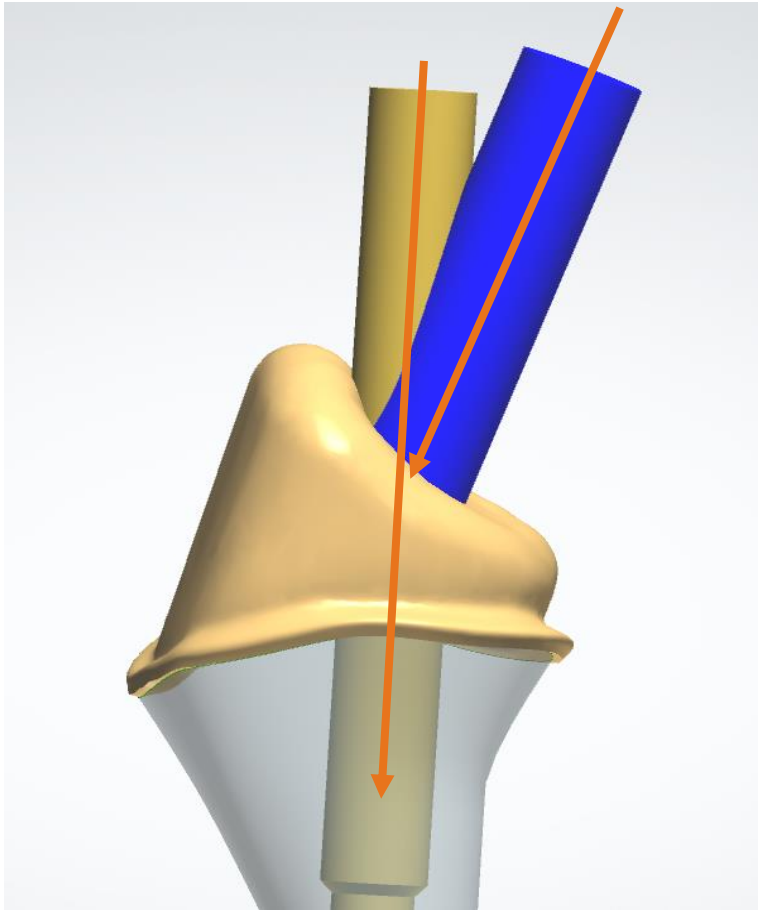
For trouble-free integration of the screw ensure the attachments axis is aligned with the implant axis.



Design of screw channels with the aim of an attachment

Divergences between implant axis and screw channel axis may prevent the screw from receiving its thread.

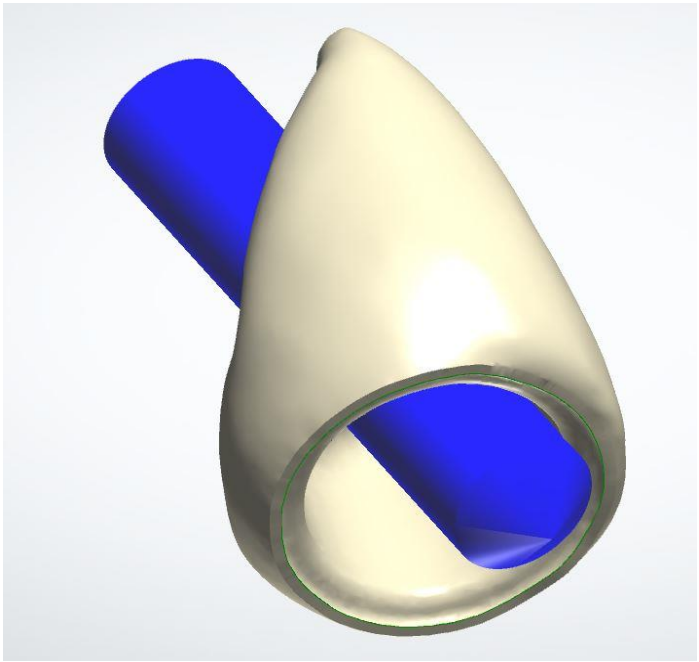
Camlog will not carry out any verification about functionality prior and post to manufacturing.

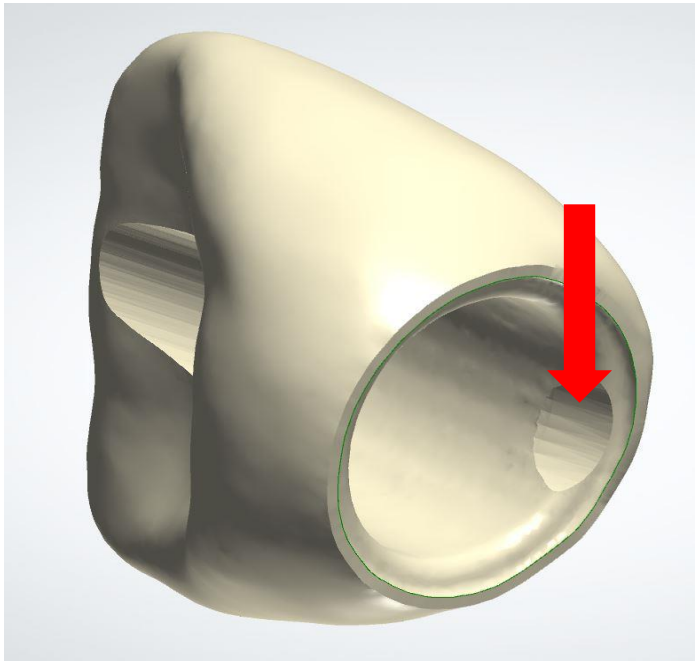


Design of screw channels with the aim of an attachment

Attention: Attachment should not touch the crown margin!

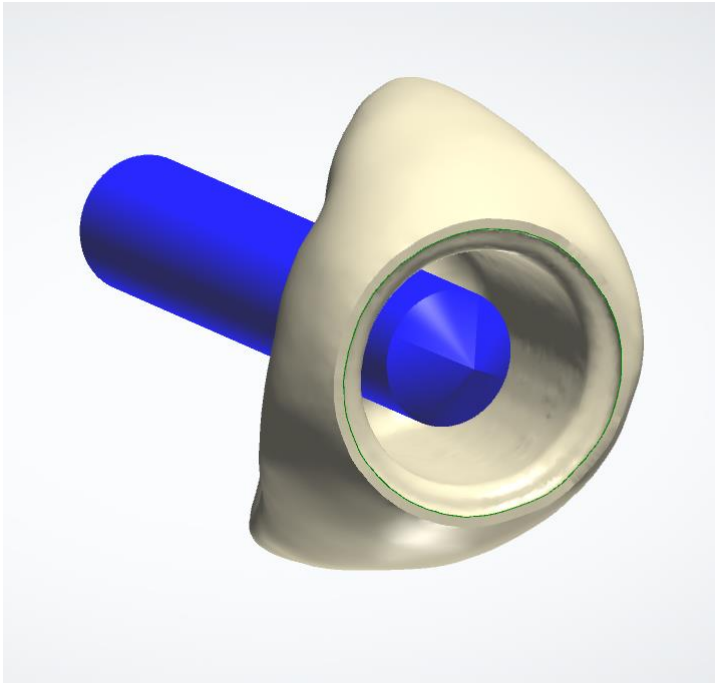
If necessary adapt the attachment length and / or the axis.

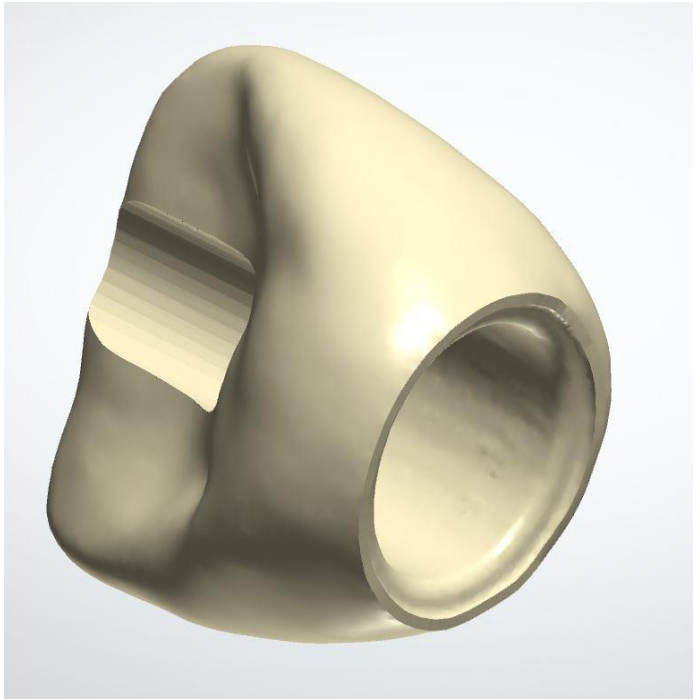




Design of screw channels with the aim of an attachment

Correctly placed design of screw channels with the aim of an attachment

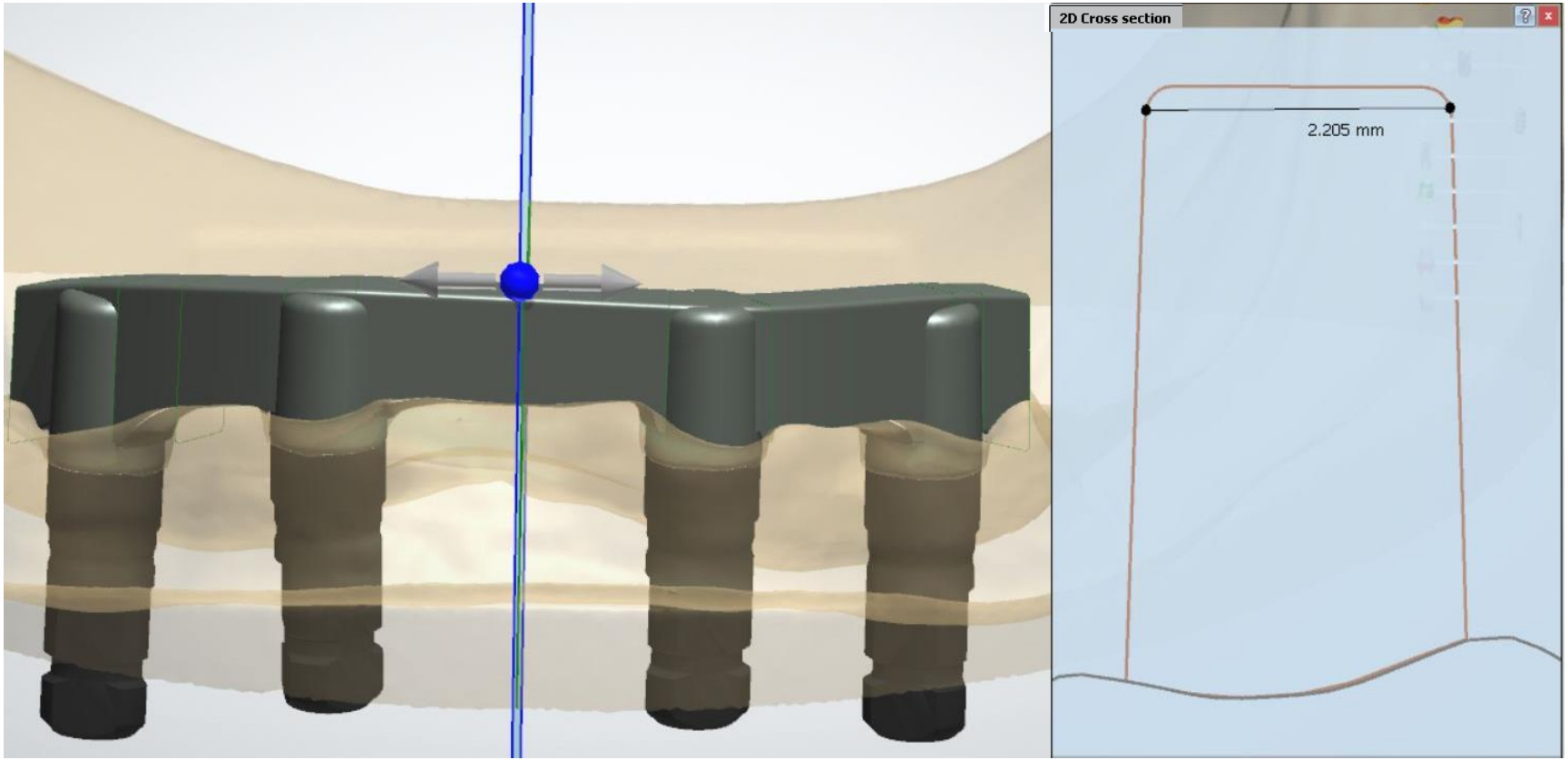




Recommendation on cross section design for bars

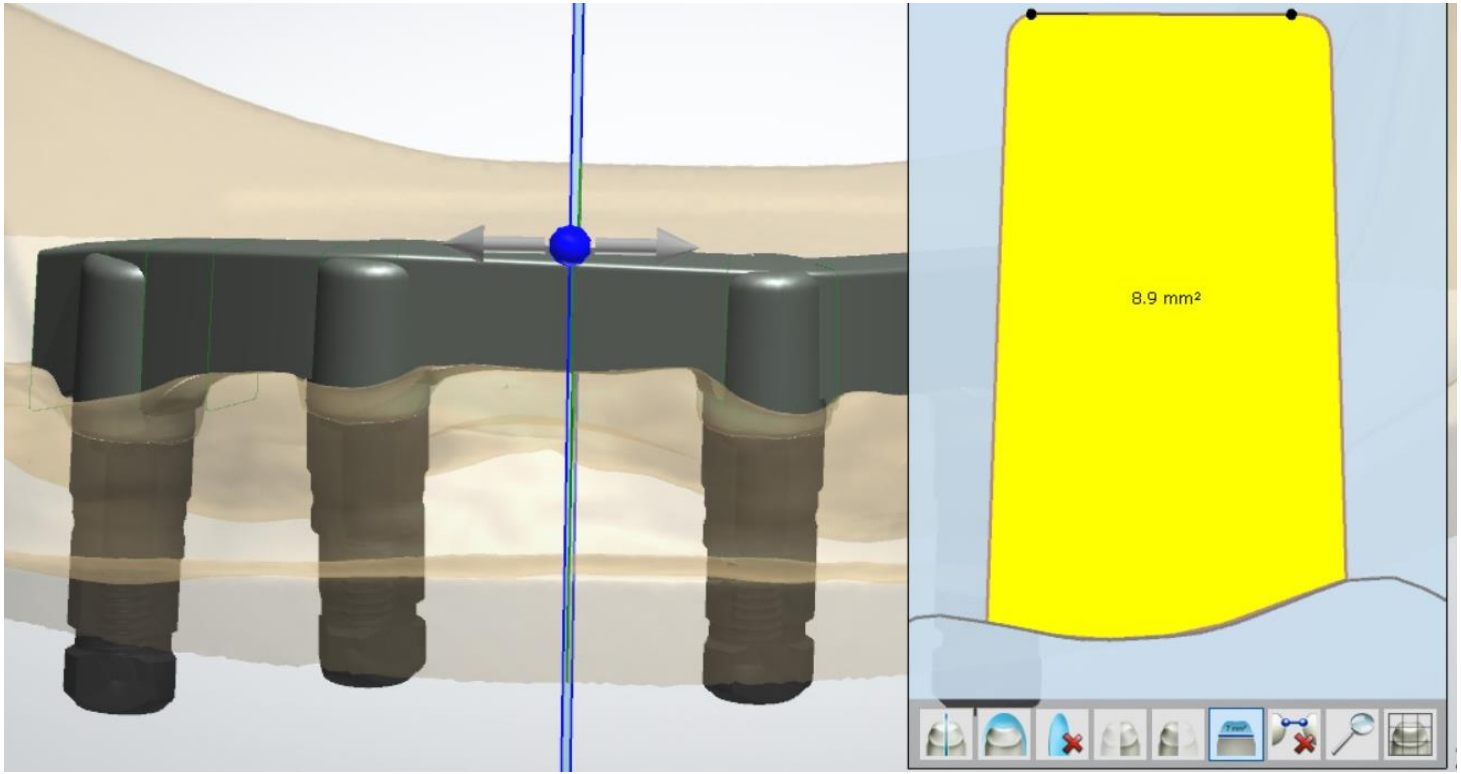
biohorizons camlog

Recommendation on cross section design for bars



Recommended bar width of min. approx. 2.2mm ensures manufacturing of suprastructures

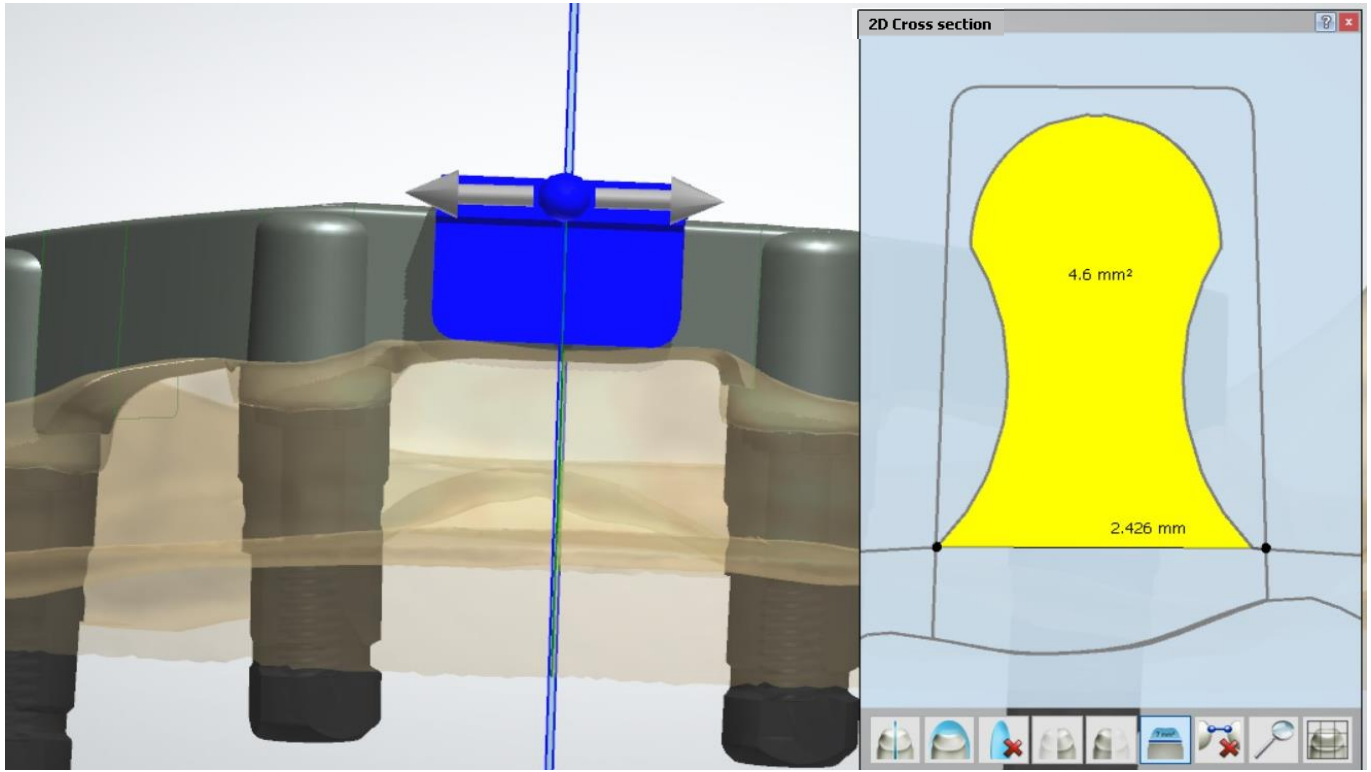
Recommendation on cross section design for bars



It is recommended not to go below a cross-section of approx. 8 to 9mm².

Note: The cross-section is smaller on bars for prefabricated bar matrices (Micro/Macro Dolder).

Recommendation on cross section design for bars



Note:

Preci-Horix cross-section
4.6mm²
plus cross section below
Preci-Horix geometry

For bars with cross-section-reducing attachments (Preci-Horix), it should be noted that the reduced bar cross-section must be compensated by a larger width or height.

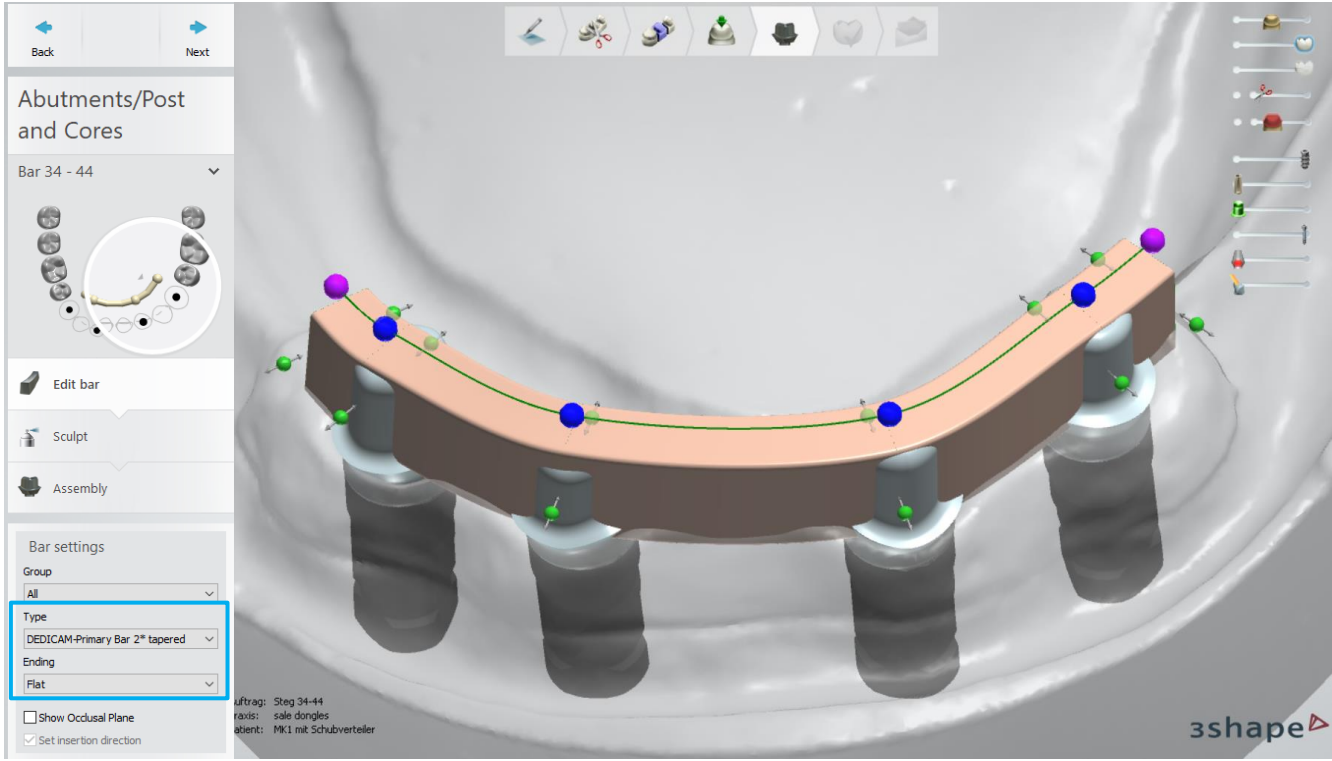
Adding a MK 1 cantilever attachment to a bar

Adding a MK1 cantilever attachment to a bar

Bar type:
DEDICAM
Primary Bar 2° tapered

Set bar ending to „Flat“

Note:
It is the recommendation of the MK1 attachments manufacturer to use a 2° tapered bar type.

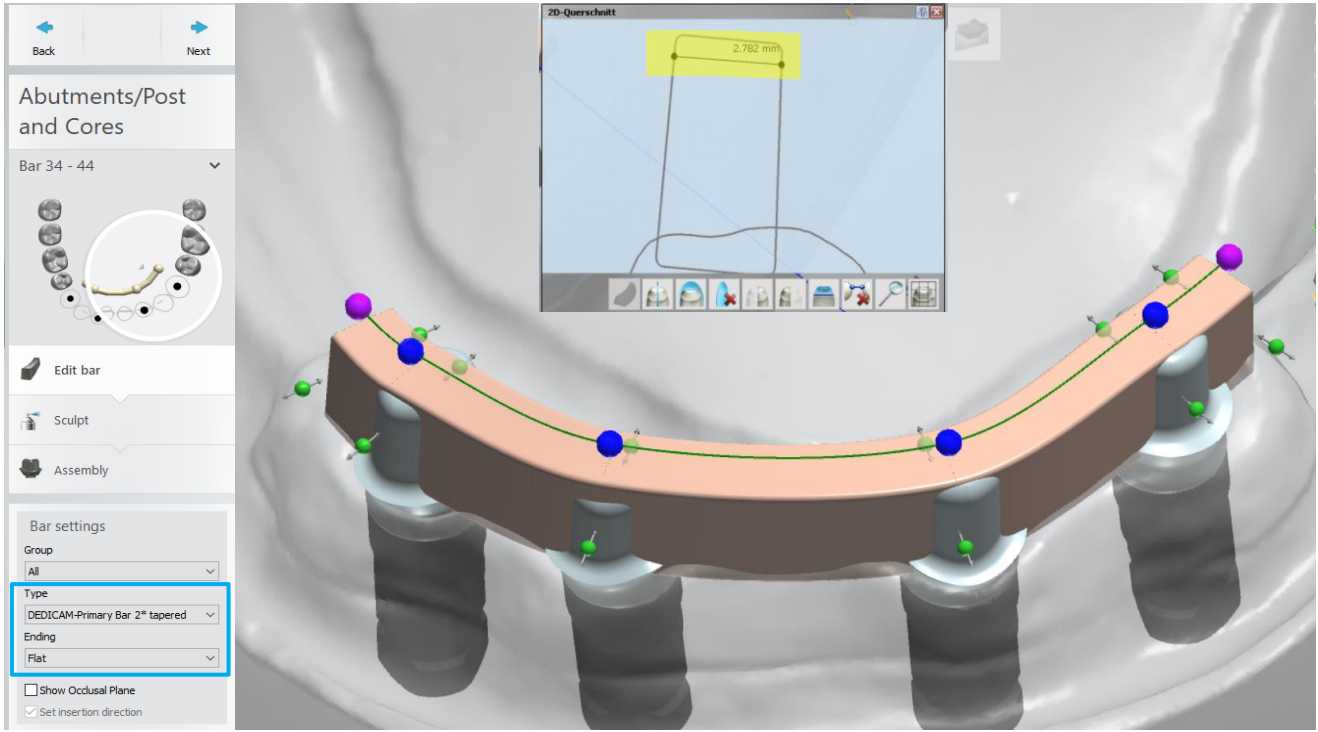


Adding a MK1 cantilever attachment to a bar

Bar type:
DEDICAM
Primary Bar 2° tapered

Set bar ending to „Flat“

Cantilever bar width
min. 2.8mm



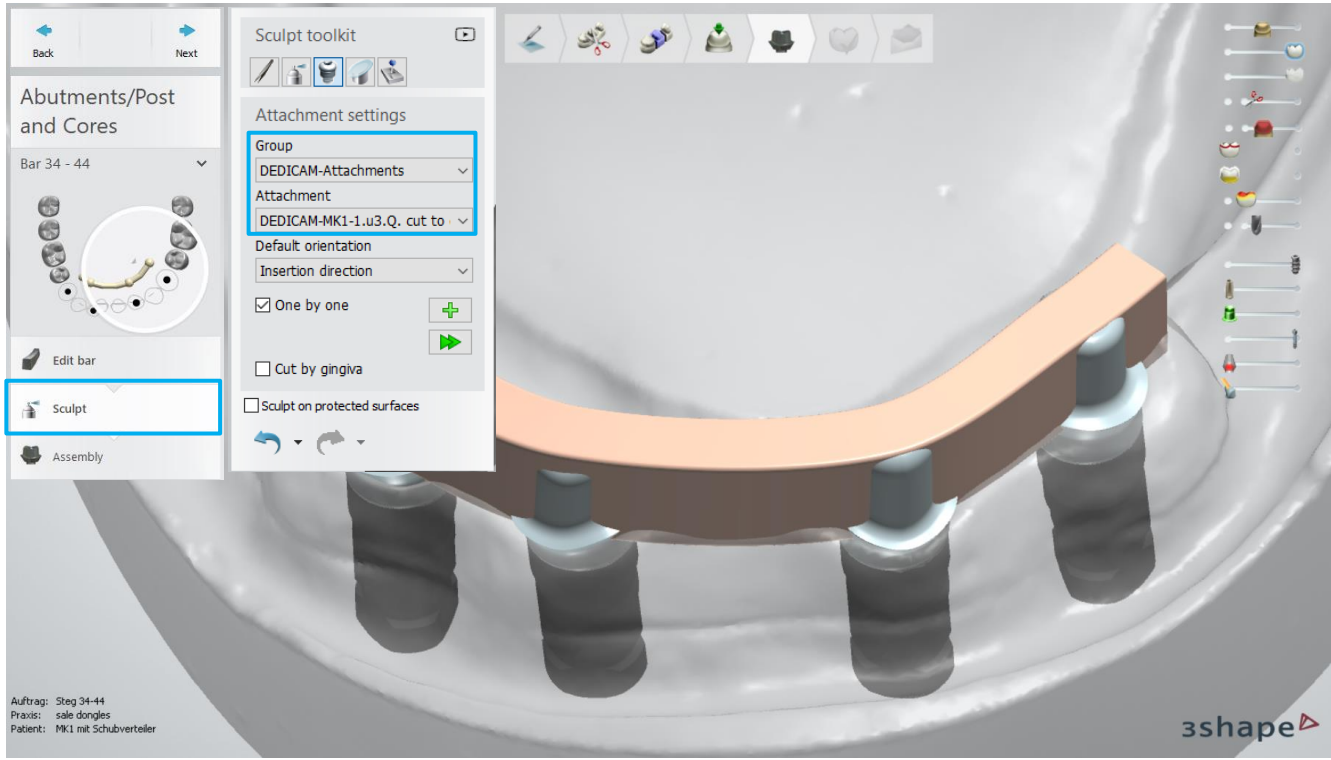
Adding a MK1 cantilever attachment to a bar

Attachment:

Select DEDICAM MK 1-attachment according its placing region 1.u.3.Q. or 2.u.4.Q.

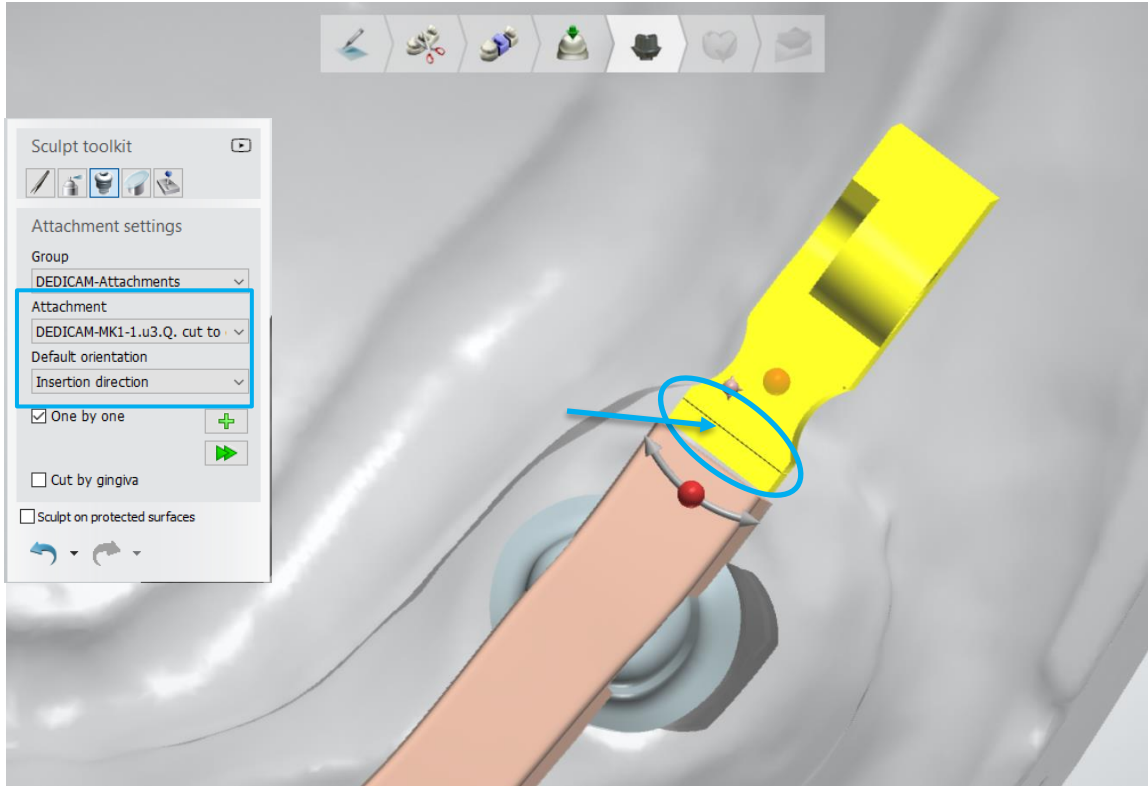
Note:

In case the attachment shall be cut to the gingiva, select MK1 attachment with „cut-to-gingiva“ naming



Adding a MK1 cantilever attachment to a bar

Push the MK1 attachment into the bar profile



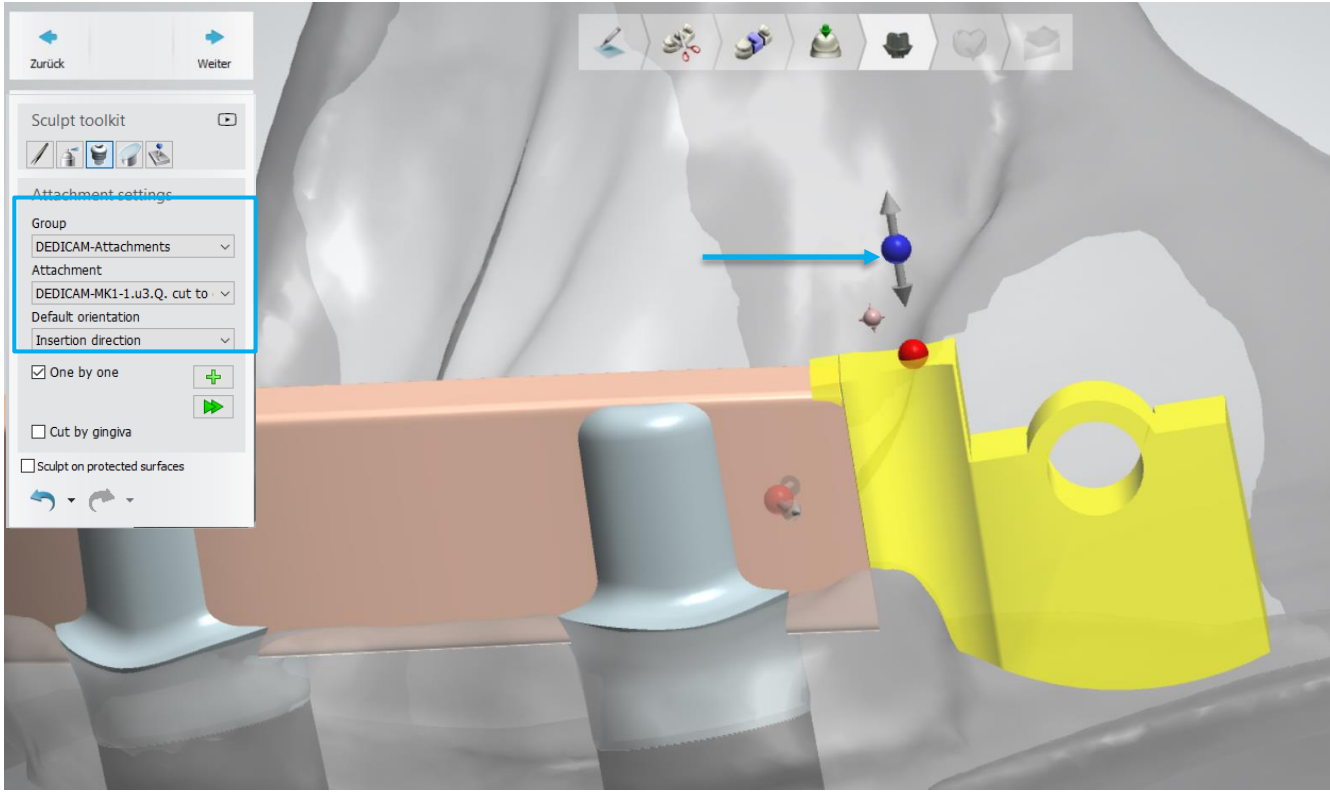
Adding a MK1 cantilever attachment to a bar

Do not push the MK1 attachment further into the bar profile than the marked line indicates.

Adding a MK1 cantilever attachment to a bar

Change to side view for positioning of the MK1 attachment in terms of height.
Therefore, use the arrow with the blue dot.

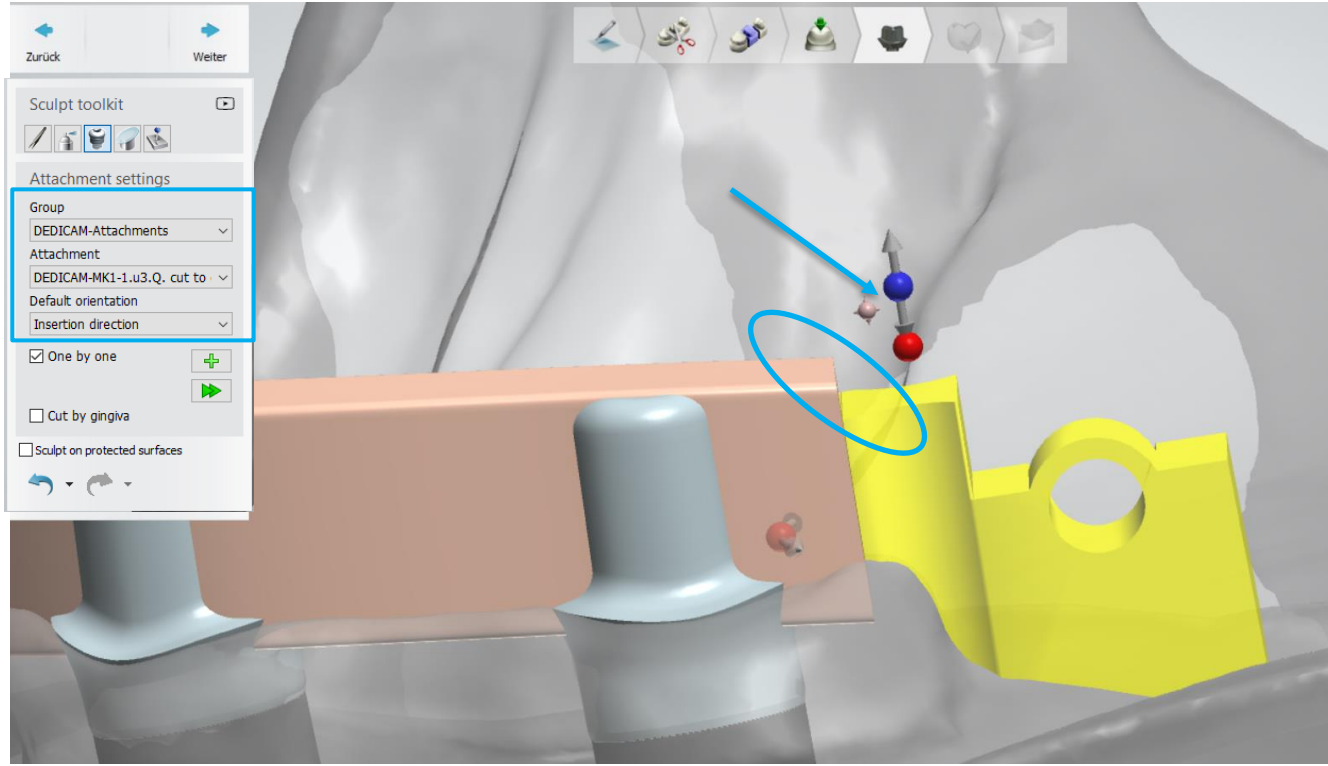
By this, the MK1 attachment is only corrected in height.



Adding a MK1 cantilever attachment to a bar

Change to side view for positioning of the MK1 attachment in terms of height.
Therefore, use the arrow with the blue dot.

By this, the MK1 attachment is only corrected in height.

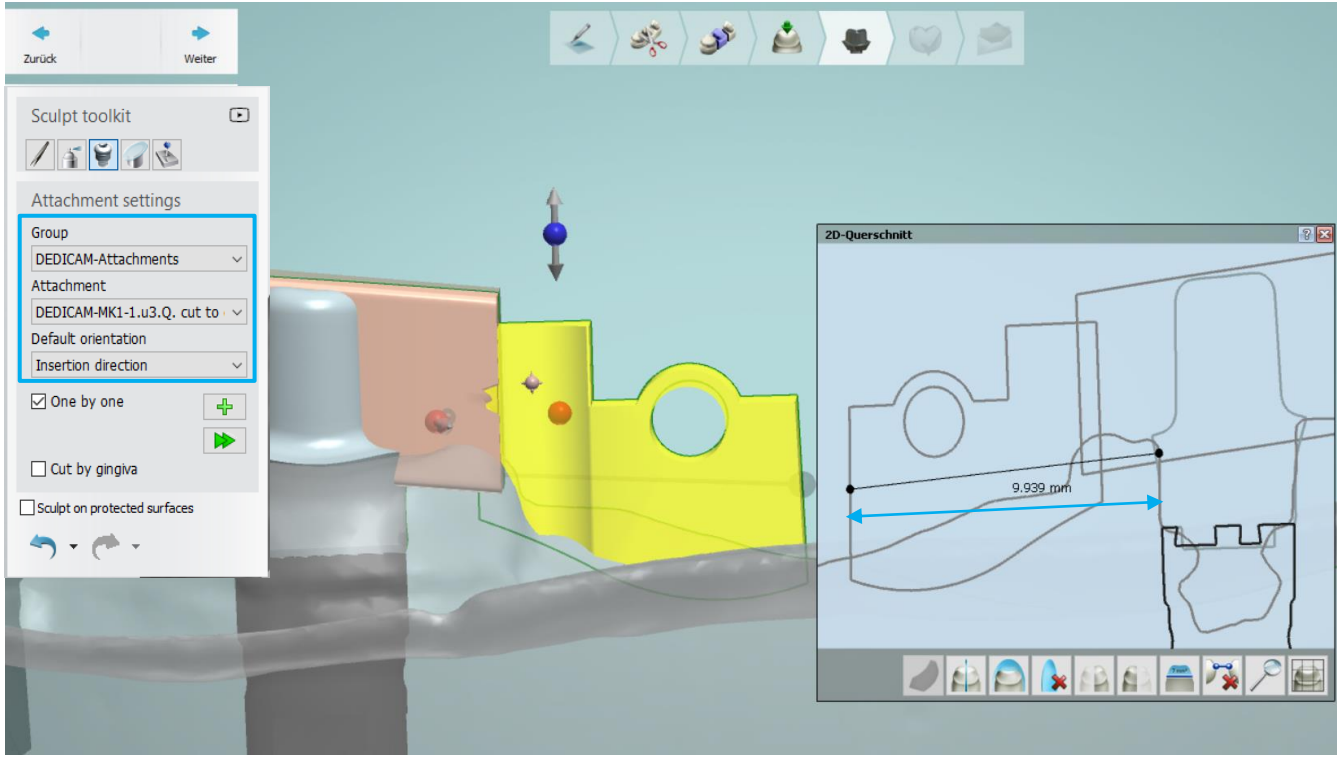


Adding a MK1 cantilever attachment to a bar

Attention:

According to the IFU, the maximum extension of the bar including attachment is 10mm measured from the outer diameter of the implant.

Use the 2-D cross section to verify the length



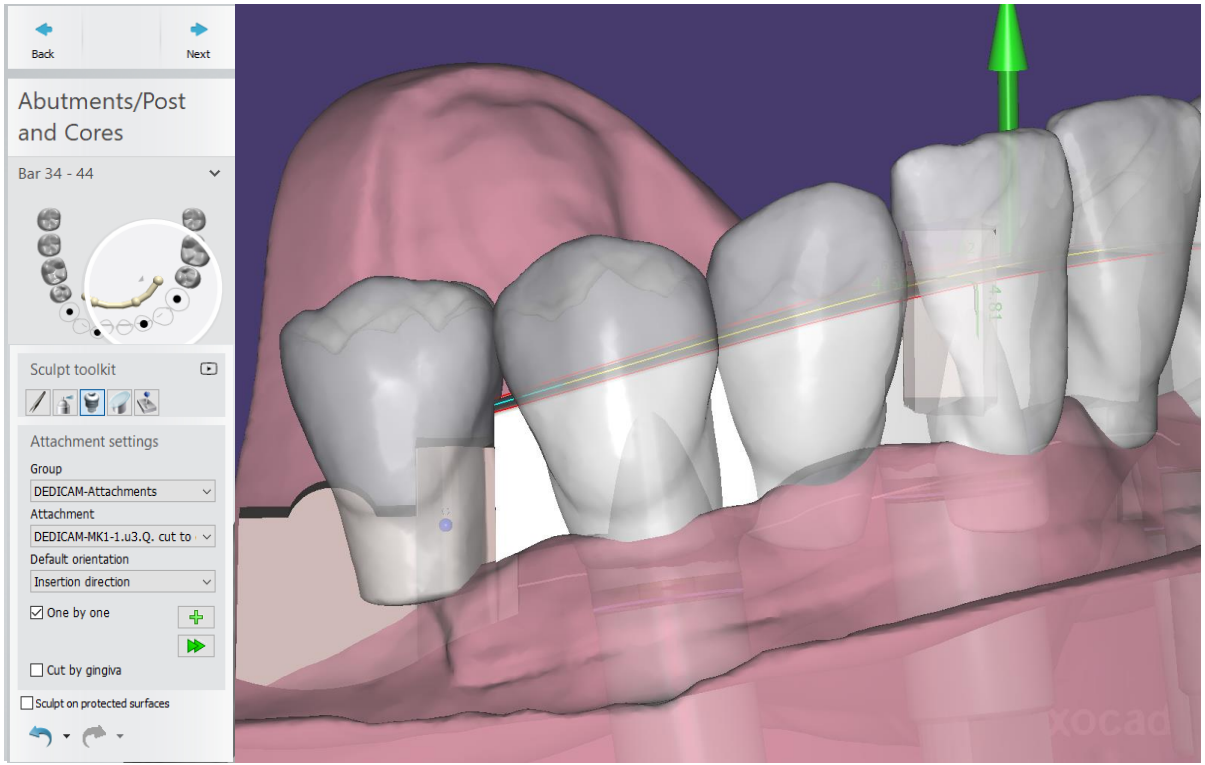
Adding a MK1 cantilever attachment to a bar

Attachment:

The ideal solution is to place the functional part of the DEDICAM MK 1 attachment in the interdental space of the denture teeth.

Note:

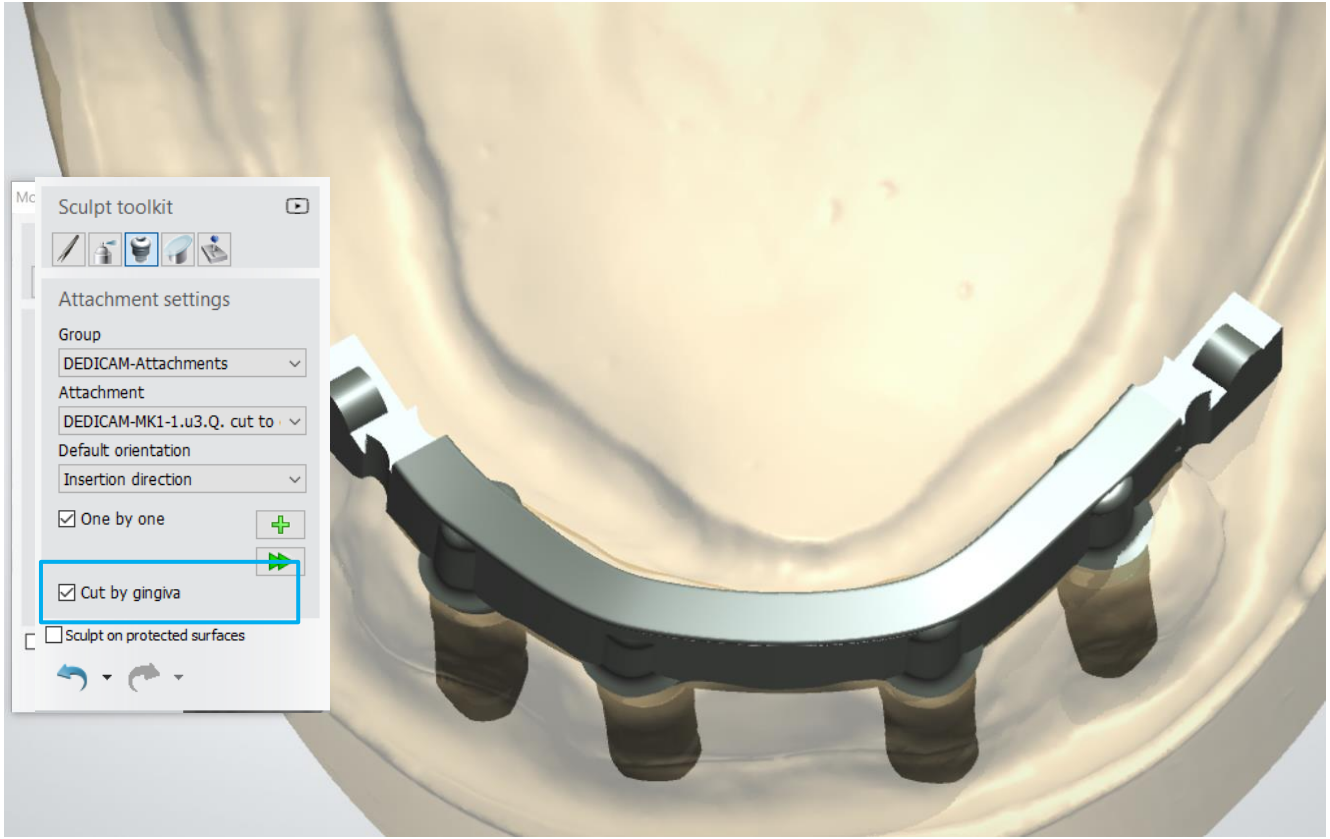
In order to ensure operability by the patient it is recommended to place the functional part of the MK 1 attachment not further distal than the 2nd premolar.



Adding a MK1 cantilever attachment to a bar

Attachment:

After final positioning of the MK1 attachments tick the checkbox „cut by gingiva“.

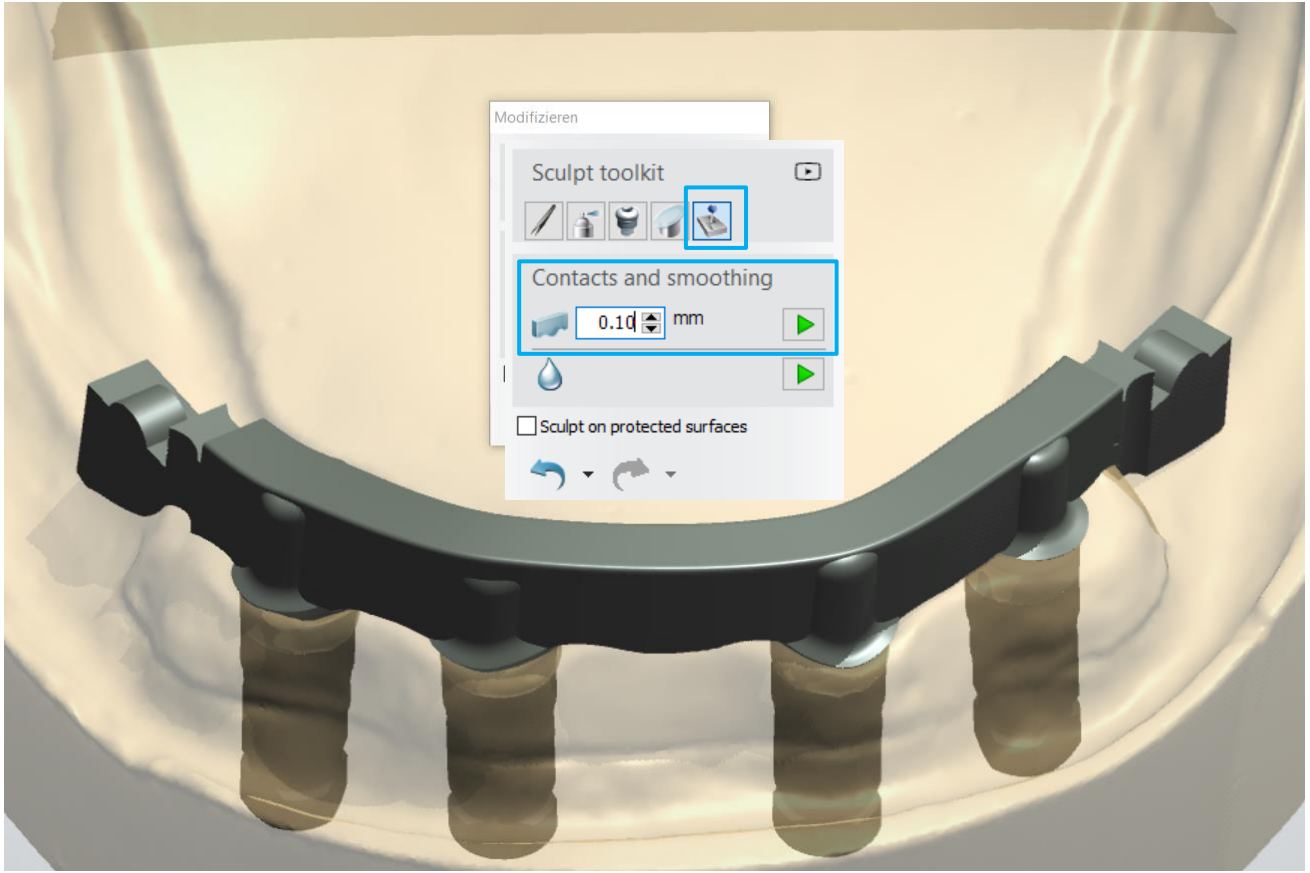


Adding a MK1 cantilever attachment to a bar

Sculpt toolkit:

Bar cut by gingiva distance selectable e.g. 0.10mm

Operation activated by clicking the ▶ symbol

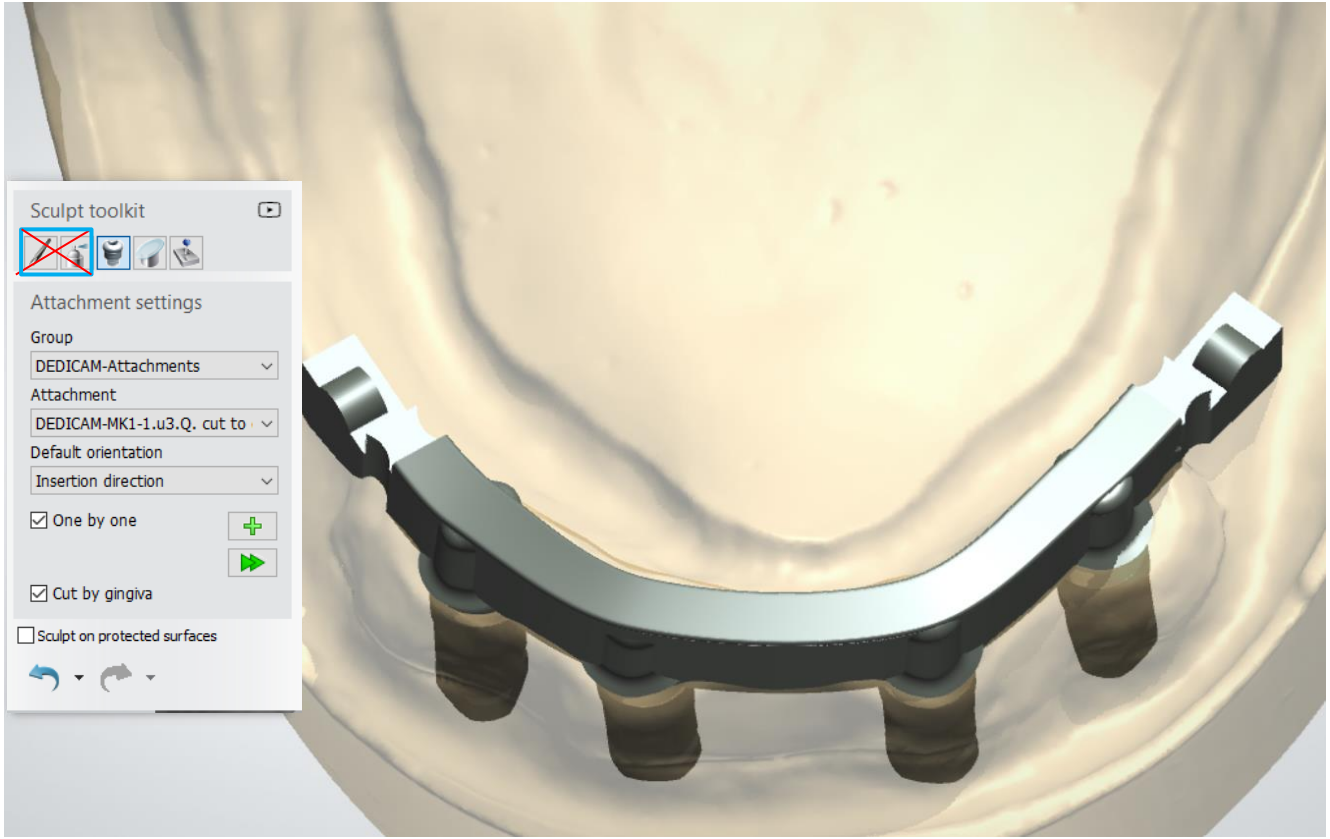


Adding a MK1 cantilever attachment to a bar

Attachment:

Advise:

Do not use any other tools from the sculpt toolkit to finalize the bar design.



Adding a MK1 cantilever attachment to a bar

Send the design via inBox to the DEDICAM production site.

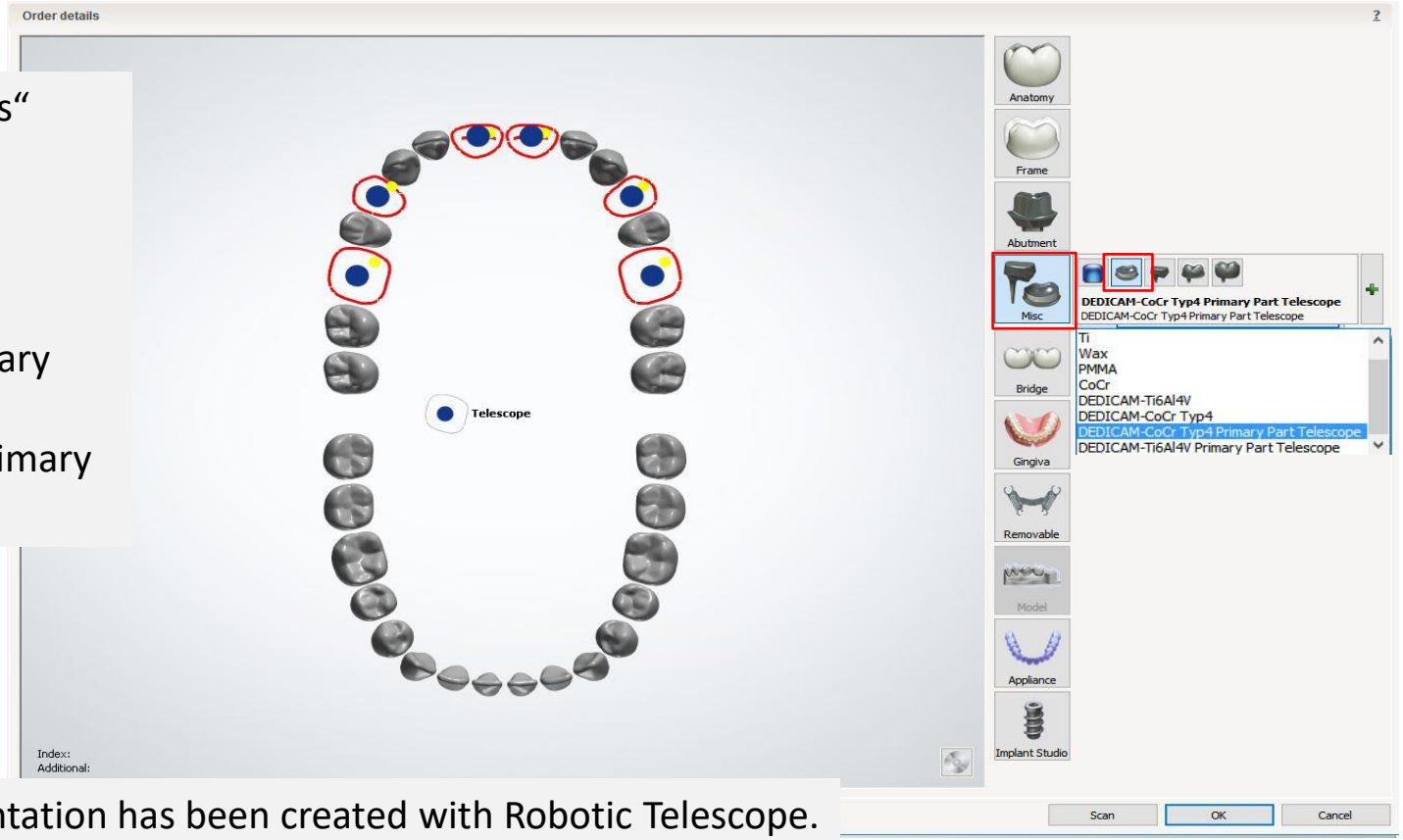
Design of primary parts for telescopic crowns

Design of primary parts for telescopic crowns

Order creation

- Select „Miscellaneous“
- Telescope
- Robotic Telescope *

- Select material:
- DEDICAM Ti6Al4V Primary Part Telescope
- DEDICAM CoCr Typ4 Primary Part Telescope



* The following documentation has been created with Robotic Telescope.

Design of primary parts for telescopic crowns

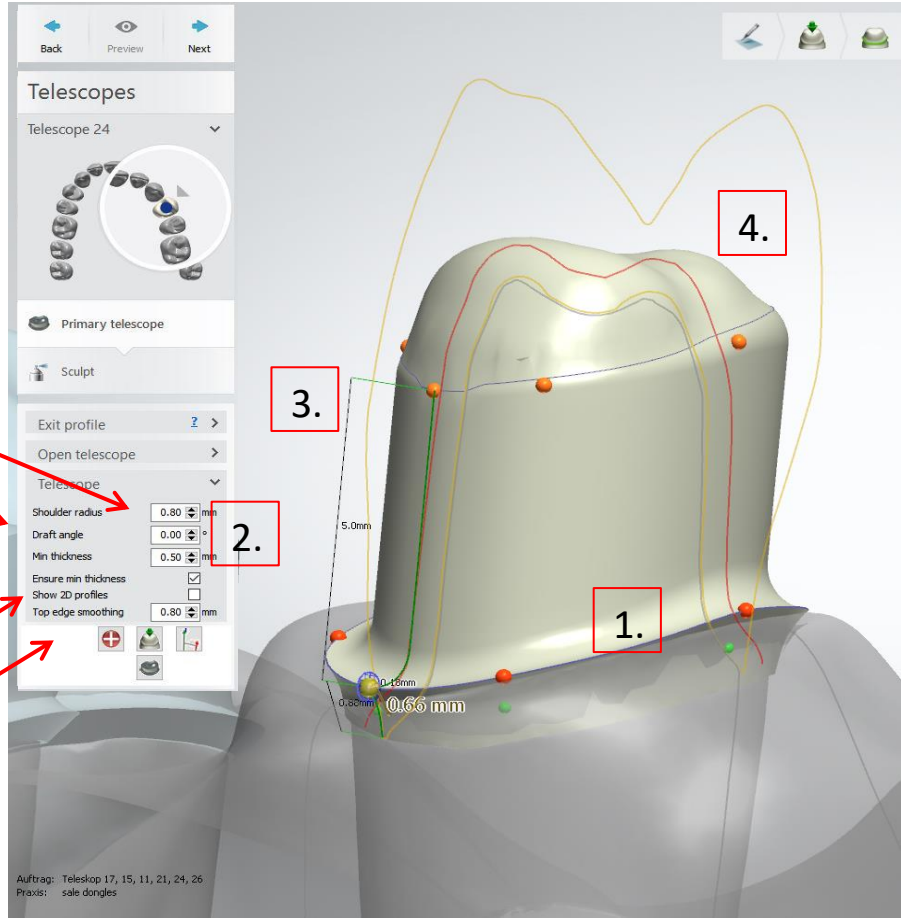
Note:
All primary parts of telescopic crowns are constructed with the same insertion direction.

1. abutment shoulder = epigingival / supragingival
   Shoulder radius = 0.80mm

2. Draft angle parallel telescope = 0°
   Draft angle conical telescope = 2 – 6°

3. Height functional area = height 5.0mm
   (parallel or conical)
   Information: Height can be visualised by activating „Show 2D profiles“

4. Top edge smoothing = 0.80mm



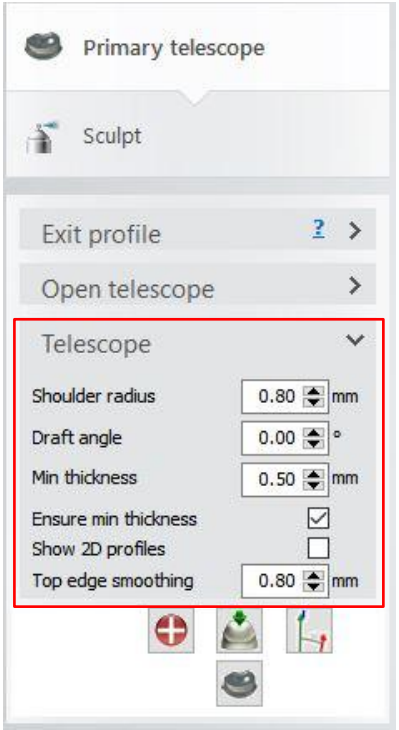
Design of primary parts for telescopic crowns

- **Shoulder radius 0.80mm**
- Value for abutment shoulder

- **Draft angle 0.00° - 6.00°**
- Value can be changed for parallel telescopes = 0° and
- for conical telescopes 2 – 6°
- (Note: use same value per jaw)

- **Minimum thickness 0.50mm**
- Value should not be changed if possible in order to ensure that
- there is enough material thickness even after corrections.
- **Recommendation:** tick „Ensure min thickness“

- **Top edge smoothing 0.80mm**



Note:

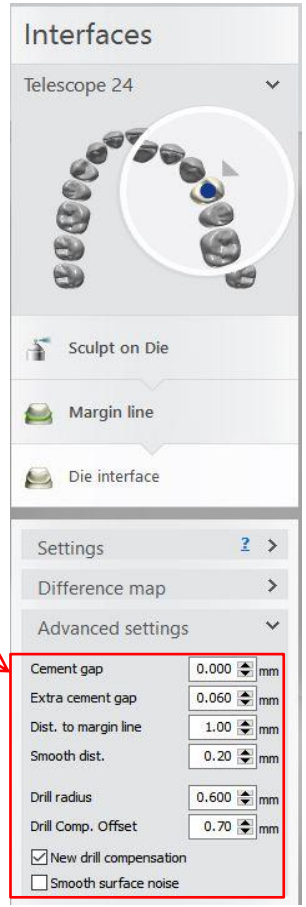
Values for shoulder radius and top edge smoothing enable shape congruent secondary parts of telescopes.

Design of primary parts for telescopic crowns

Stump parameter, internal fit for primary parts of telescopic crowns

Cement gap	0.000mm
Extra cement gap	0.060mm
Dist. to margin line	1.00mm
Smooth dist.	0.20mm
Drill radius	0.600mm
Drill comp. offset	0.70mm

The values correspond to the values of frameworks and crowns.



Design of primary parts for telescopic crowns

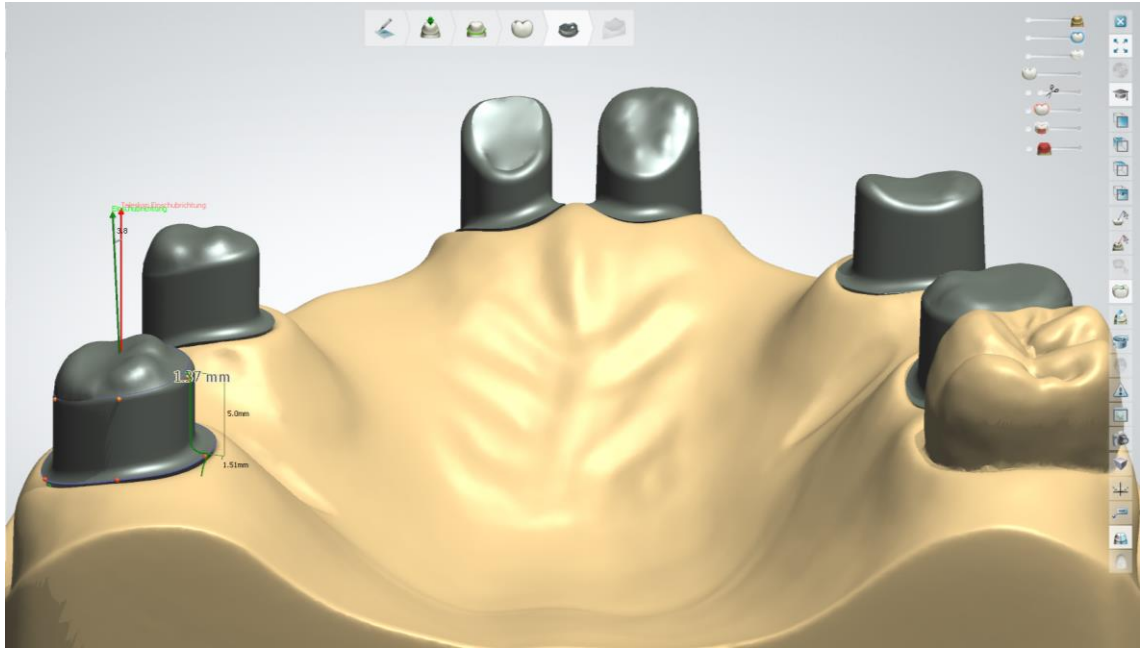
Finish of the primary parts for telescopic crowns

Right quadrant = primary parallel telescopes

Left quadrant = primary 2° conical telescopes

Note: Telescopes with parallel and conical designs should never be mixed.

DEDICAM does not support design and milling of secondary crowns



Attaching a Preci-Vertix® with interlock and circumference to crowns and bridges

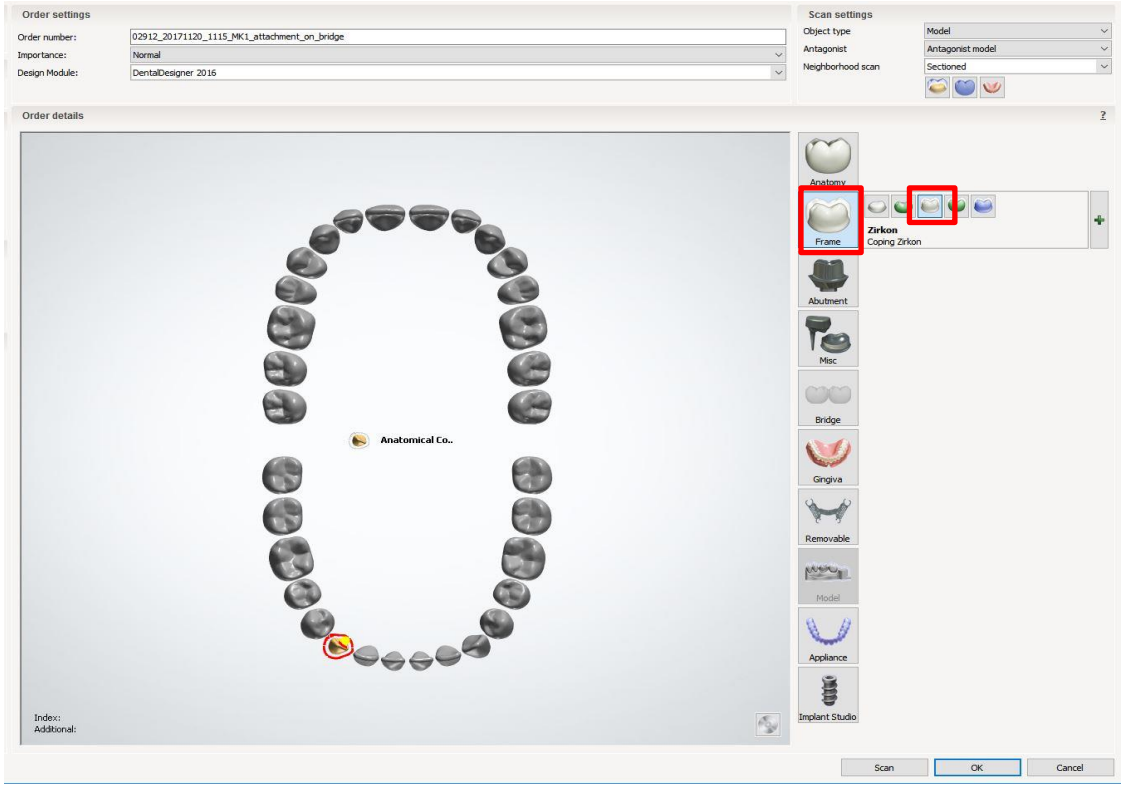
Attaching a Preci-Vertix® with interlock and circumference

In order to position attachments to fixed bridges or crown blocks or to cut them by the gingiva note the explanations with the example designs when creating the order.

For the design of attachments it is necessary to use the up-to-date DEDICAM® CAD library.

Attaching a Preci-Vertix® with interlock and circumference

Example: tooth 43 + 44 frame, blocked / attachment distal on tooth 44

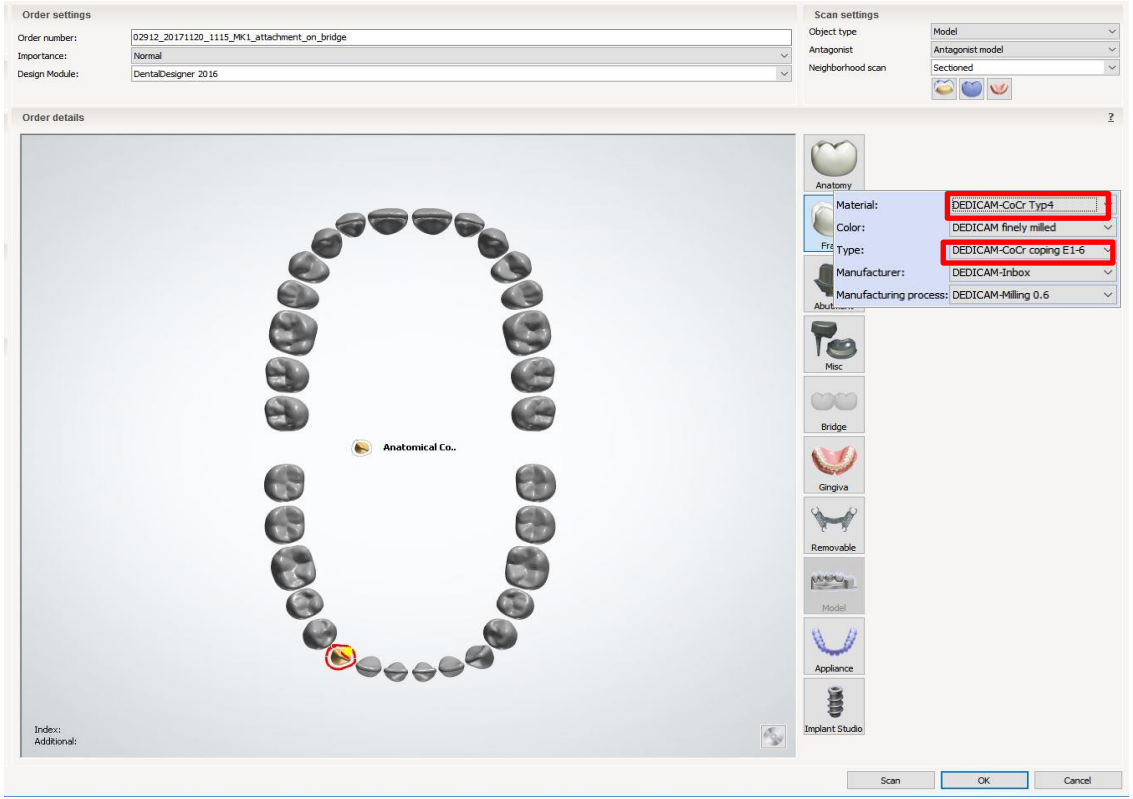


Order creation: tooth 43

- “Frame”
- “Anatomical coping”

Attaching a Preci-Vertix® with interlock and circumference

Example: tooth 43 + 44 frame, blocked / attachment distal on tooth 44

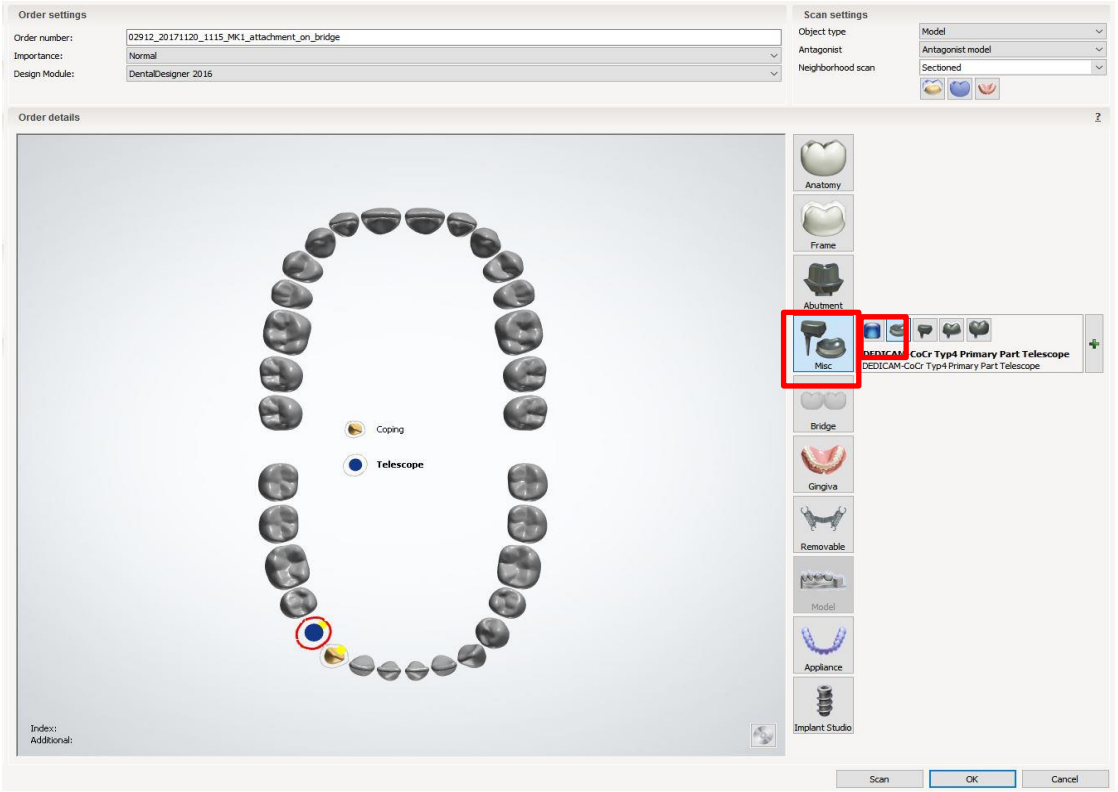


Order creation: tooth 43

- Material: e. g. “DEDICAM- CoCr Typ4”
- Type: “DEDICAM-CoCr coping E1-6”

Attaching a Preci-Vertix® with interlock and circumference

Example: tooth 43 + 44 frame, blocked / attachment distal on tooth 44

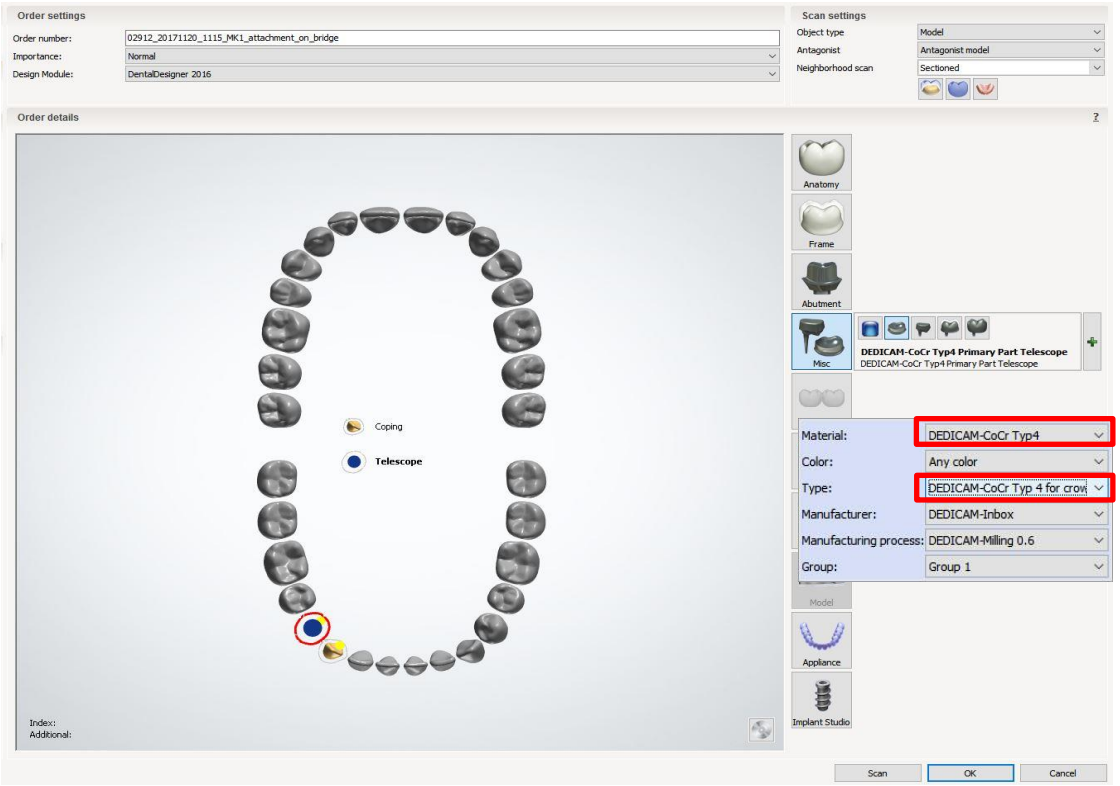


Order creation: tooth 44

- “Miscellaneous”
- “Robotic Telescope”

Attaching a Preci-Vertix® with interlock and circumference

Example: tooth 43 + 44 frame, blocked / attachment distal on tooth 44

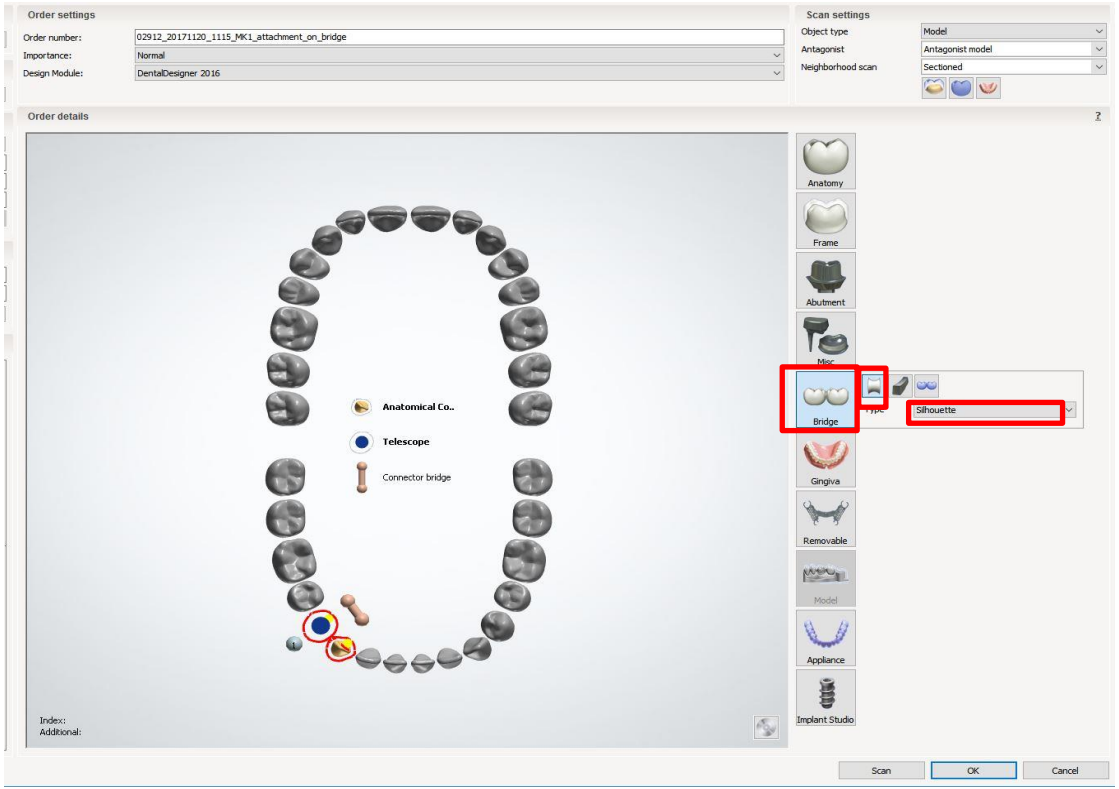


Order creation: tooth 44

- Material: e. g. “DEDICAM-CoCr Typ4”
- Type: “DEDICAM-CoCr Typ 4 for crown and pontic with attachments“

Attaching a Preci-Vertix® with interlock and circumference

Example: tooth 43 + 44 frame, blocked / attachment distal on tooth 44

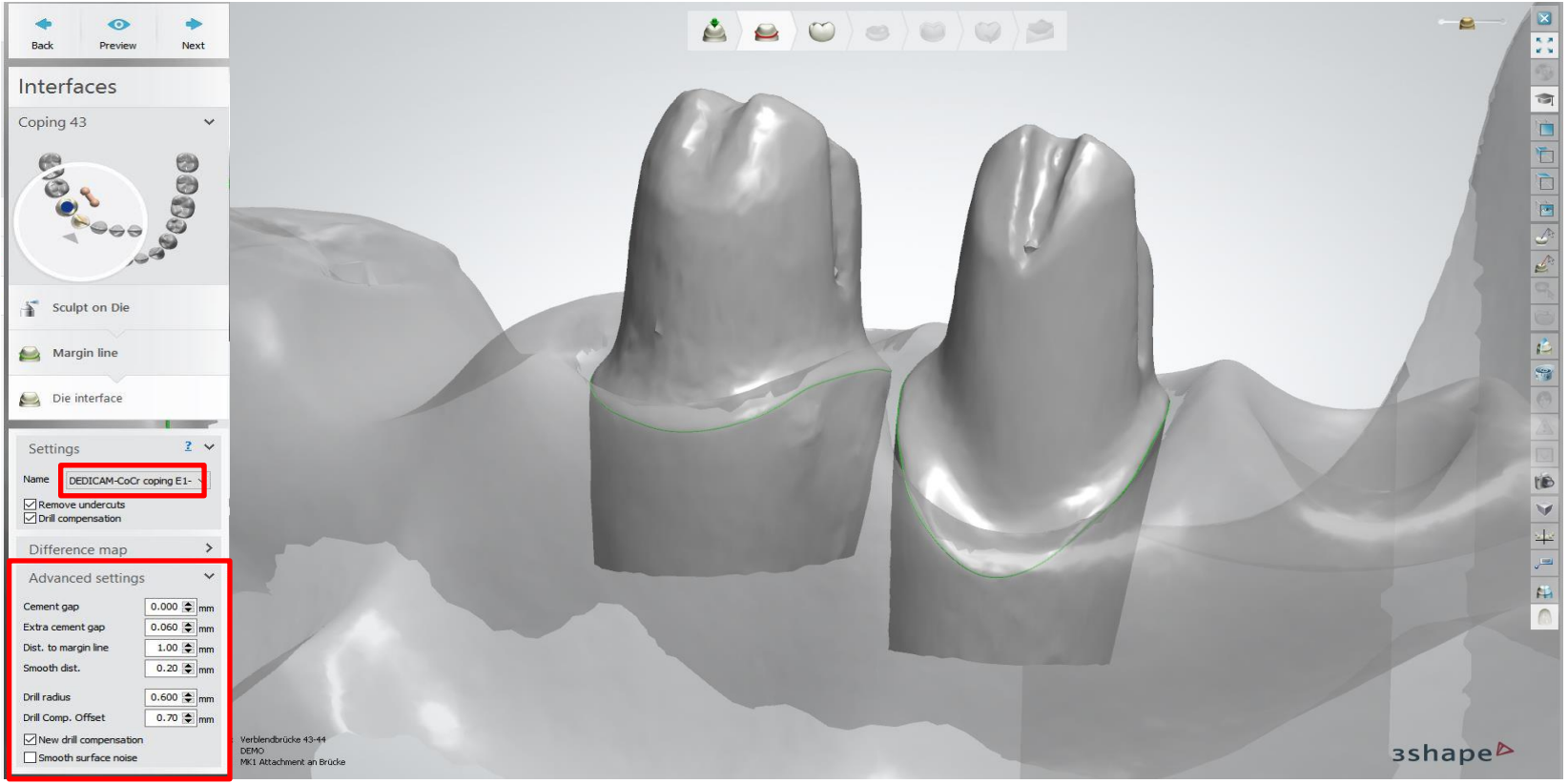


Order creation: bridge

- select tooth 43 + 44 “Bridge”
- “Connector bridge”
- Type: e. g. “Silhouette”

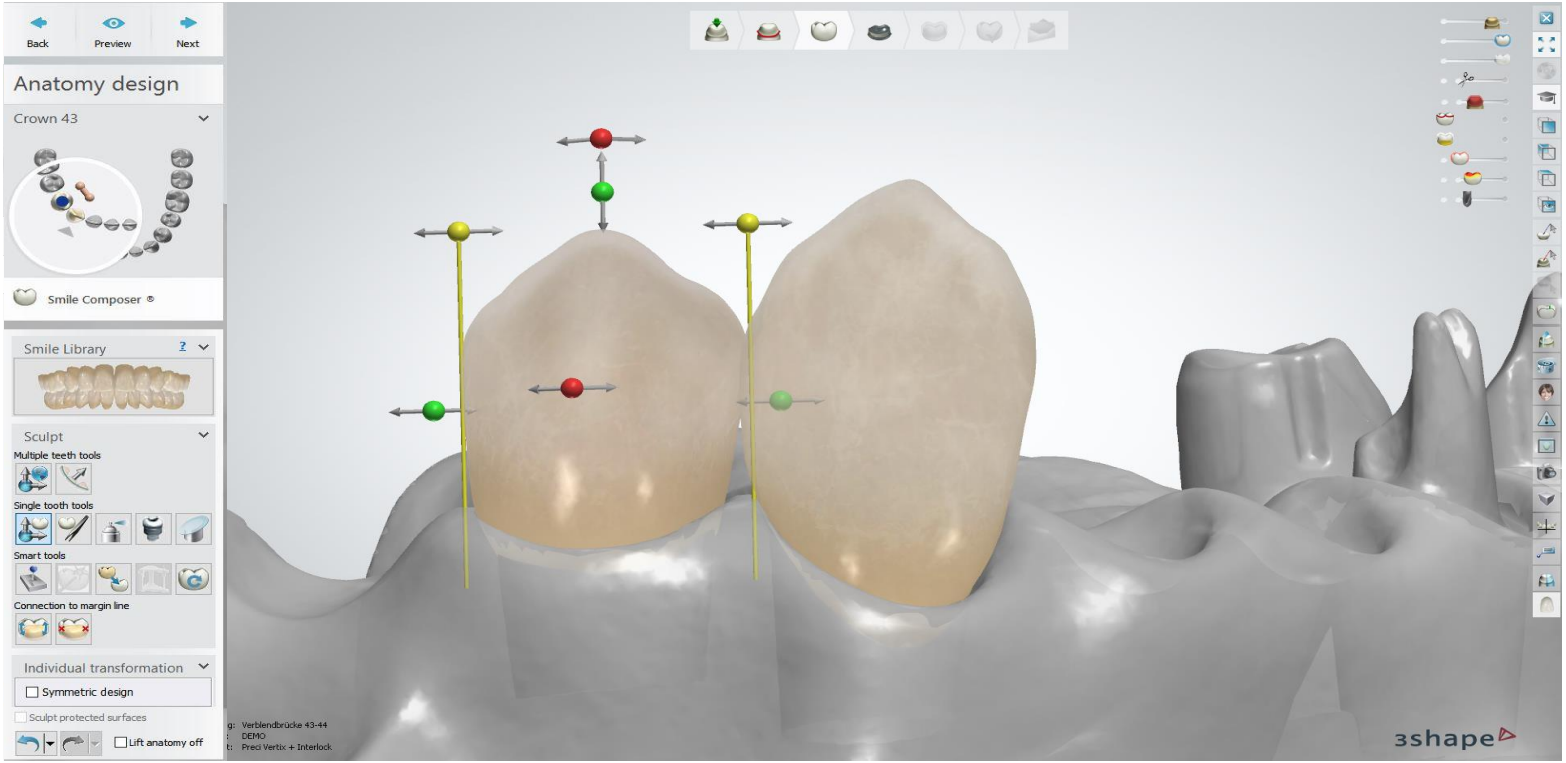
Attaching a Preci-Vertix® with interlock and circumference

Stump fit tooth 43 and 44: Values should be identical



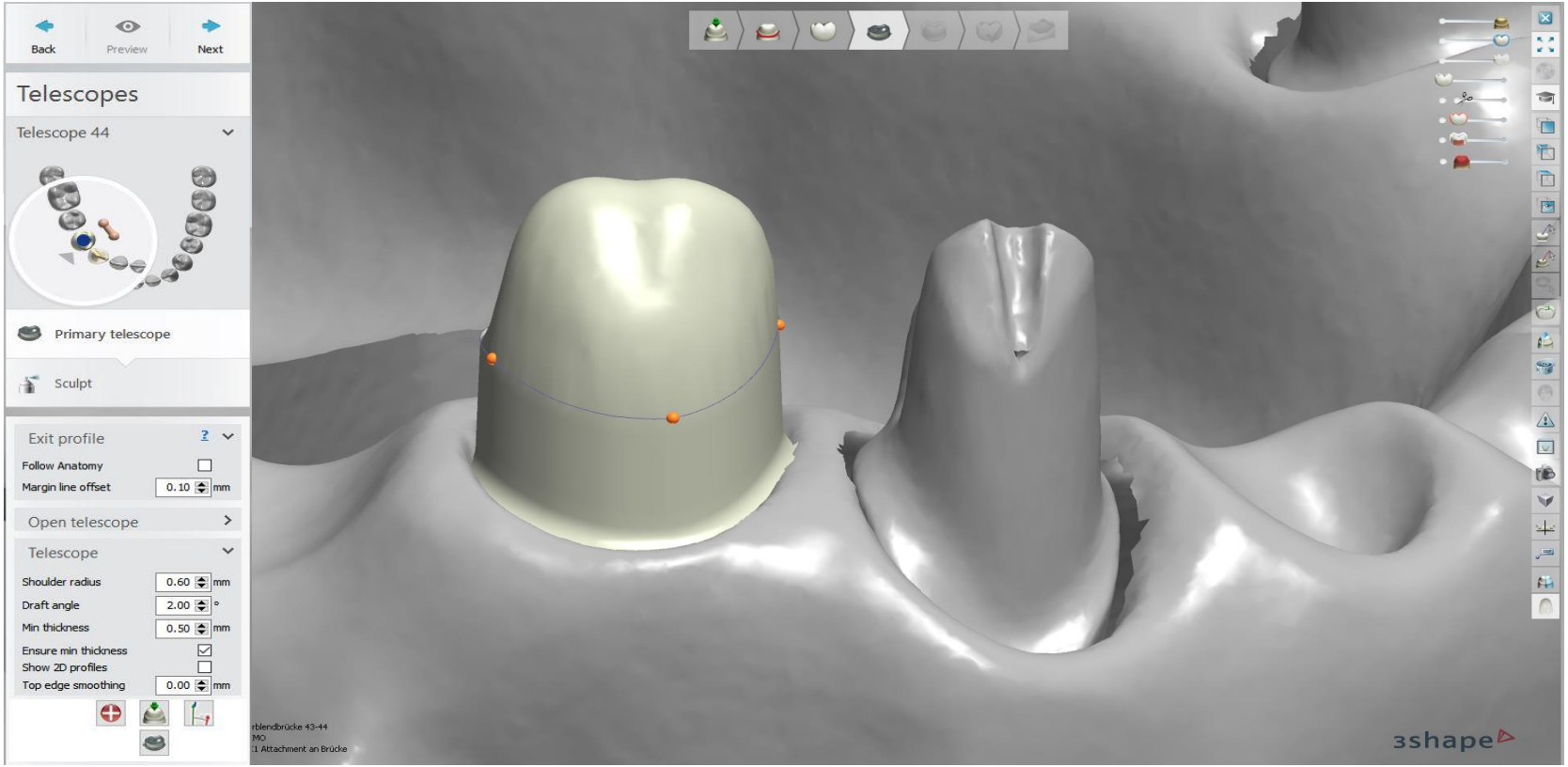
Attaching a Preci-Vertix® with interlock and circumference

Match the anatomical design to the case.
(leave sufficient space around tooth 44 for the circumference and the interlock)



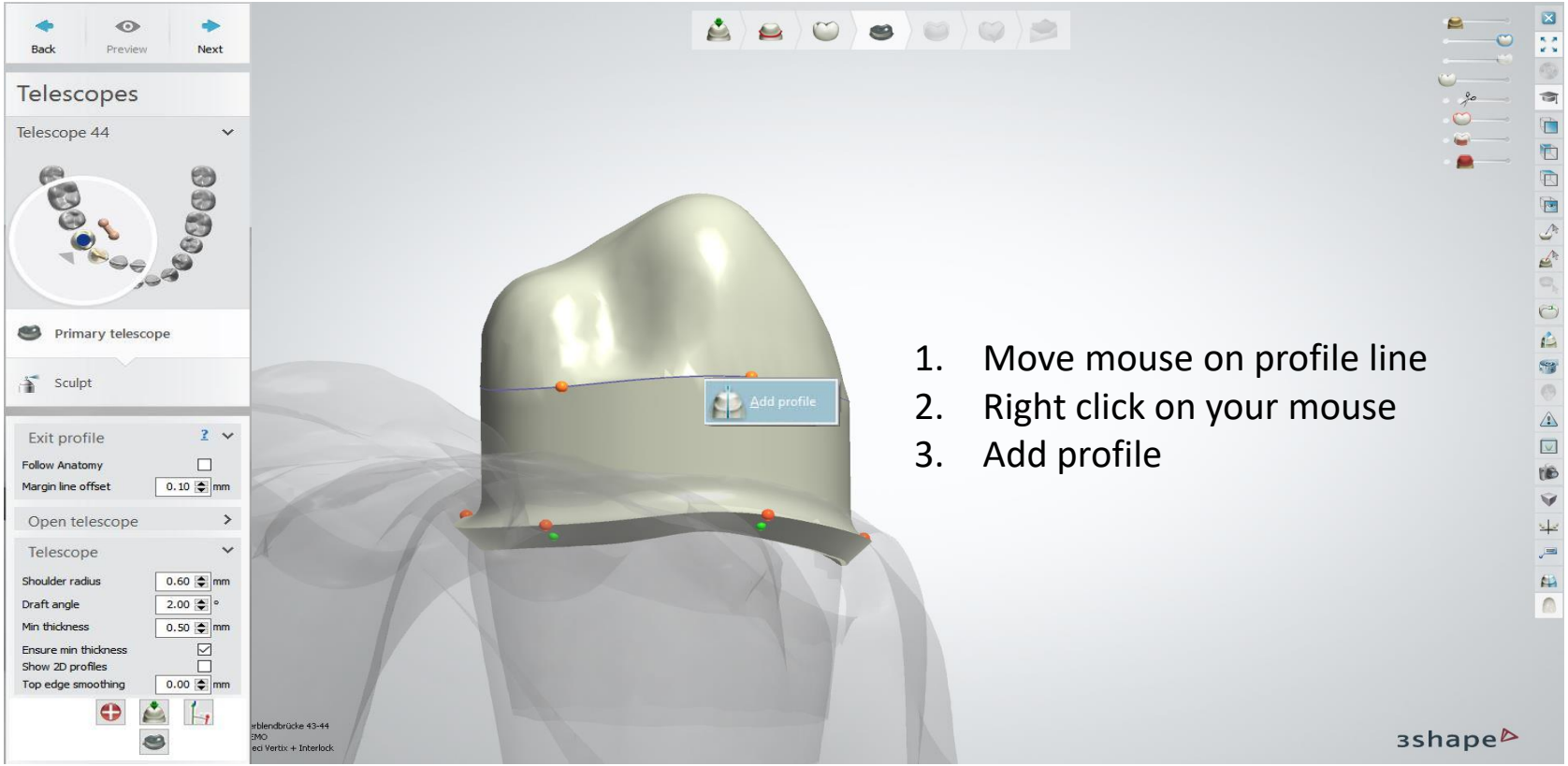
Attaching a Preci-Vertix® with interlock and circumference

Telescope module: alter parallel surfaces



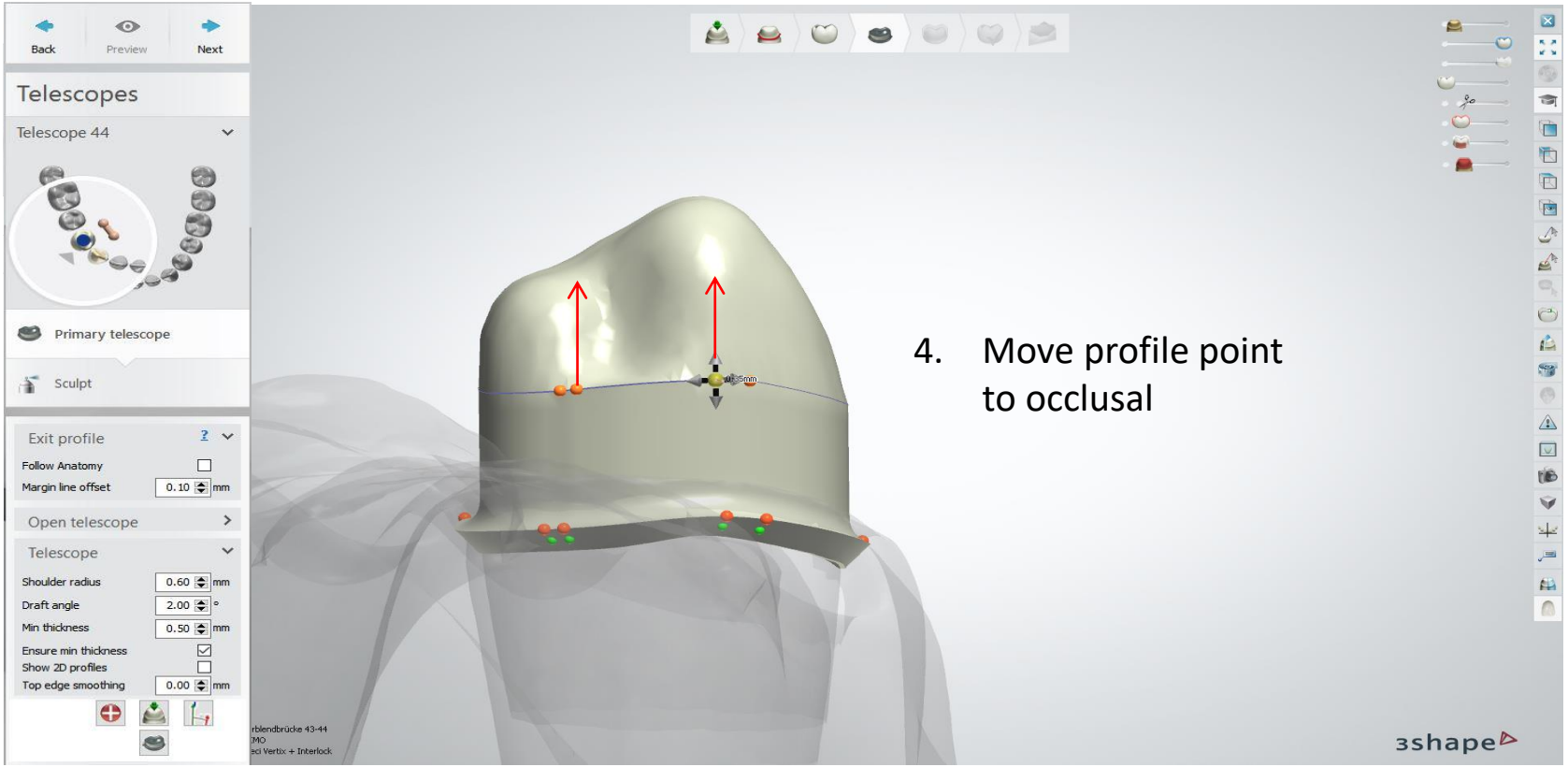
Attaching a Preci-Vertix® with interlock and circumference

Telescope module: add profile in order to create the distal surface for Preci-Vertix® compatible male parts



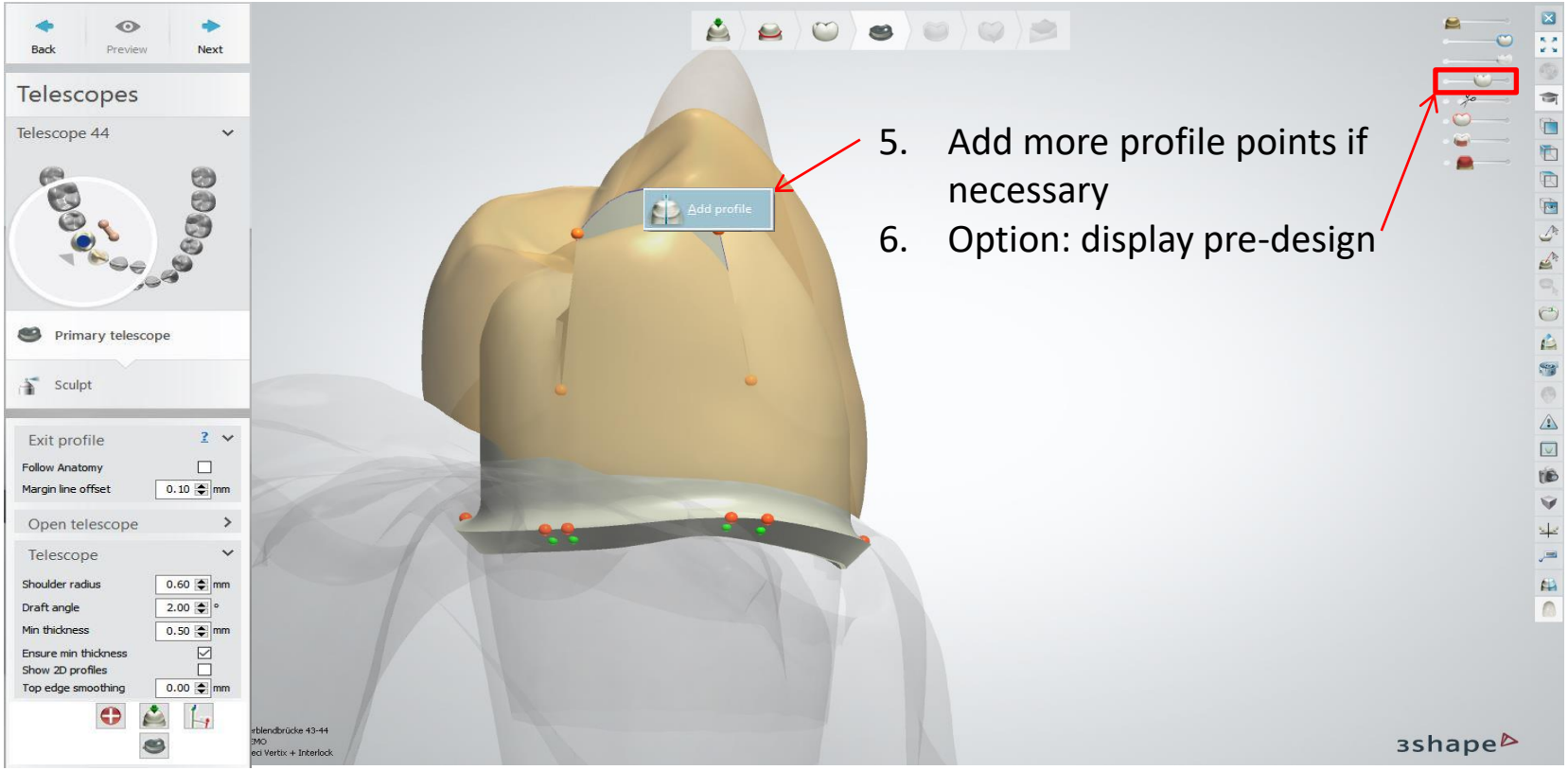
Attaching a Preci-Vertix® with interlock and circumference

Telescope module: add profile in order to create the distal surface for Preci-Vertix® compatible male parts



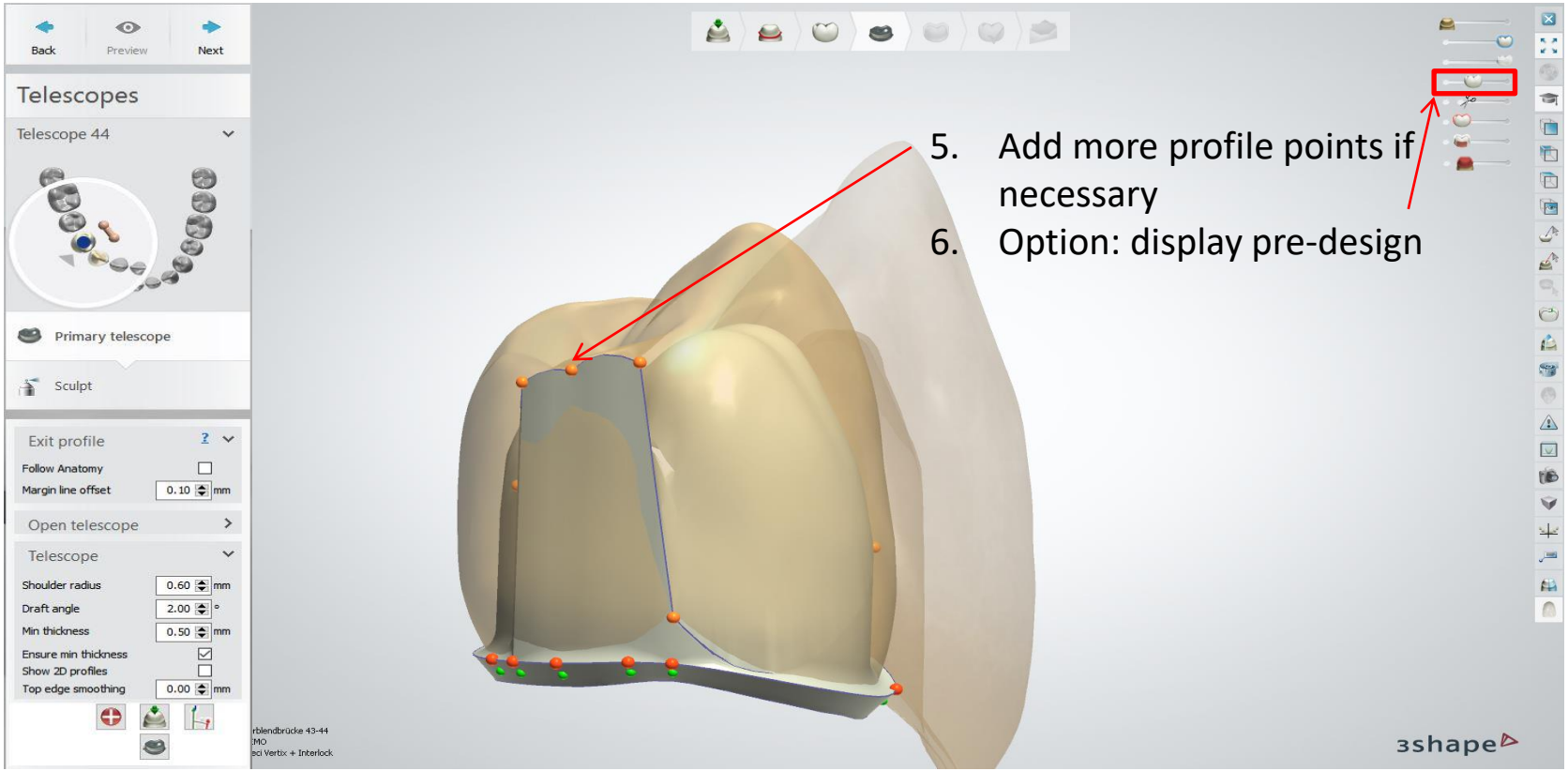
Attaching a Preci-Vertix® with interlock and circumference

Telescope module: add profile in order to create the distal surface for Preci-Vertix® compatible male parts



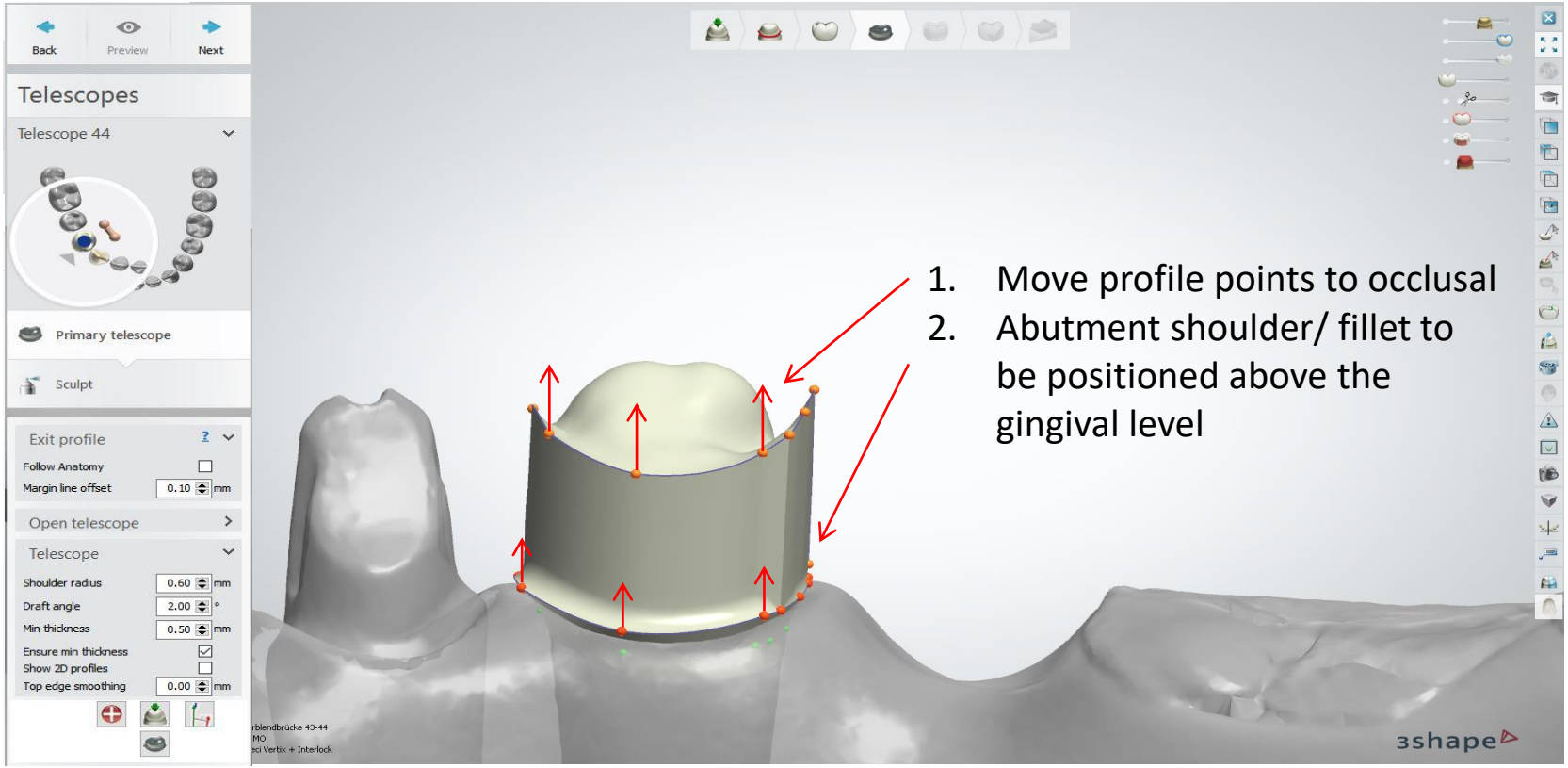
Attaching a Preci-Vertix® with interlock and circumference

Telescope module: create the distal surface for Preci-Vertix® compatible male parts



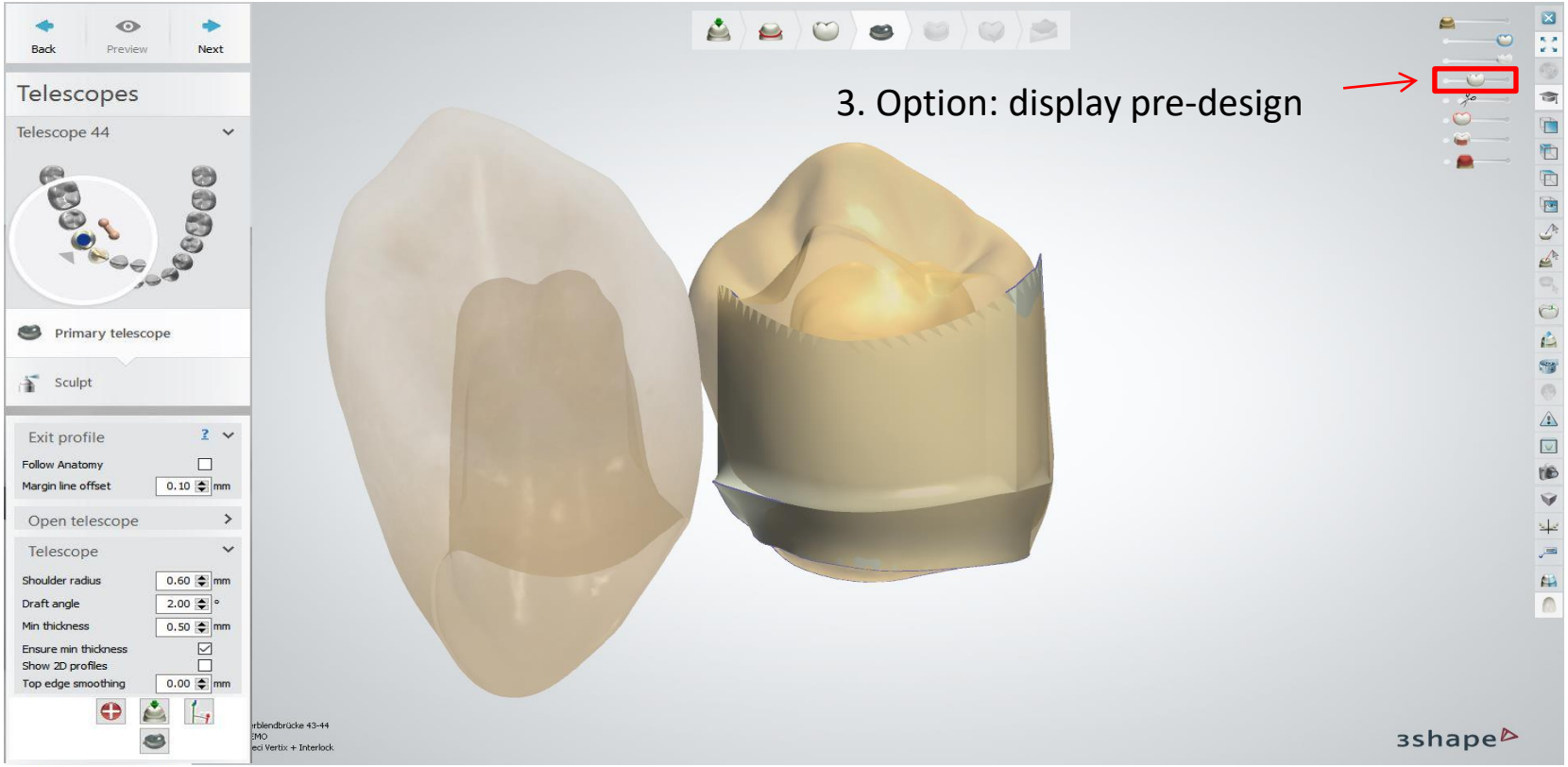
Attaching a Preci-Vertix® with interlock and circumference

Telescope module: create circumference



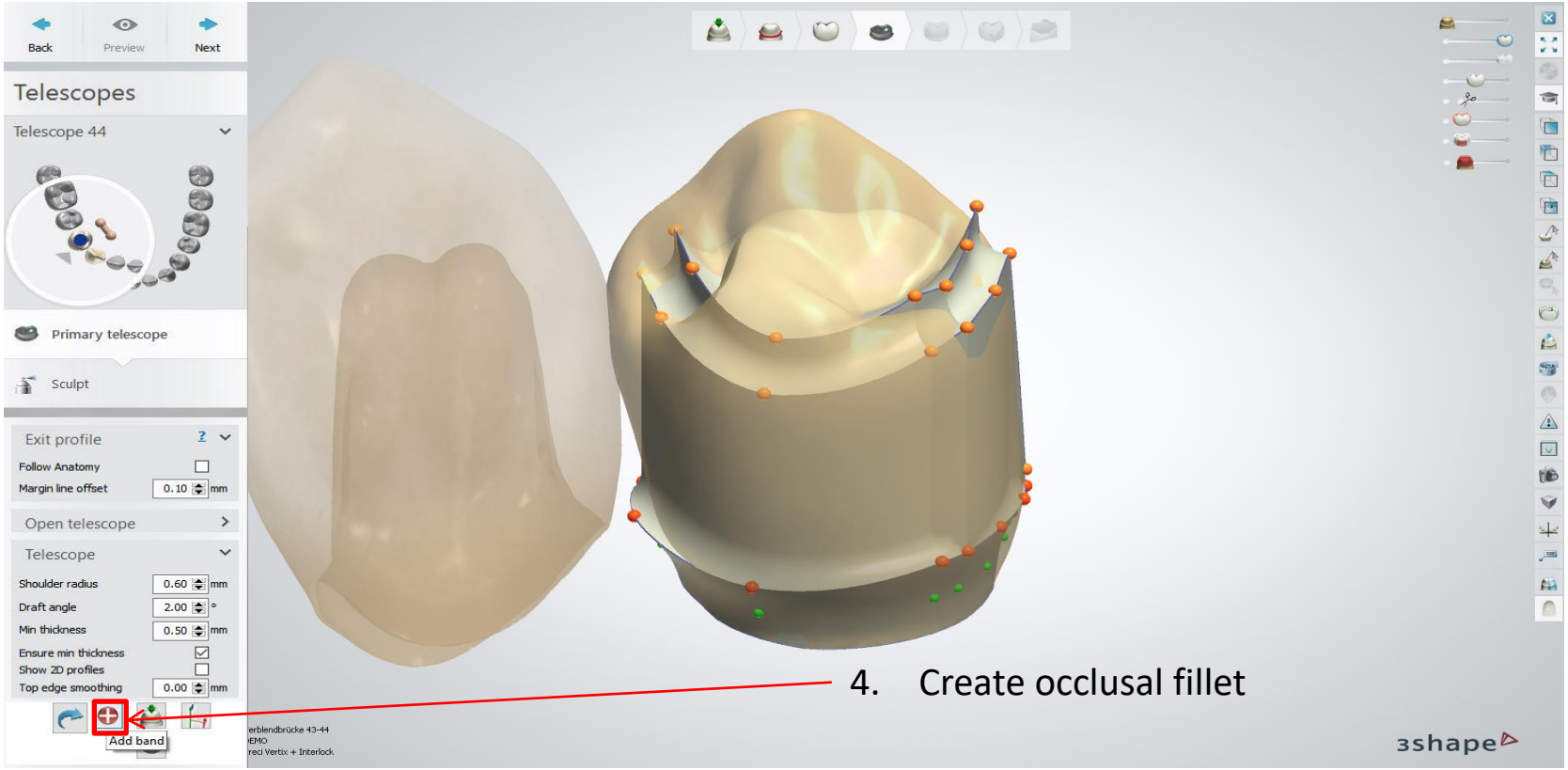
Attaching a Preci-Vertix® with interlock and circumference

Telescope module: create circumference



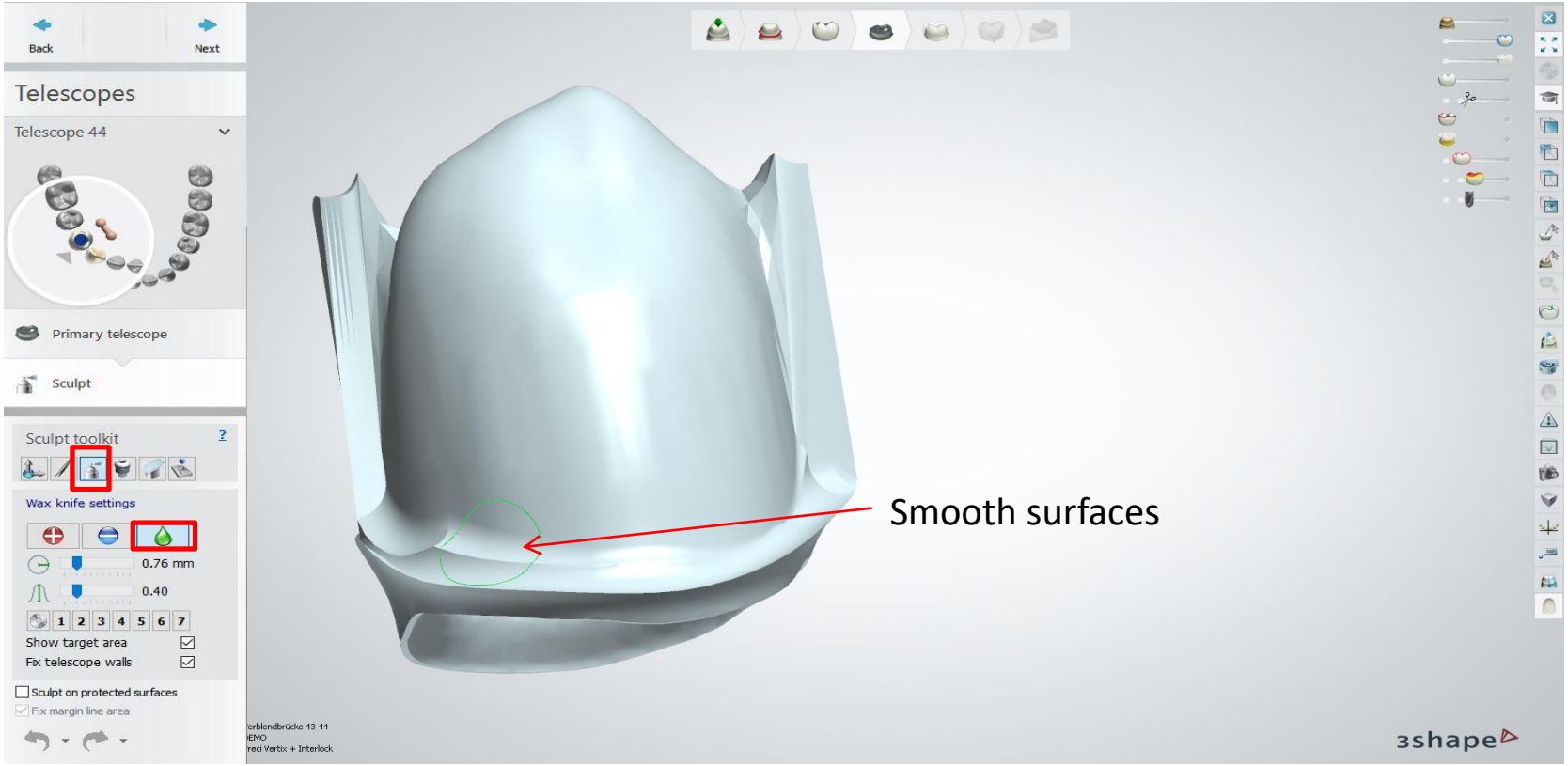
Attaching a Preci-Vertix® with interlock and circumference

Telescope module: create circumference



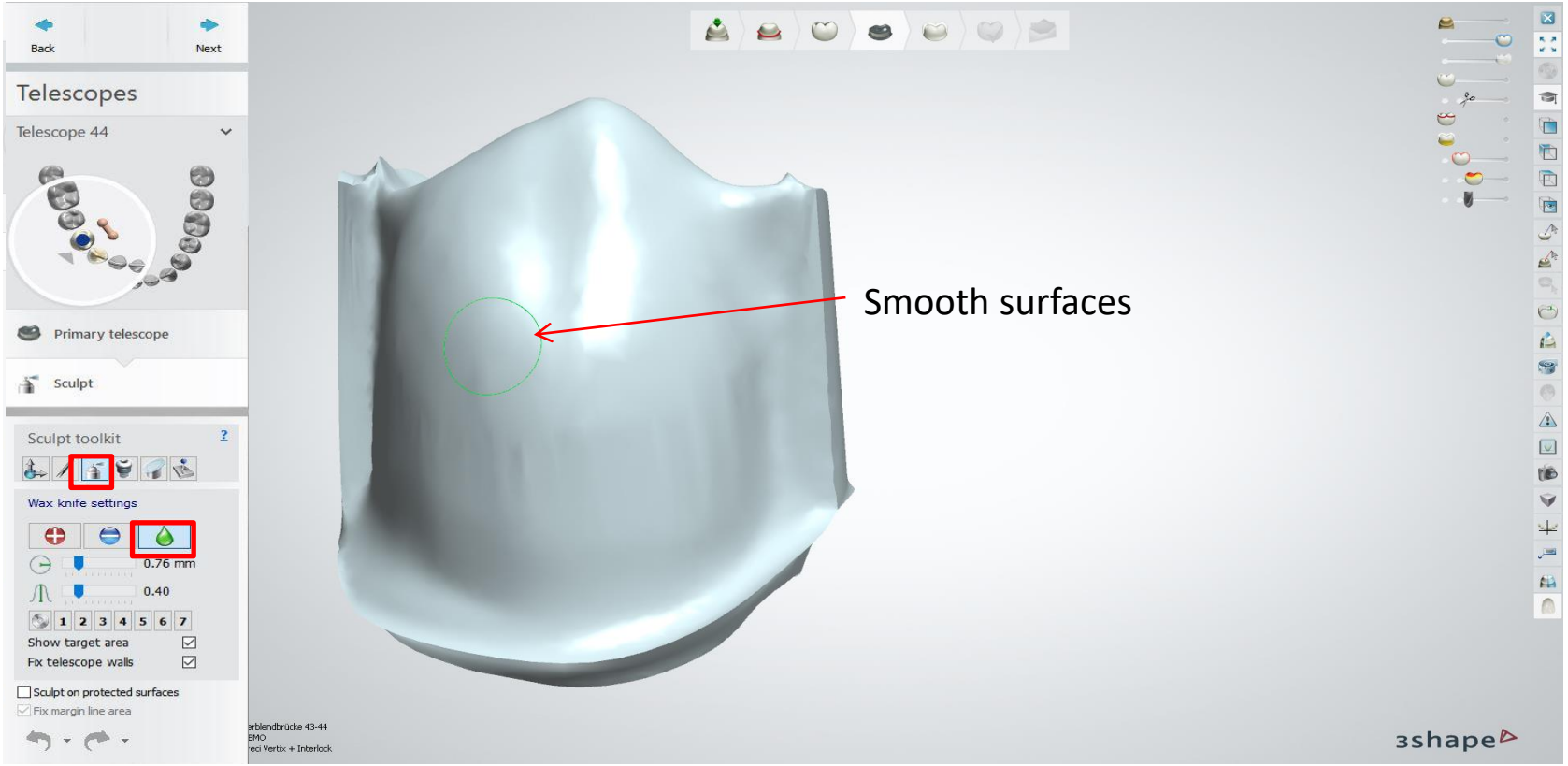
Attaching a Preci-Vertix® with interlock and circumference

Modify: Sculpt toolkit (smooth)



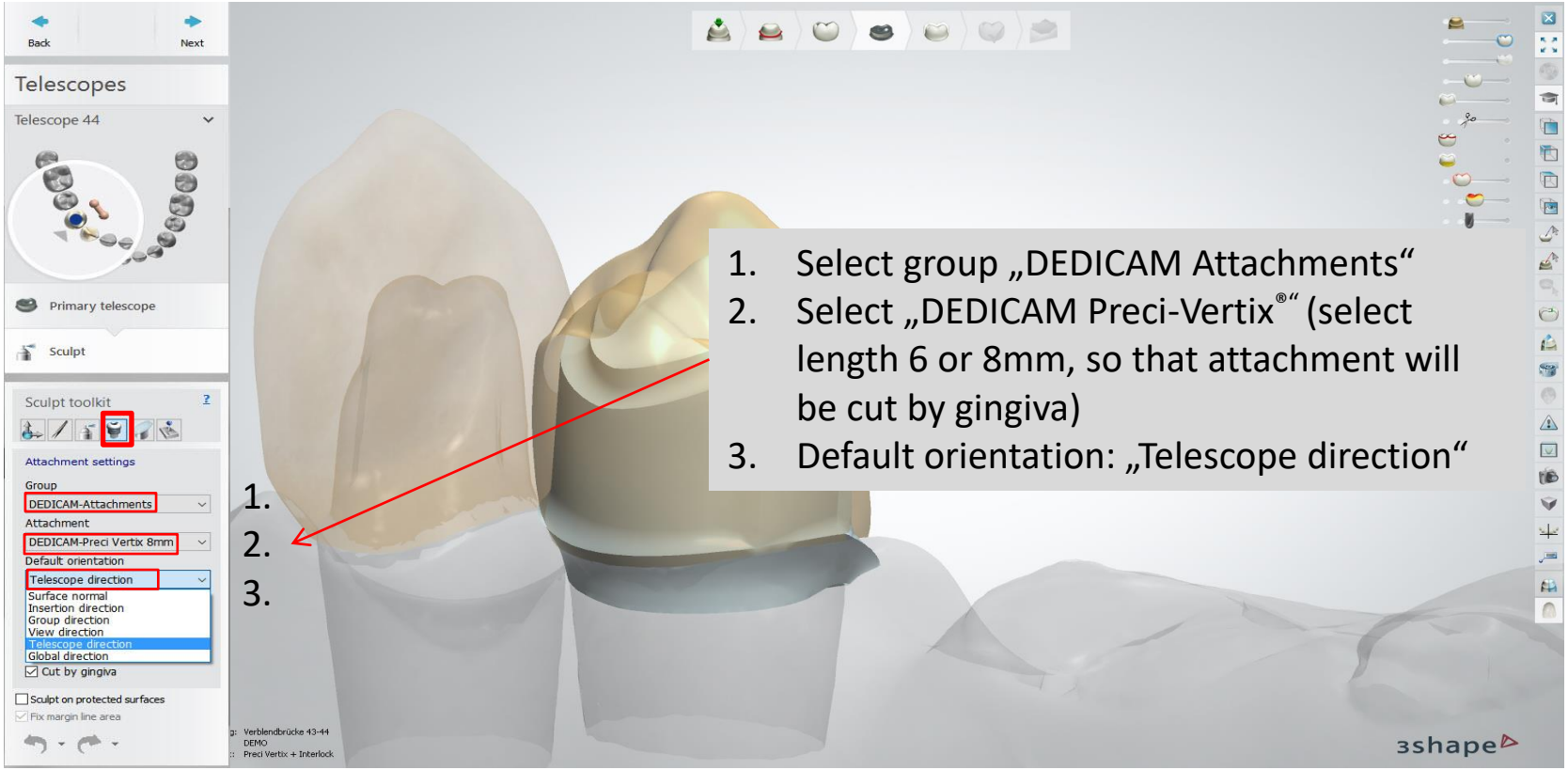
Attaching a Preci-Vertix® with interlock and circumference

Modify: Sculpt toolkit (smooth)



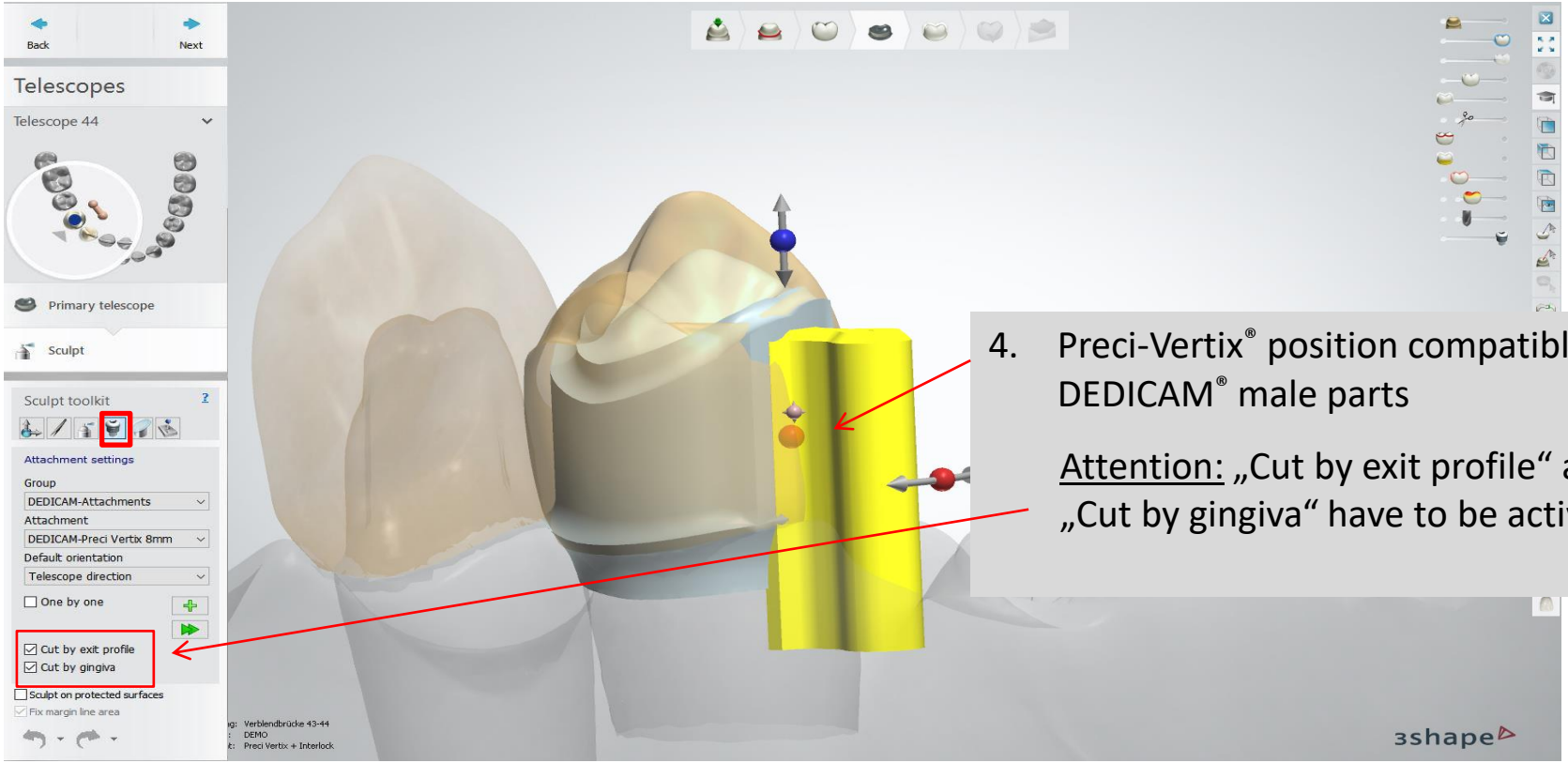
Attaching a Preci-Vertix® with interlock and circumference

Modify: Attachment – DEDICAM Preci-Vertix® (6 or 8mm)



Attaching a Preci-Vertix® with interlock and circumference

Modify: Attachment – DEDICAM Preci-Vertix® (6 or 8mm)

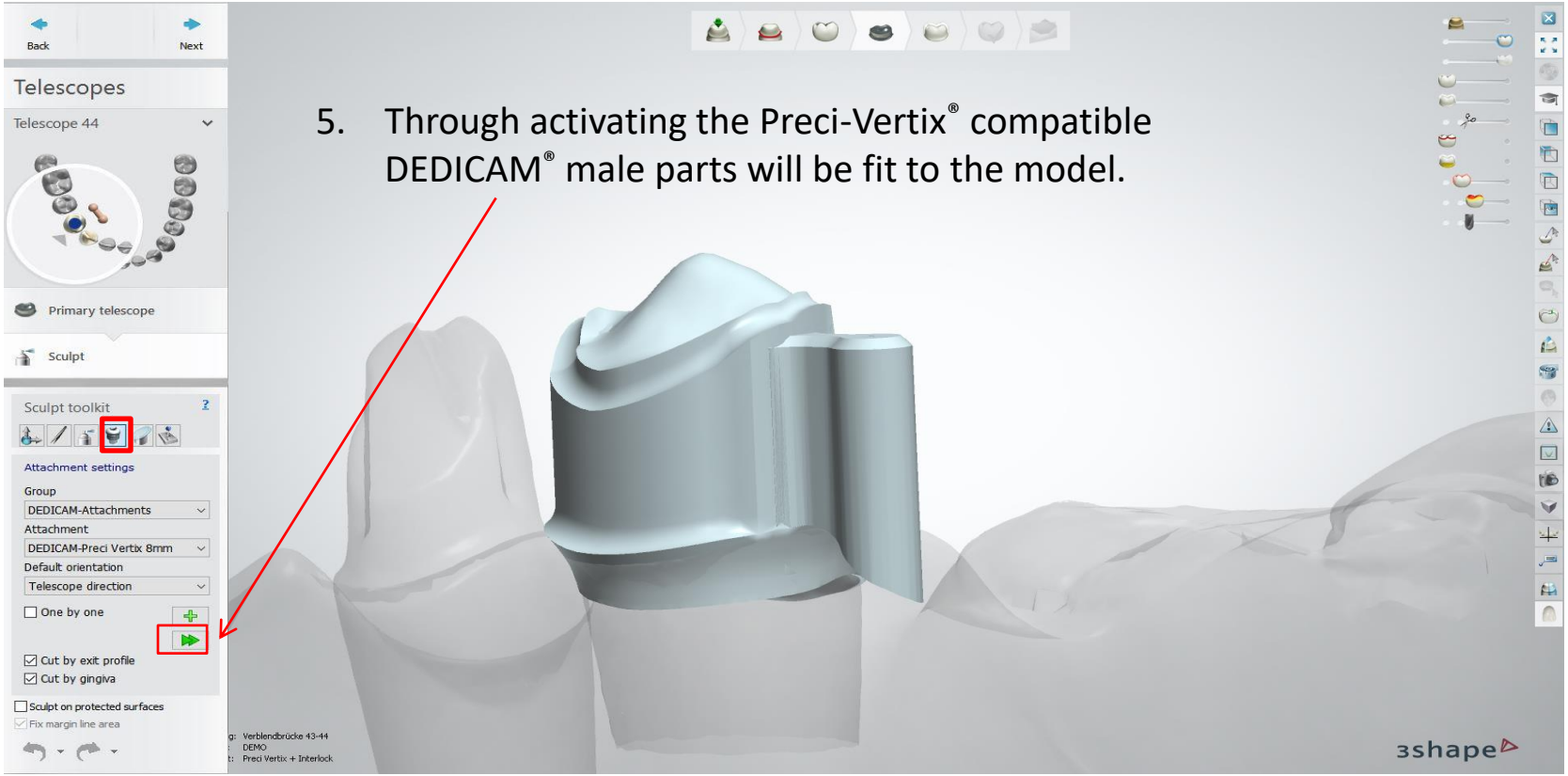


4. Preci-Vertix® position compatible DEDICAM® male parts

   Attention: „Cut by exit profile“ and „Cut by gingiva“ have to be activated

Attaching a Preci-Vertix® with interlock and circumference

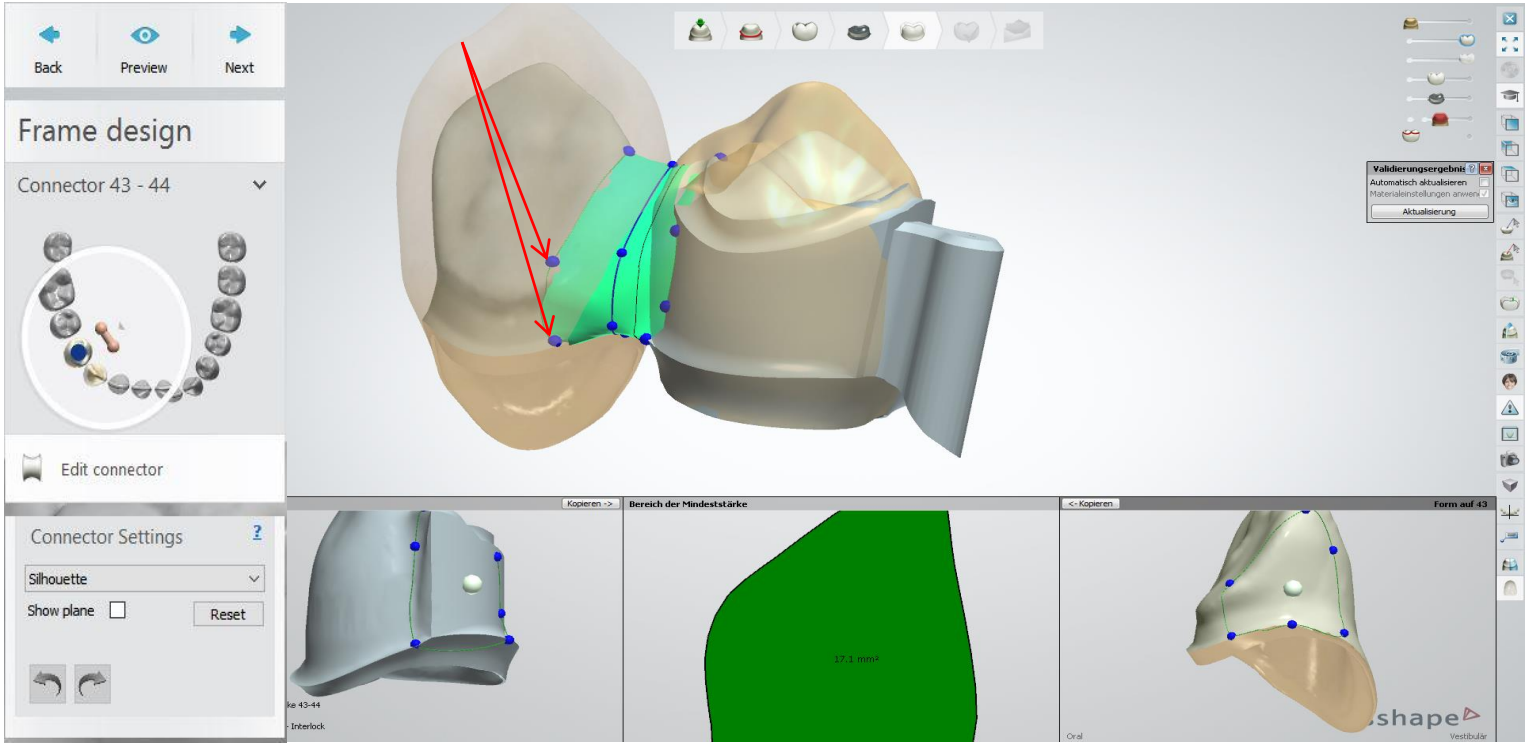
Modify: Attachment – DEDICAM Preci-Vertix® (6 or 8mm)



Attaching a Preci-Vertix® with interlock and circumference

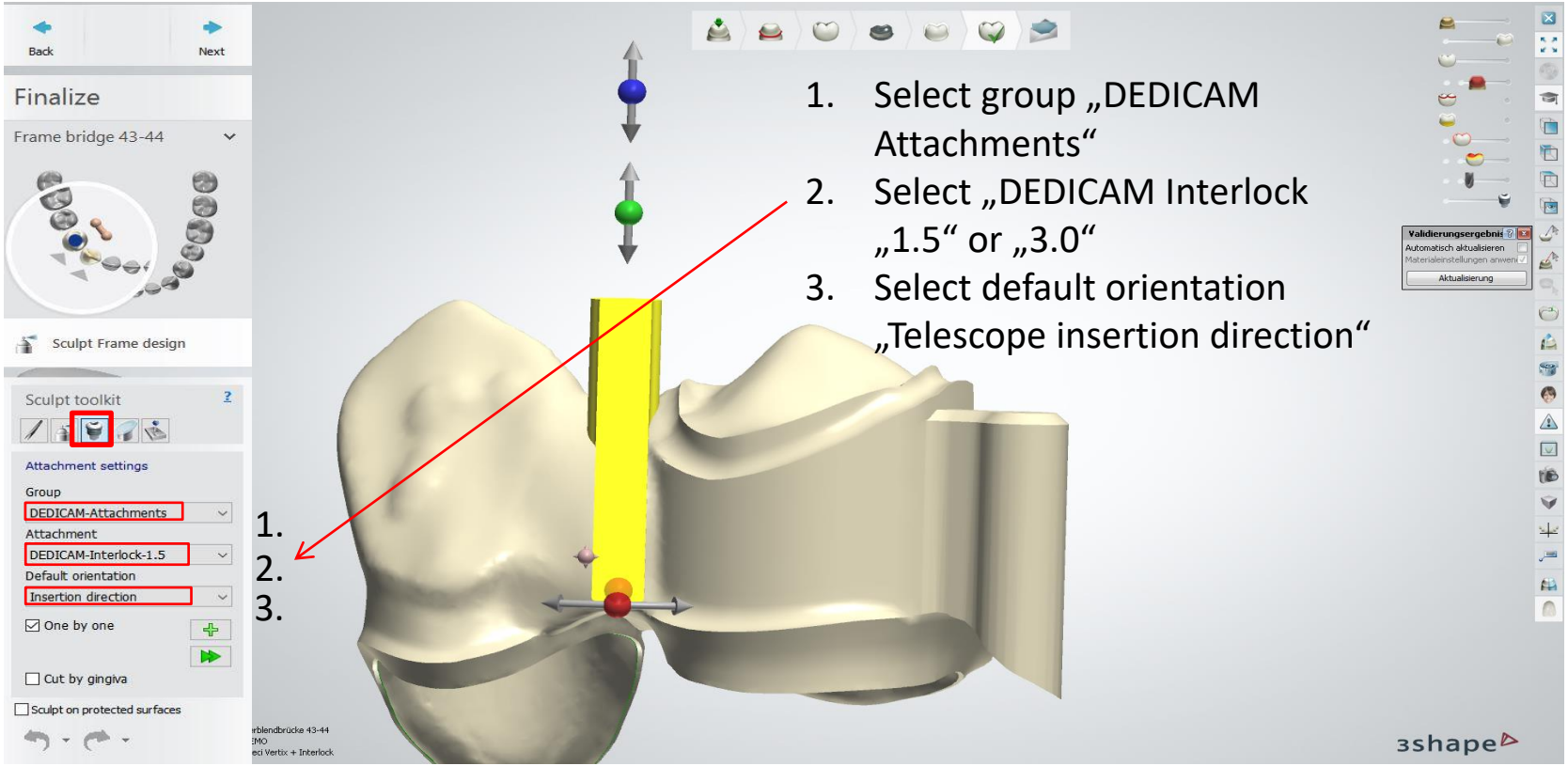
Frame design on tooth 43 and completing connector

Important: Connector cross section must be of large enough dimension (for interlock).



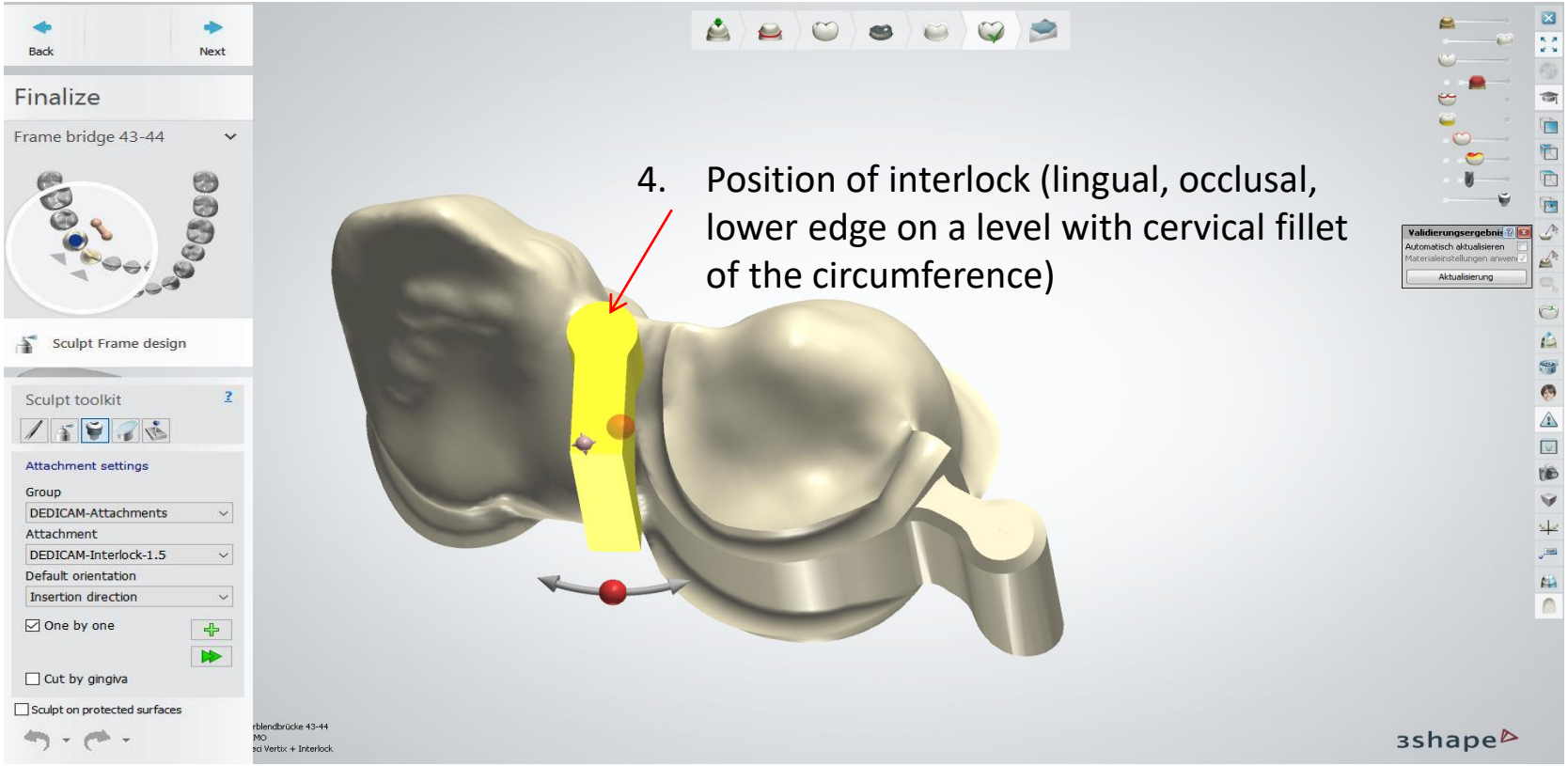
Attaching a Preci-Vertix® with interlock and circumference

Modify: Attachment – DEDICAM® Interlock 1.5 (Ø 1.5 + 3.0mm possible)



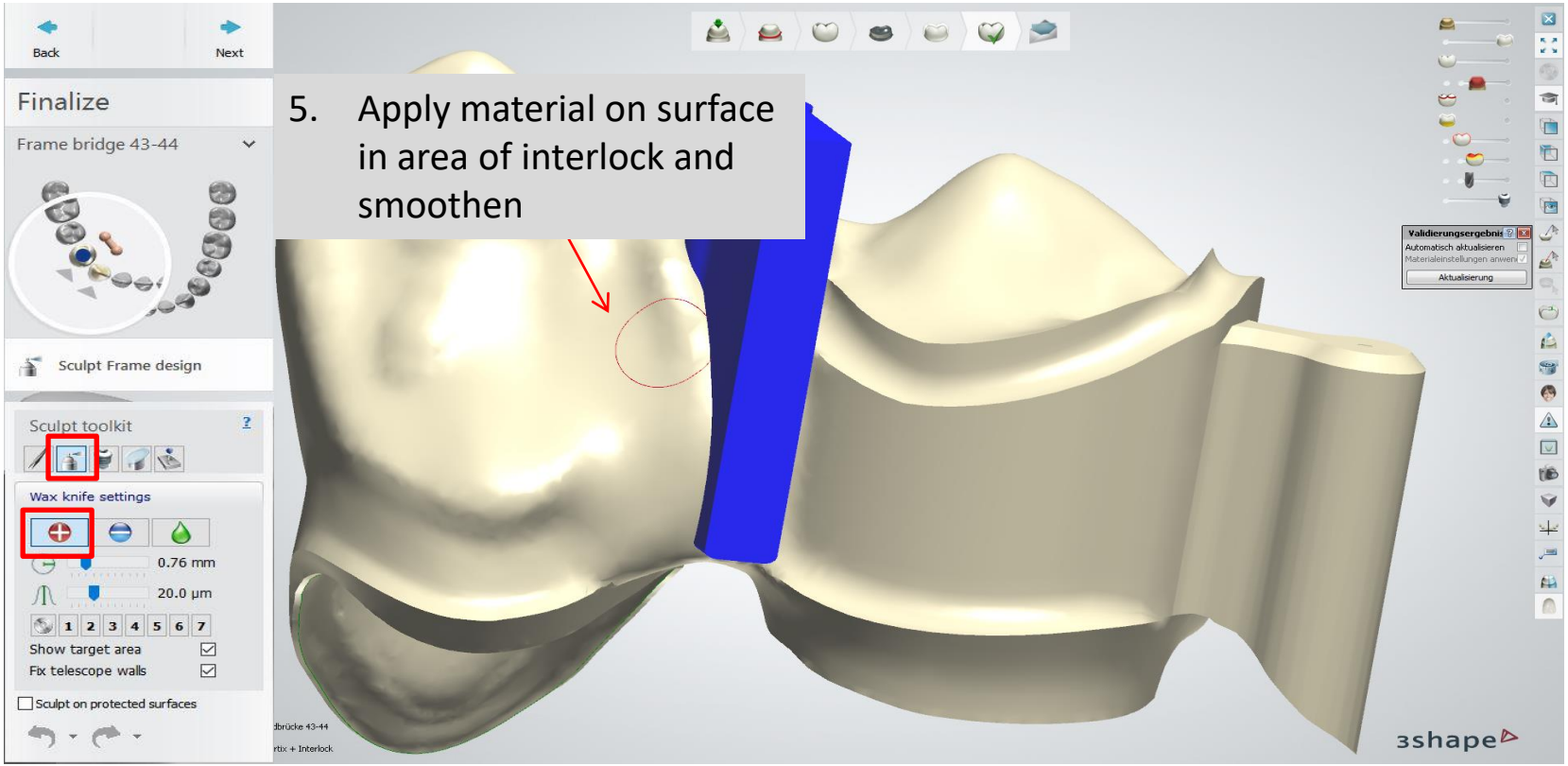
Attaching a Preci-Vertix® with interlock and circumference

Modify: Attachment – DEDICAM® Interlock 1.5 (Ø 1.5 + 3.0mm possible)



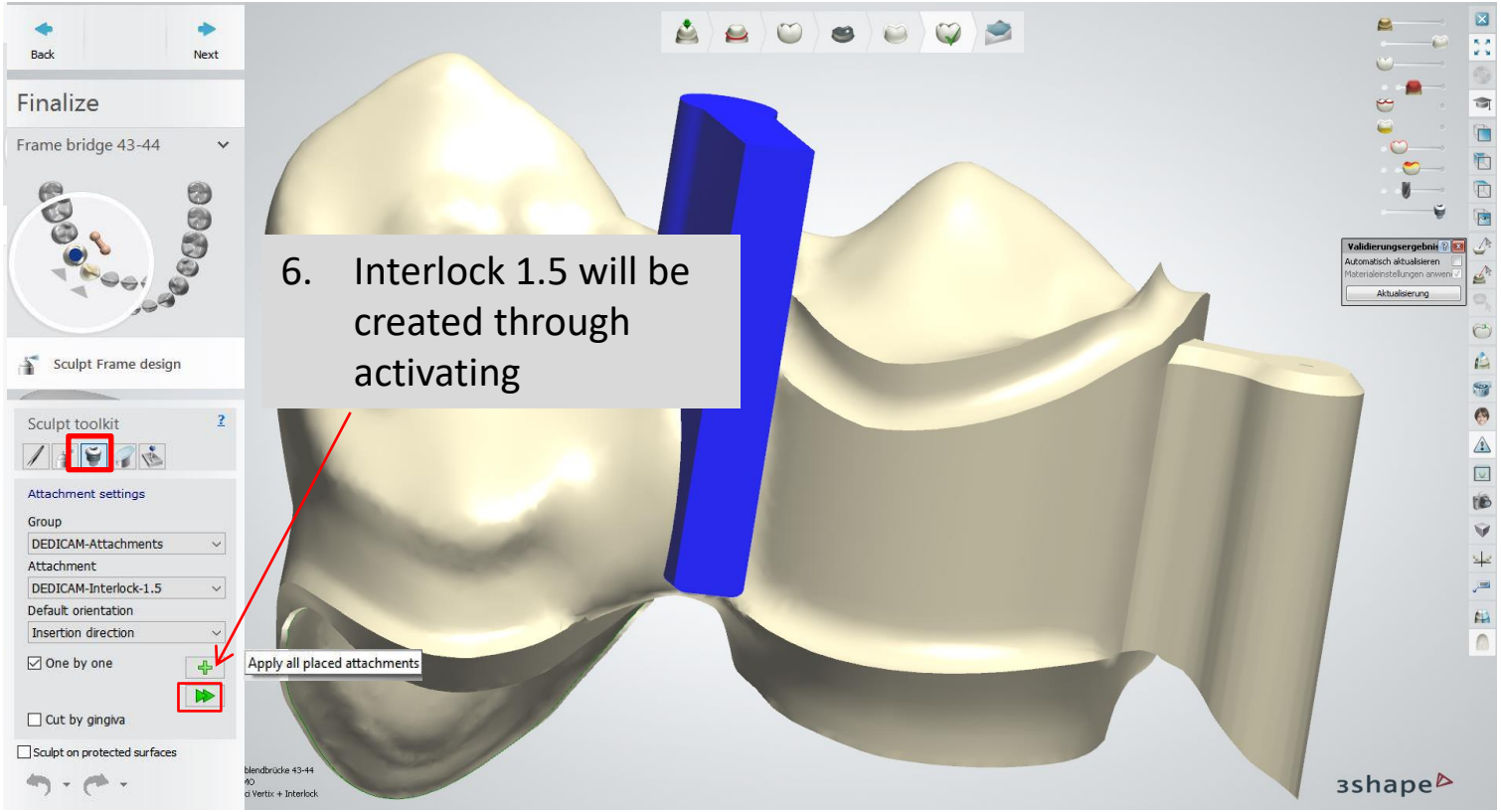
Attaching a Preci-Vertix® with interlock and circumference

Modify: Sculpt tool (smoothen)



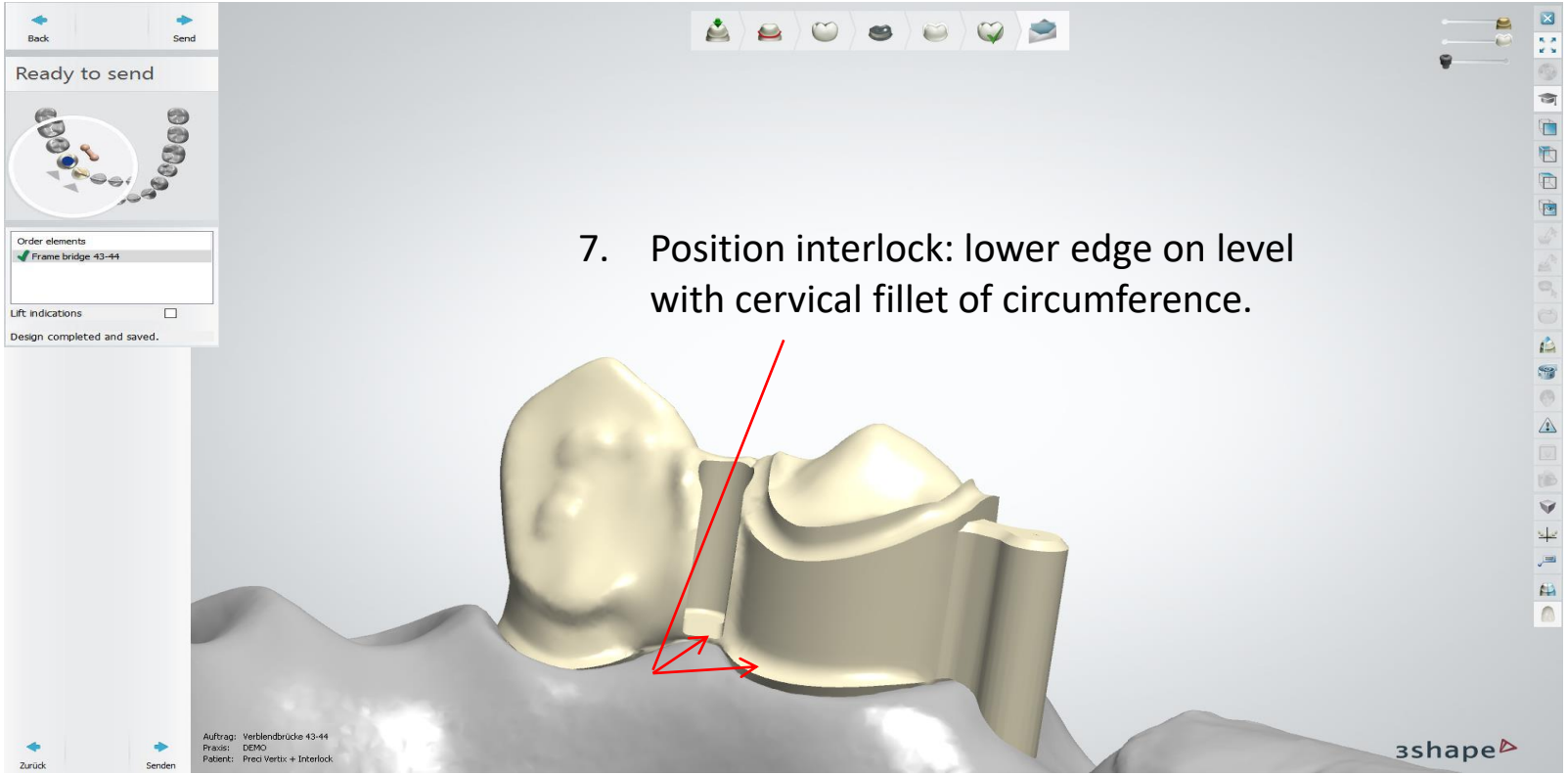
Attaching a Preci-Vertix® with interlock and circumference

Modify: Complete attachment – DEDICAM® Interlock



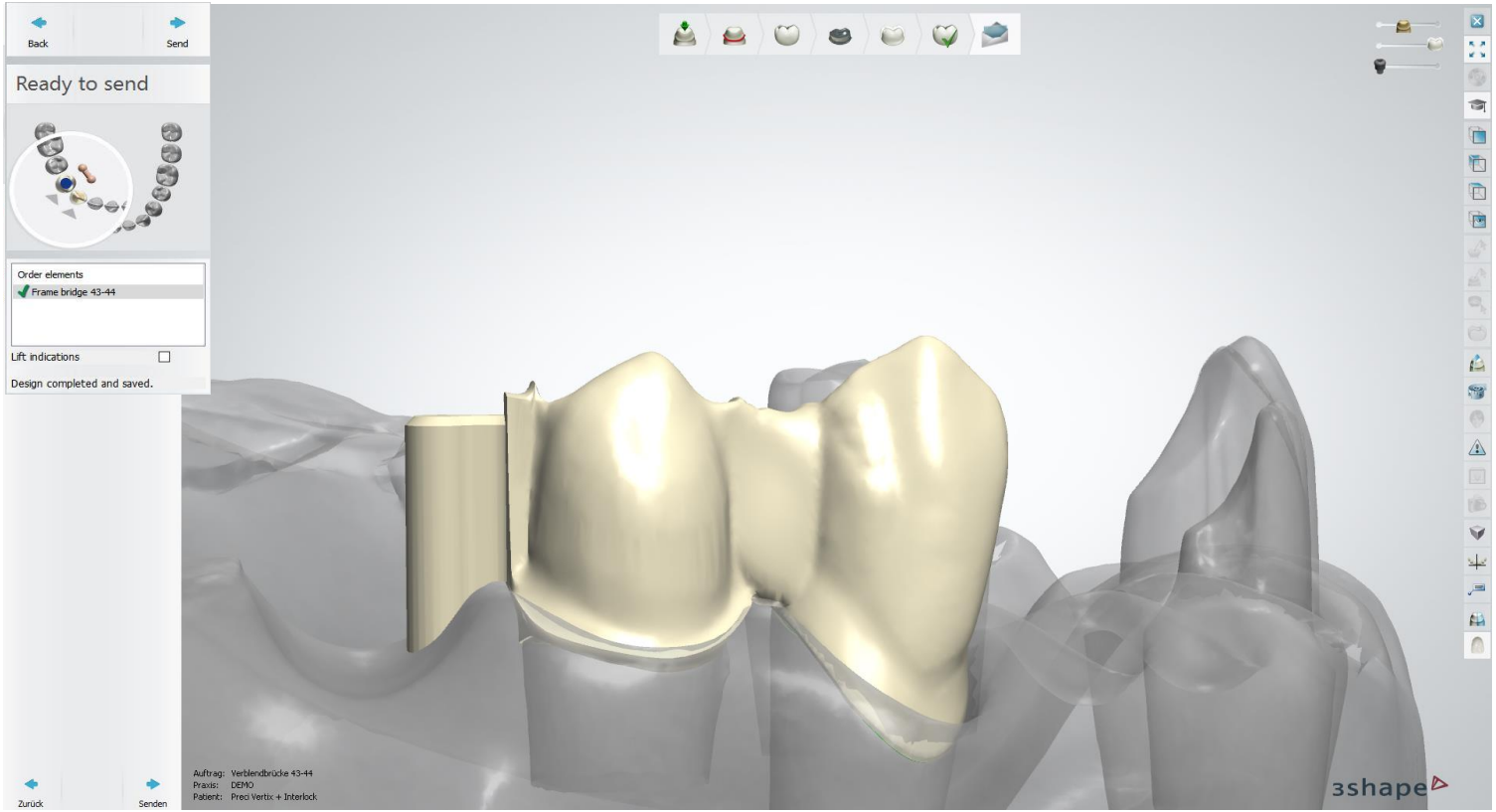
Attaching a Preci-Vertix® with interlock and circumference

Completion: final design of lingual region



Attaching a Preci-Vertix® with interlock and circumference

Completion: final design of buccal region



Design of healing abutments

Design of healing abutments

General notes / prerequisites for custom healing abutments made of Polyetheretherketone (PEEK)

In addition to the healing abutment, an individualized impression post for the open or closed impression can be ordered in the same order and with the same design.
Availability (July 2022):

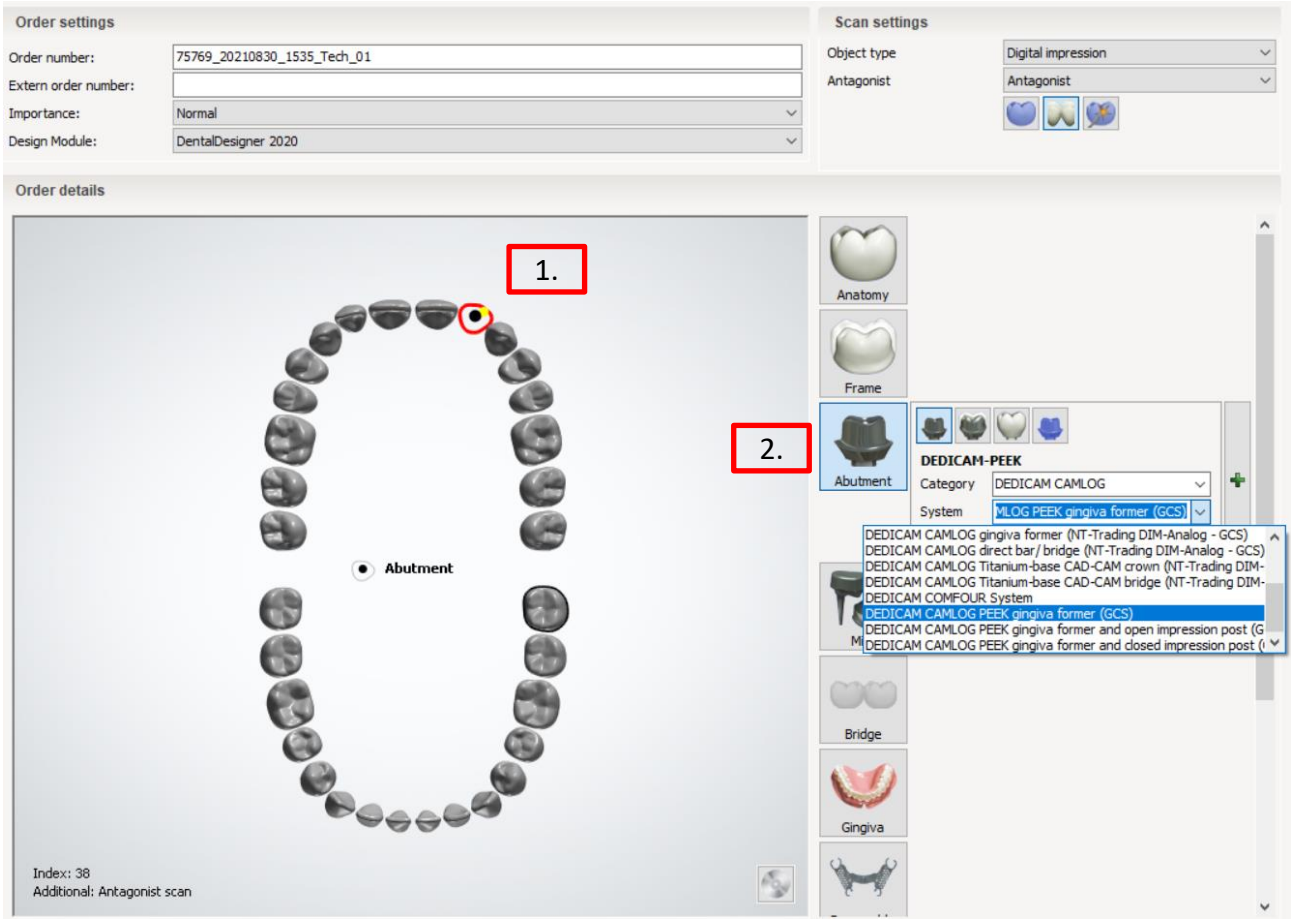
	CAMLOG®	CONELOG®	CERALOG® [1]	iSy® on Implant shoulder	BioHorizons® [2]	Further implant systems
Titanium healing abutments [1] Zirconia for CERALOG	✓	✓	✓	✓	✓	✓
PEEK healing abutments	✓	✓	✓	✓	✓	⊘
PEEK impression posts [2] BioHorizons: For open tray technique only	✓	✓	✓	✓	✓	⊘

Design of healing abutments

Order form:

1. Define tooth position

2. Choose «Abutment»



Design of healing abutments

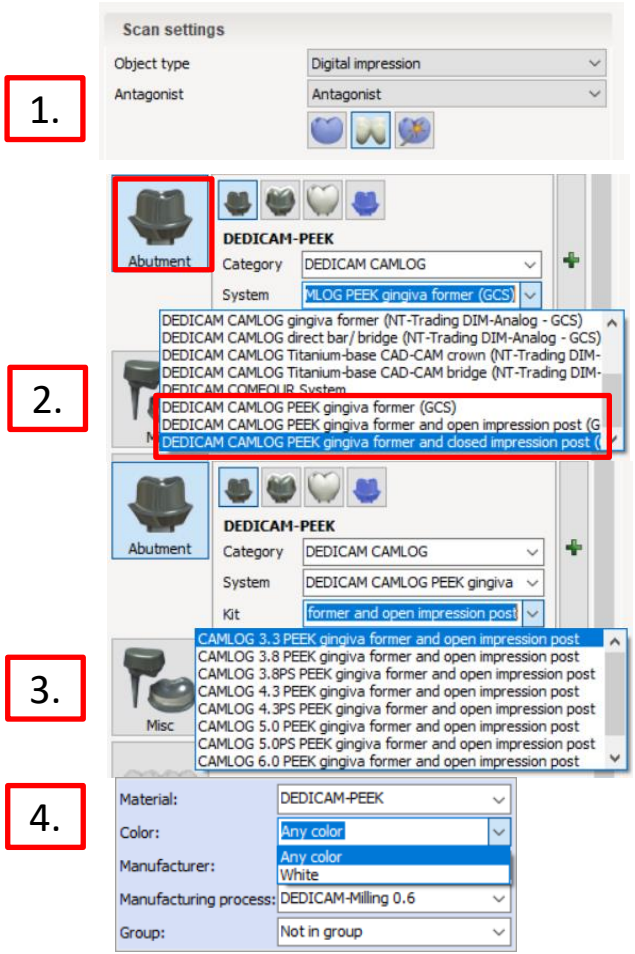
Details from the order form:

1. Select type of impression: e.g. «Digital impression»

2. System: *Example DEDICAM CAMLOG* library
select your desired set of healing abutment / impression post

3. Kit: Select implant diameter
Note: Available for CAMLOG implants are all diameter 3.3 to 6.0 mm, incl. 3.8 to 6.0mm for Platform Switching («PS»)

4. Material: Predefined as «DEDICAM-PEEK»,
change color from «Any color» to «White»



Design of healing abutments

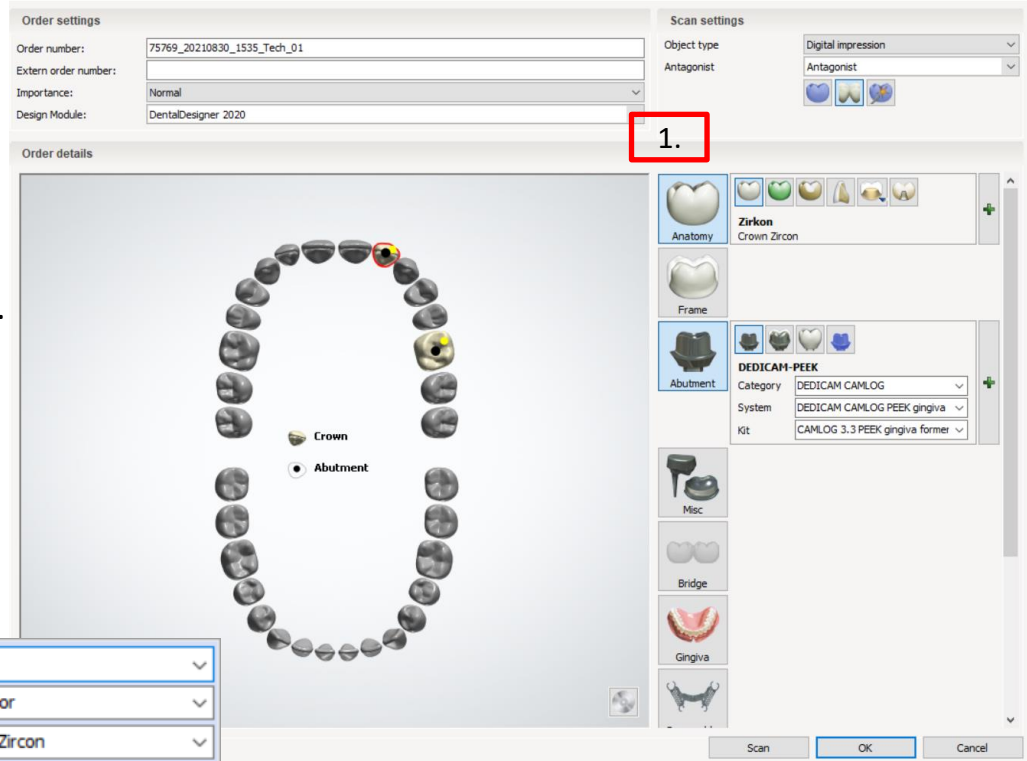
Order form:

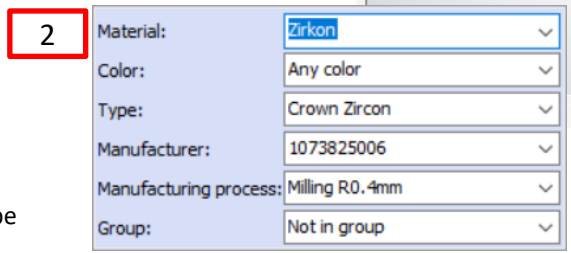
1

Note: select for each healing abutment according the situation a crown or bridge anatomy.
Thus, it is possible to design the healing abutment according to the planned restoration.

2

To ensure that the prosthetic is not manufactured by Camlog when shipped via Inbox, a material must be selected that is not designated with DEDICAM.





Design of healing abutments

After import, alignment, cropping and data matching of the scan data, the healing abutment design starts.

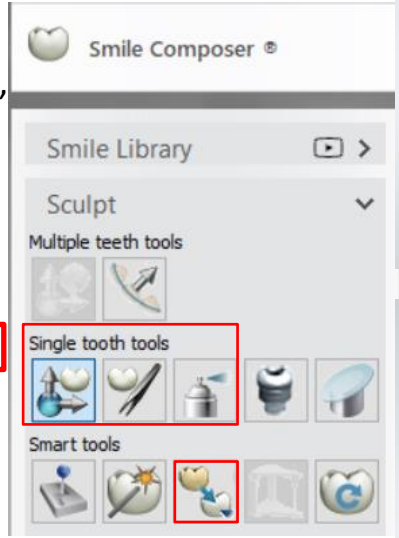
The additional selection of the anatomy (crown, bridge) supports the healing abutment design as it is the base of the prosthetic restoration.

1

Use e.g. ,“mirrored“ from opposite tooth or select preferred tooth shape from „Smile library“ for anatomy proposal

2

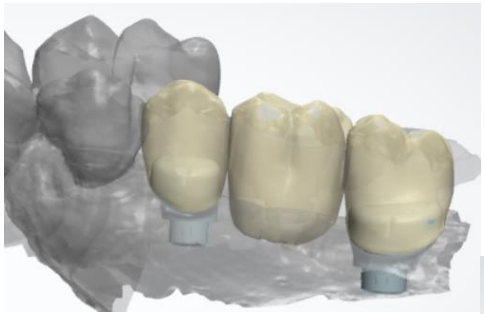
Use „Single tooth tools“ to adapt the anatomy proposal

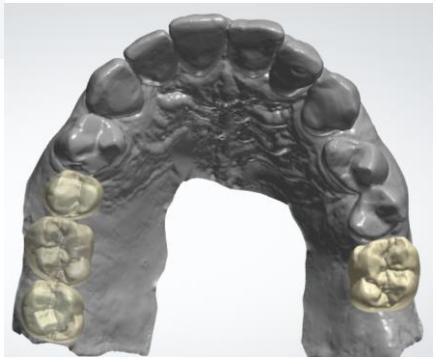


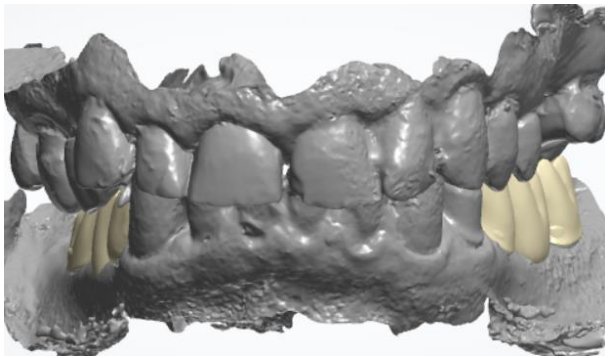
Design of healing abutments

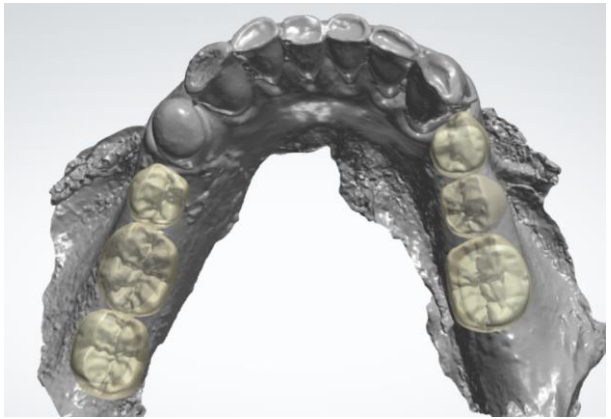
The additional anatomy (crown, bridge) supports the design of the healing abutments. Healing abutments are the basis, the foundation, for the prosthetic restoration.

If implant positions serve for bridges **always**
create a bridge „virtual Wax-up“



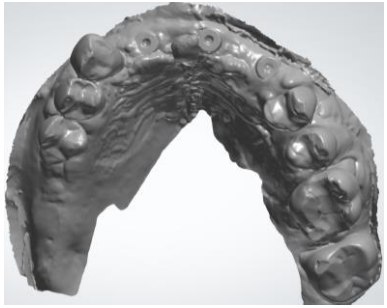
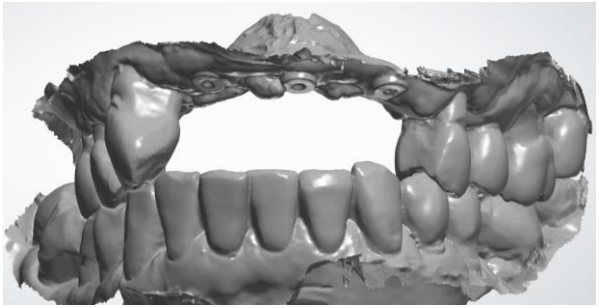


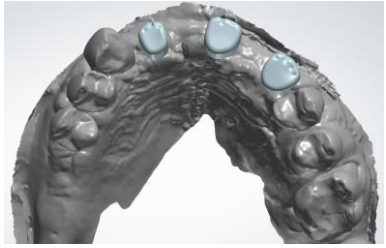


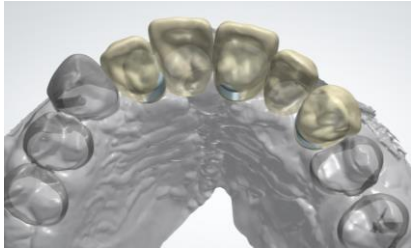
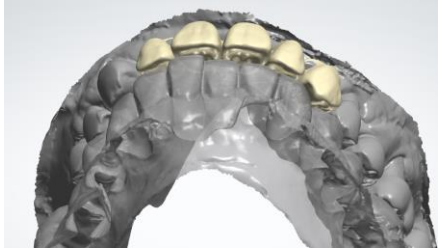
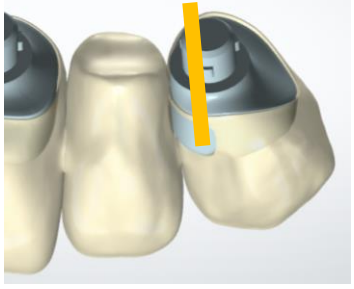


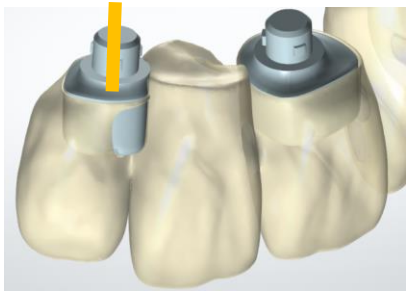
Design of healing abutments

If implant positions serve for bridges always create a bridge „virtual Wax-up“.



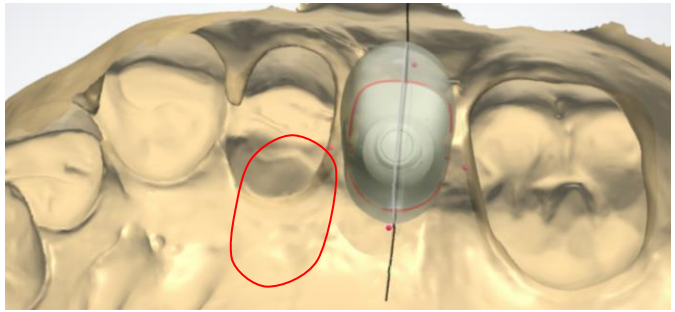






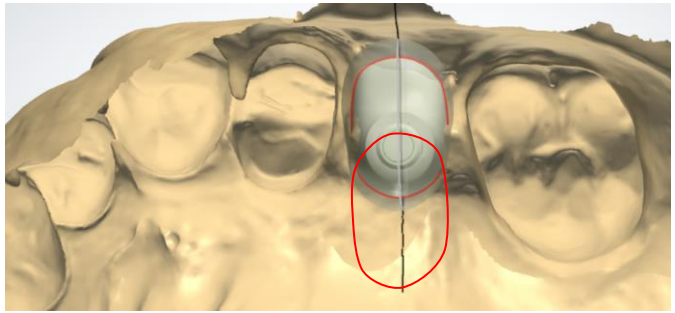
Design of healing abutments

Basal view helps to assess the basic shape

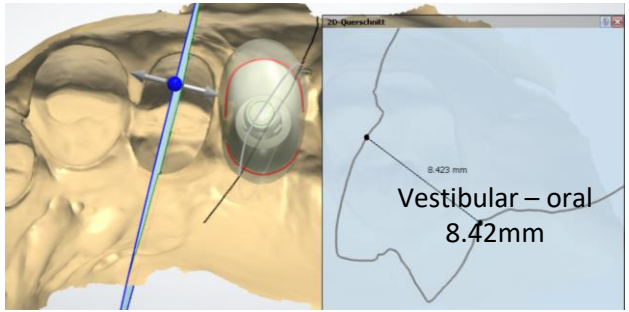
Basic shape on the emergence profile



Basic shape transferred to the healing abutment

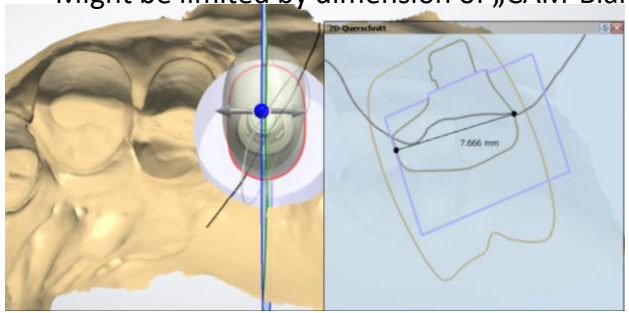


Cross section on natural tooth



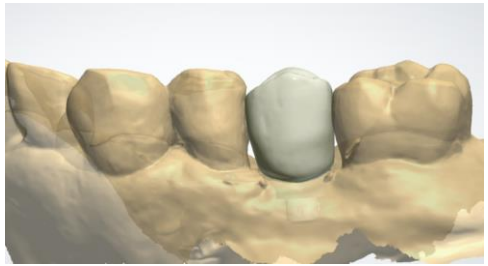
Vestibular – oral
8.42mm

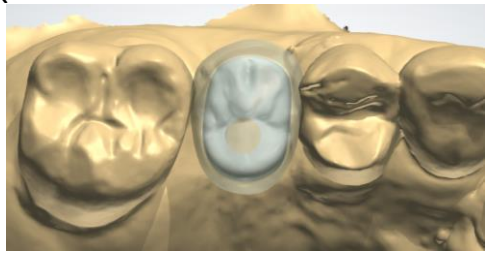
Cross section of the healing abutment–
Might be limited by dimension of „CAM-Blank“



Vestibular – oral
7.66mm

After finishing of the design, the basic shape can be assessed





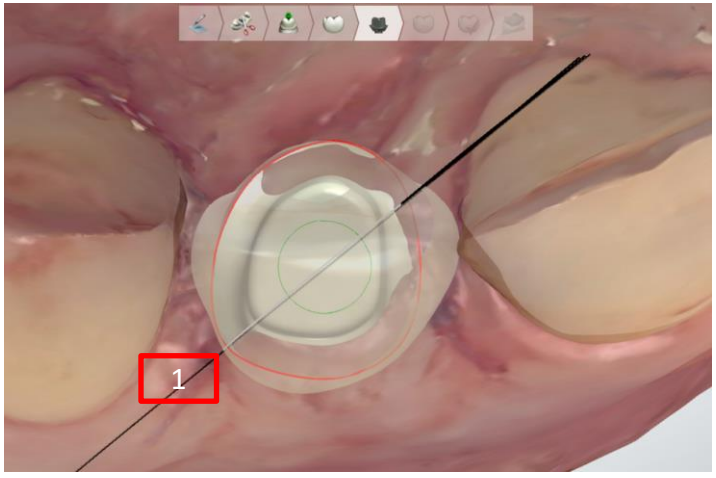
Design of healing abutments

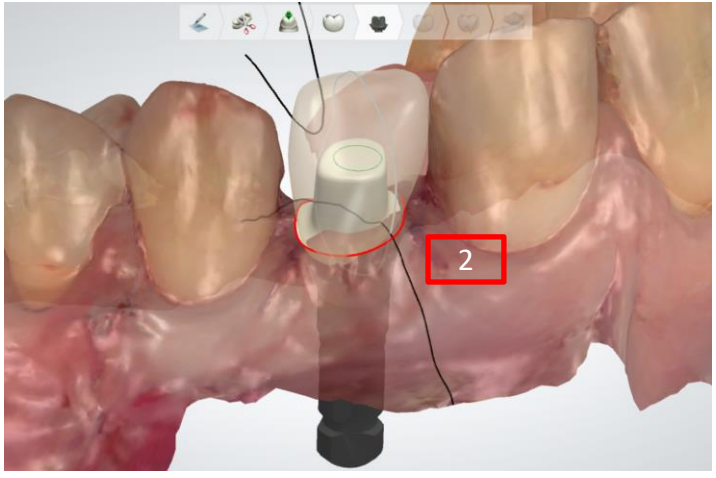
The anatomy supports the circular design of the healing abutment. This is created comparable to the design of a final abutment.

Notes:

1 The distance between the healing abutment and the neighboring tooth should be at least 1.0 - 1.5mm.

2 The "abutment shoulder" (red line) runs at the level of the gingiva



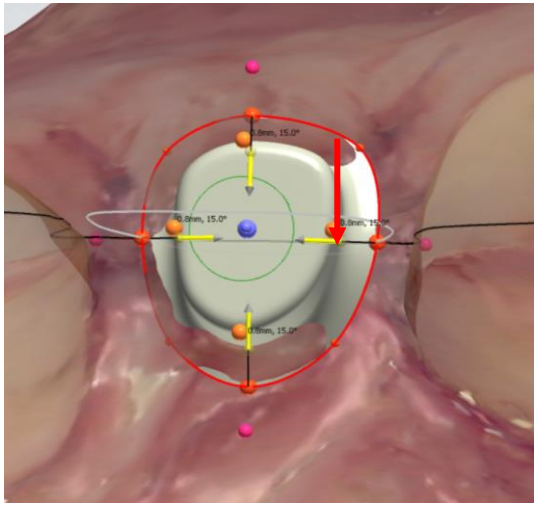


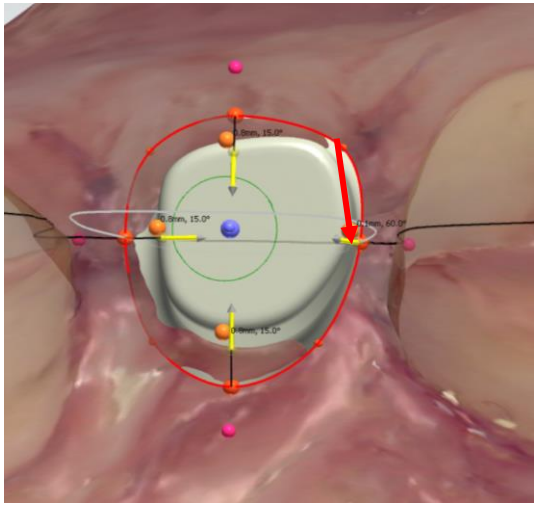
Design of healing abutments

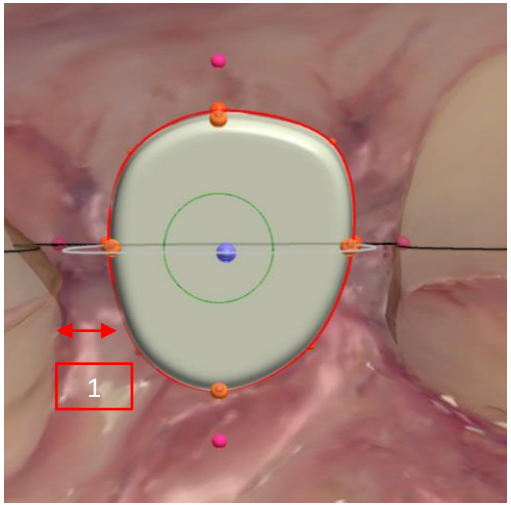
After defining the outer contour (red line) and the subgingival design, the abutment shoulder is reduced to the value **0.1mm and 60°**.

- drag an inner point at the abutment shoulder to the red line
- Press the right mouse button and select the "Apply this value for the entire profile" field

1 The distance between the healing abutment and the neighboring tooth should be at least 1 - 1.5mm.







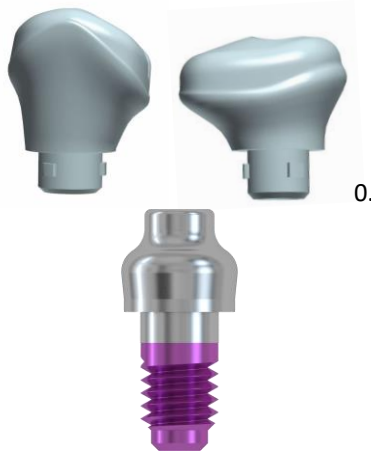
Design of healing abutments

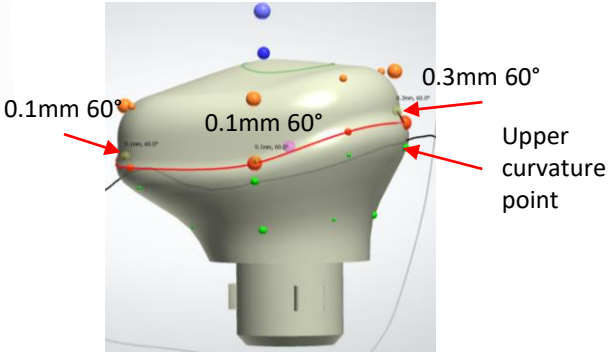
After defining the outer contour (red line) and the subgingival design, the abutment shoulder is reduced to the value 0.1mm and 60°.

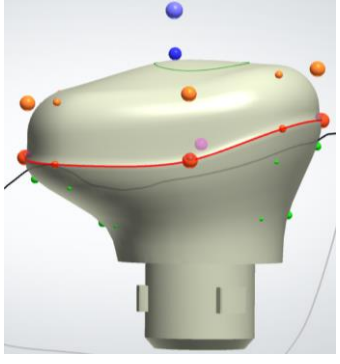
Zervical step and subgingival design

To achieve a bulging shape according „Bottleneck“ standard healing abutment proceed as follows:

- Set value abutment shoulder not evenly 0.1mm and 60°
- Drag upper curvature points partly further outwards than the abutment shoulder

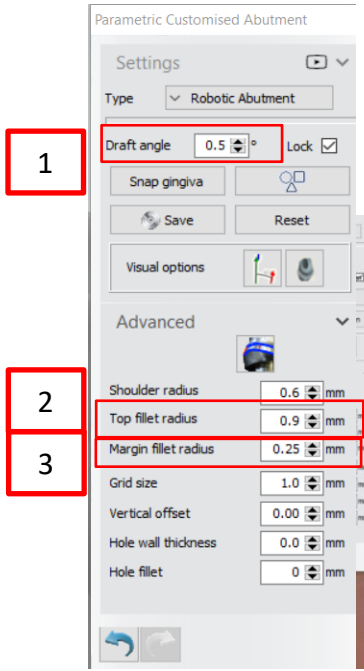






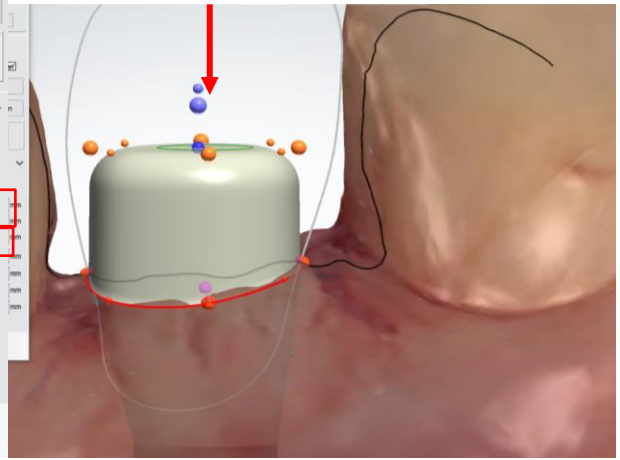
Design of healing abutments

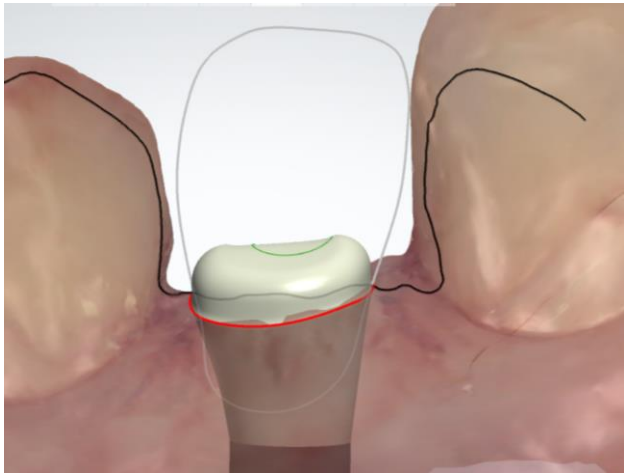
Rounding and reducing the height of the healing abutment.
The healing abutment should protrude approx. 1.5mm above gingival level.
Reason: Soft tissue should not "grow" over the healing abutment during healing.
Depending on its size, the healing abutment displaces a corresponding volume of soft tissue; therefore, the height should not exceed the displaced gingiva.



Recommendation:

1. Set value „Draft angle“ from 3° to app. 0.5°
2. Set value „Top fillet radius“ to app. 0.8 -1.0mm
3. Set value „Margin fillet radius“ to app. 0.20 – 0.30mm





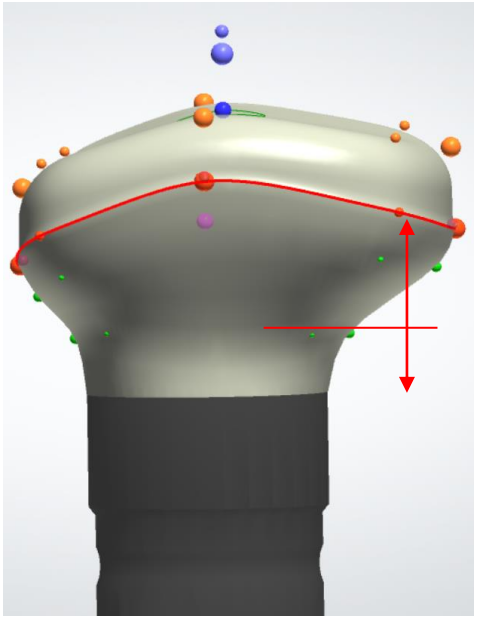
Design of healing abutments

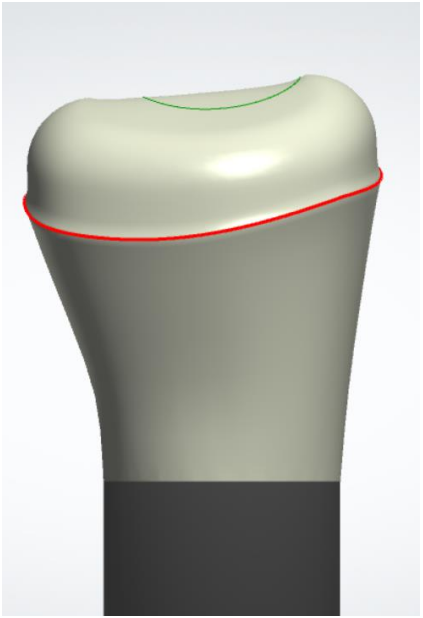
The subgingival design should be discussed with the practitioner.

Recommendation:

The lower third of the height almost corresponds to the implant diameter.

Upper two-thirds to gingival level: concave / convex design to the cross section of the planned prosthetics





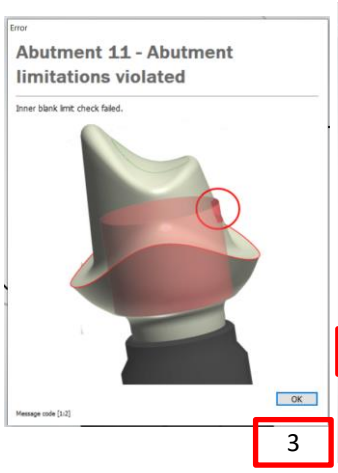
Design of healing abutments

Design limitations

1 The inner blank limit regarding the screw seating cannot be ignored.

2 The maximum height of the healing abutment from implant shoulder is 7mm. This must be be considered.

3 The corresponding warning must be confirmed with "OK" and then corrected.



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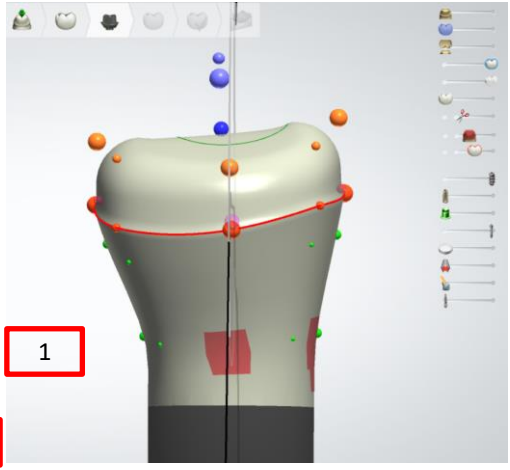
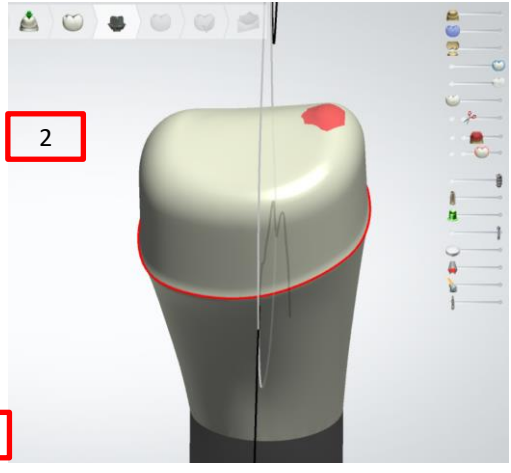


1

3



2

Design of healing abutments

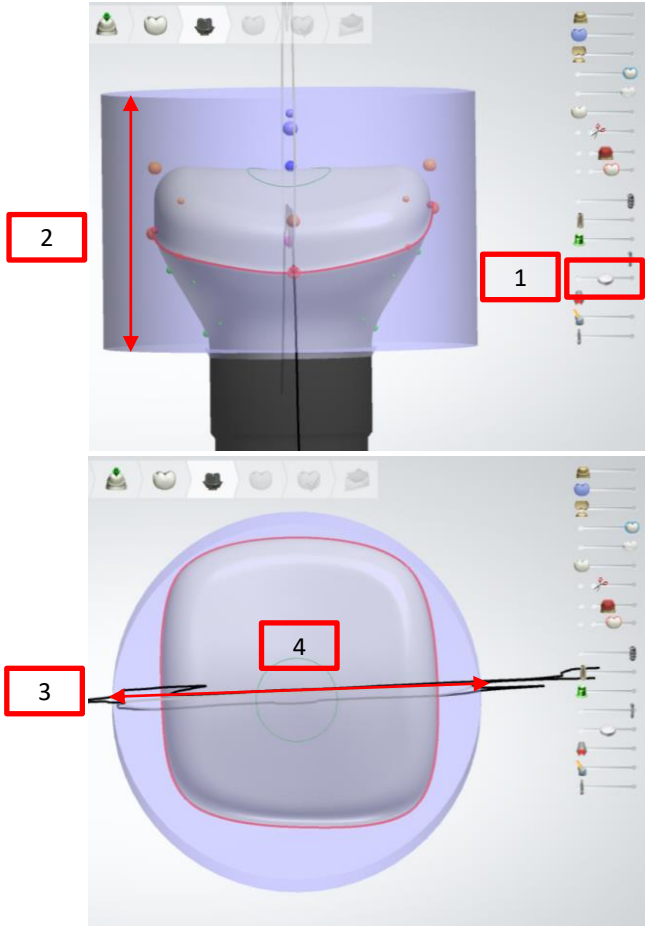
Maximum geometry

1 To control the design in height and diameter, the maximum geometry can be displayed

2 The maximum height of the healing abutment from the implant shoulder is 7mm

3 The maximum diameter of the healing abutment is 9.9mm

4 The screw channel is always central in the maximum geometry



Design of healing abutments

Since individual healing abutments have oval, square / rectangular or triangular shapes, it is helpful to facilitate the correct insertion of the healing abutments for the practitioner by means of marking / notching.

To apply a marker the following are suitable methods:

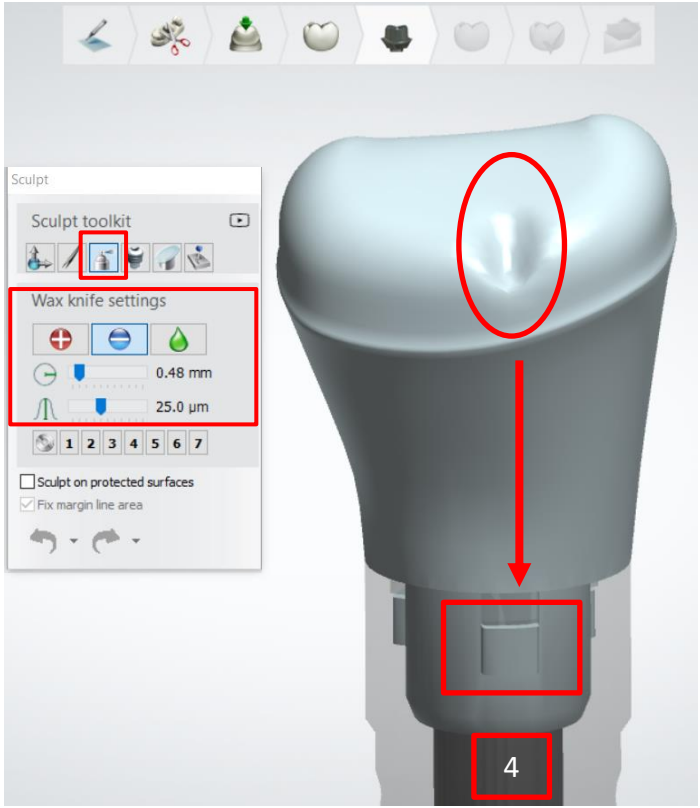
1 Sculpt toolkit

2 Wax knife settings

3 Remove Tip: small radius/ medium level

Note: additional smoothing is not necessary

4 Recommendation: A position of the marking/groove corresponding to the vestibular cam facilitates the correct insertion of the healing abutment and impression post for the dentist. Always create only one marking/groove - no double groove.

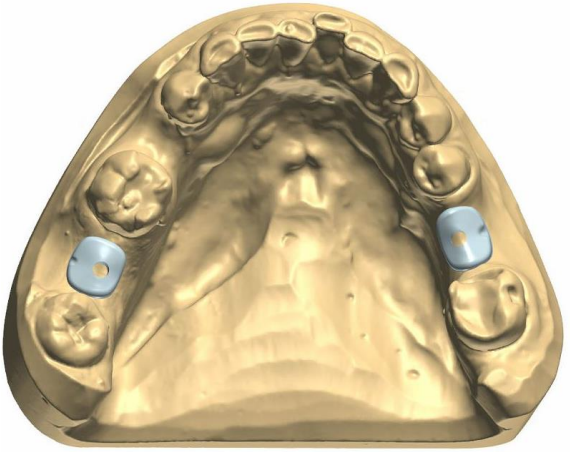


Design of healing abutments

Since individual healing abutments have oval, square/rectangular or triangular shapes, it is helpful for the practitioner to make additional dot-like markings when there are several "shape-matched" healing abutments.

Example: Similar molar shapes have their corresponding tooth region on the label.
However, the healing abutments may no longer be correctly assigned after disinfection.

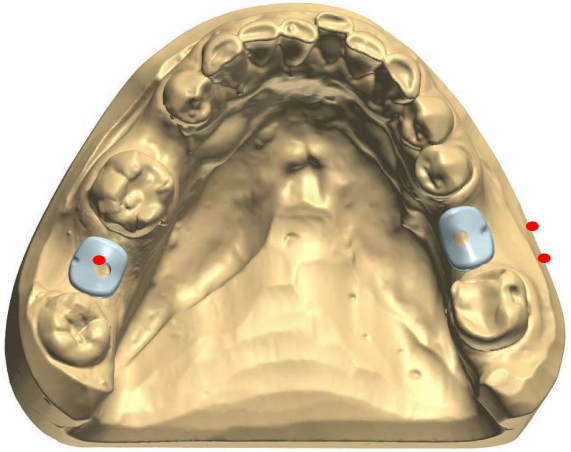
1. Without identification



Recommendation:
For uniform structures in two quadrants
- odd quadrants (1 + 3) with one mark
- even quadrants (2 + 4) with two marks

Note:
these additional markings are omitted
- with only one healing abutment
- with several but clearly different basic shapes (anterior tooth, premolar, molar)

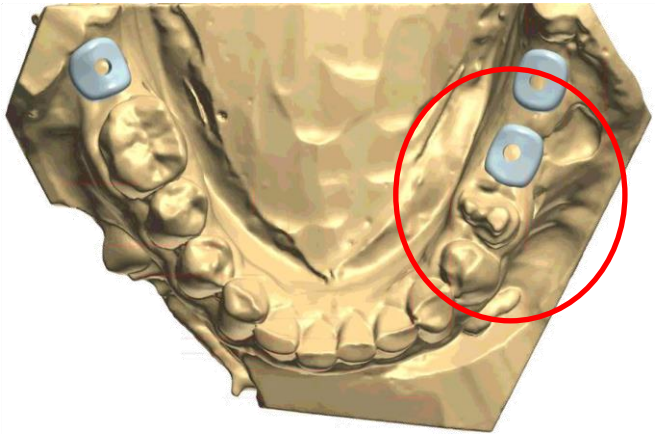
2. With identification



Design of healing abutments

Marking the corresponding quadrant might not be sufficient if in the same area multiple healing abutments are placed.

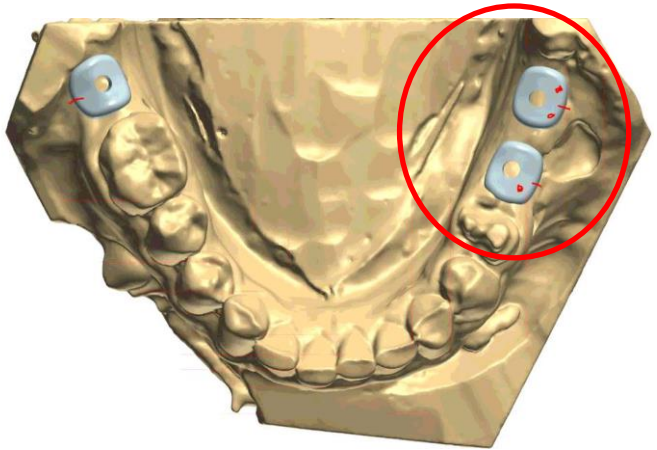
1. Without identification



Recommendation:
For uniform structures in two quadrants
- odd quadrants (1 + 3) with one mark
- even quadrants (2 + 4) with two marks

Note:
these additional markings are omitted
- with only one healing abutment
- with several but clearly different basic shapes (anterior tooth, premolar, molar)

2. with identification



Design of healing abutments

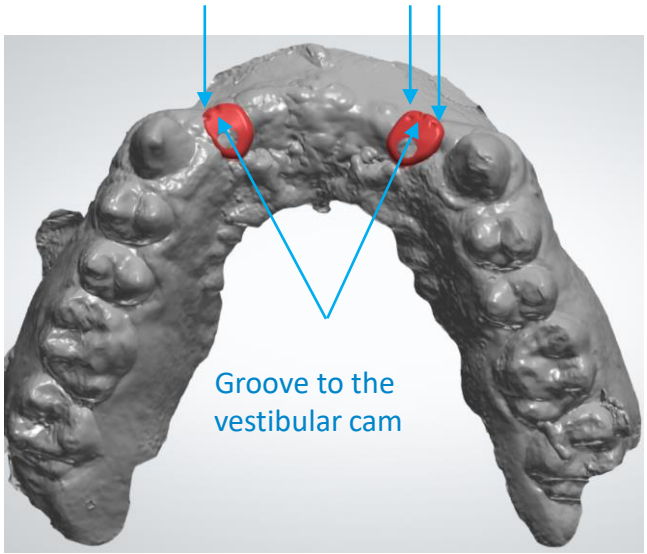
1. Quadrant =
one identification

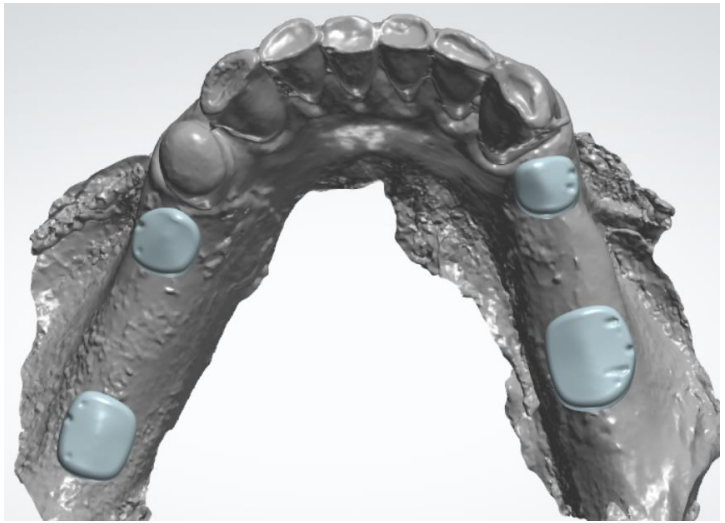
2. Quadrant =
two identifications

without identification

1. + 3. Quadrant =
dot identification

2. + 4. Quadrant =
line identifications

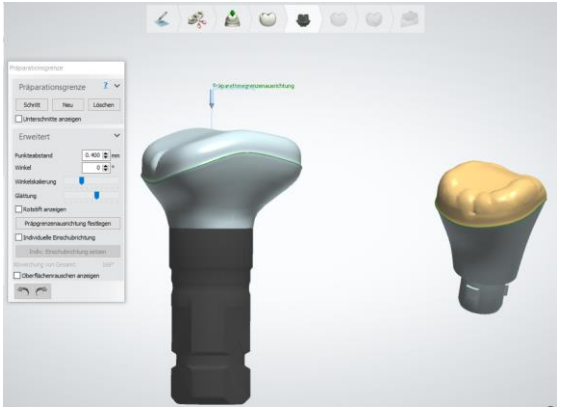


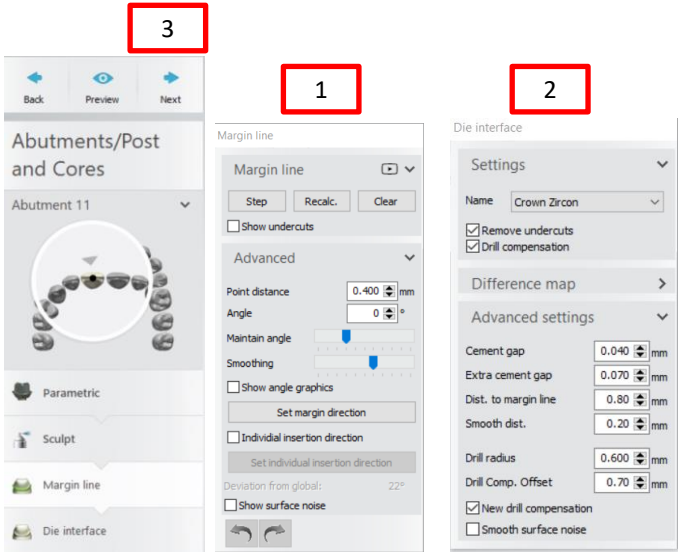


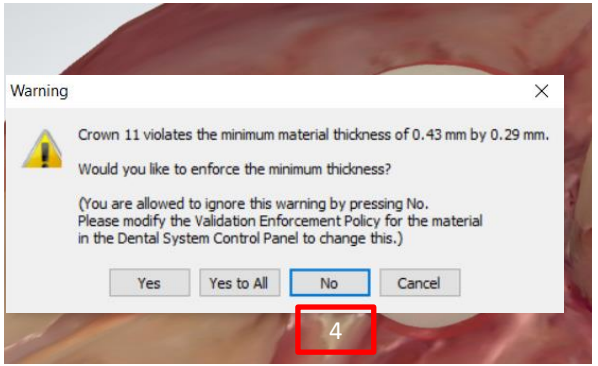
Design of healing abutments

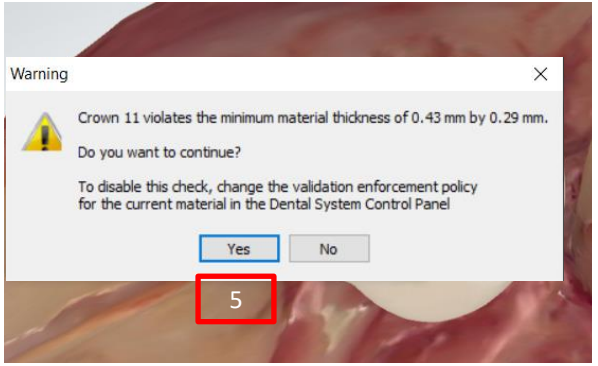
If the order form with prosthetic crown/bridge was created, the further steps are performed in the software

1. Margin line
2. Die interface / Settings
3. Click „Next“ to continue
4. Warning „Enforce minimum thickness“ to be confirmed with **No**
5. Warning „Do you want to continue?“ to be confirmed with **Yes**





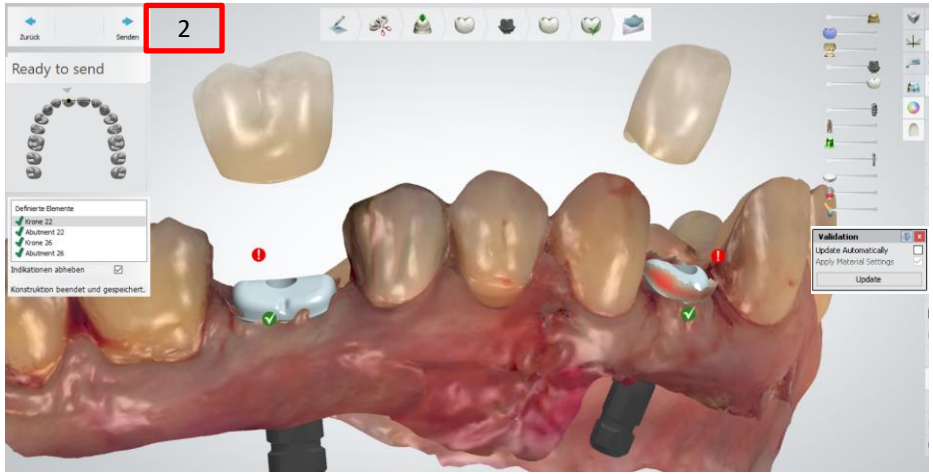




Design of healing abutments

1 The "crown, bridge" prosthetics will not pass the validation

2 **Important note:**
To ensure that the prosthetics are not manufactured by Camlog when shipped via Inbox, a material must be selected that is not designated with DEDICAM.



Design of printed models

Design of printed models

General notes / requirements for printed DEDICAM® models*:

- Activated Model Builder module on 3Shape license dongle
- 3Shape software version 2015 or higher
- Intra-oral scan data might be provided by various channels as 3Shape Unite/Communicate portal, Trios Inbox, download links, mail etc.
- Using the DEDICAM libraries with suitable analogues for printed models
- Checking and printing of the design data transmitted to Camlog is done by Innovation MediTech GmbH (Dreve)*

* This service might not be available in your country

Design of printed models

Overview of implant analogs available in the DEDICAM® CAD libraries for printed models

	CAMLOG®	CONELOG®	CERALOG®	iSy®	BioHorizons®	Further implant-systems
Original analogs from Camlog	✓	✓	✓	✓	⊗	⊗
DIM Analogs from NT	✓	✓	⊗	⊗	✓	✓

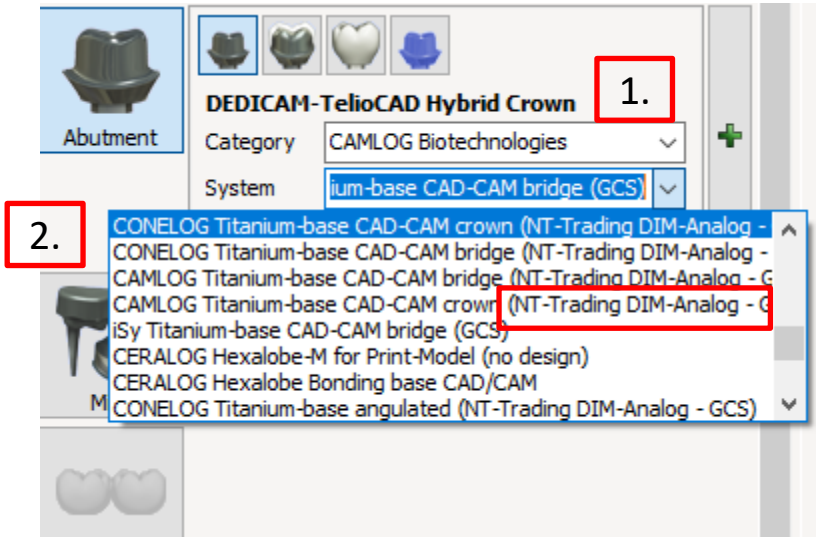
Design of printed models

Order form settings:

1. Select implant libraries supplier under «Category»

2. Based on desired restoration define the library under «System»

Standardized, Camlog printed model analogs for CAMLOG and CONELOG are included.
Libraries containing NT-DIM Analogs are displayed with the name NT-Trading DIM-Analog in brackets.



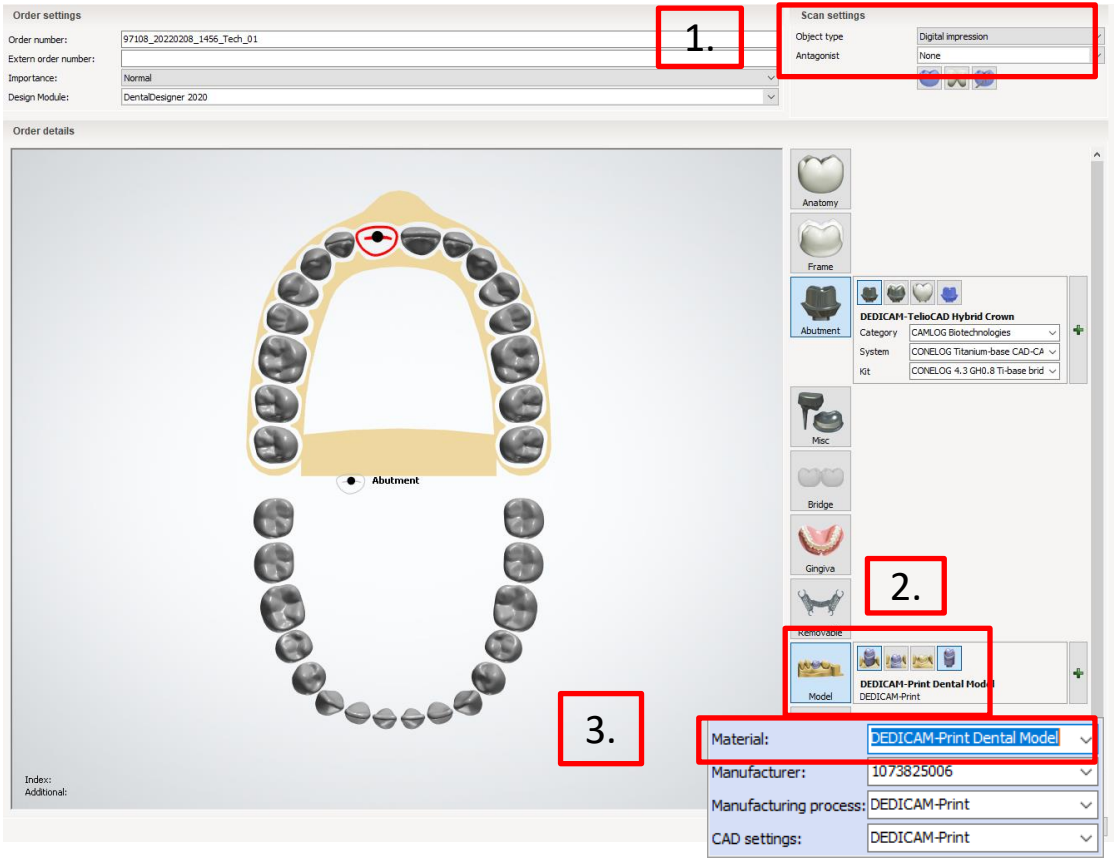
Design of printed models

1. Scan settings
«Digital impression»

2. Activate «Model» and select subtype from «Sectioned (die ditched); Sectioned (cut); Unsectioned» and «Dies»

3. Select material «DEDICAM Print Dental Model» for predefined manufacturing process and CAD settings

Note:
Inhouse printing requires individual material definition with print parameters suitable for your printing device



Design of an angulated screw channel

Design of an angulated screw channel

General notes:

The Titanium-base CAD-CAM free is suitable for a design with an angulated screw channel up to a maximum of 25° for CAMLOG and CONELOG. Exception: CONELOG® GH 2.0 mm → up to **15°**.

The Titanium-base CAD-CAM free is contraindicated for bridges. The angulation of the screw channel results in the abutment screw being trapped in the Titanium-base after the restoration has been bonded.

To tighten the abutment screw with the angulated screw channel,

the "Ballpoint" screwdriver Art. no. J5319.050x must always be used.

Design of an angulated screw channel

The overview table shows the dependencies between the prosthetic components and a design with or without an angulated screw channel

	CAMLOG	Screw	CONELOG	Screw	Screwdriver
Angulated screw channel design (Ti-base CAD/CAM free)	 K2247.xxxx (short)  K2265.xxxx (long)	 J4005.1601 or J4005.2001	 C2247.xxxx (short)  C2265.xxxx (long)	 C4015.1601 or C4015.2001	 J5319.050x
Straight screw channel design (Ti-base CAD/CAM)	 K2244.xxxx	 J4005.1601 or J4005.2001	 C2242.xxxx	 C4015.1601 or C4015.2001	 J5317.0502

Design of an angulated screw channel

General notes:

The BioHorizons Hybrid titanium base is suitable for an angulated screw channel design of up to a maximum of 15°.

The BioHorizons Hybrid titanium base with an angulated screw channel is contraindicated for bridges.

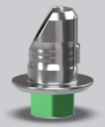
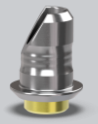
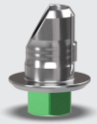
With an angulated screw channel, the yellow anodized abutment screw,

and the "Precision Angled" screwdriver. Art. no. BZ5334.2014

must be used.

Design of an angulated screw channel

The overview table shows the dependencies between the BioHorizons components and a design with an angulated screw channel

	Titanium base hexed	Titanium base non-hexed	Screw	Screwdriver
Straight screw channel design	 All diameters	 All diameters	 BZ4015.0010 (PXMUAS)	 BZ5305.5020 (135-351)
Angulated screw channel design	 All diameters	X not possible	 BZ4022.0010 (PXPAS)	 BZ5334.2014 (PADM14)

Design of an angulated screw channel

1. Select the implant system CAMLOG or CONELOG from «Category»

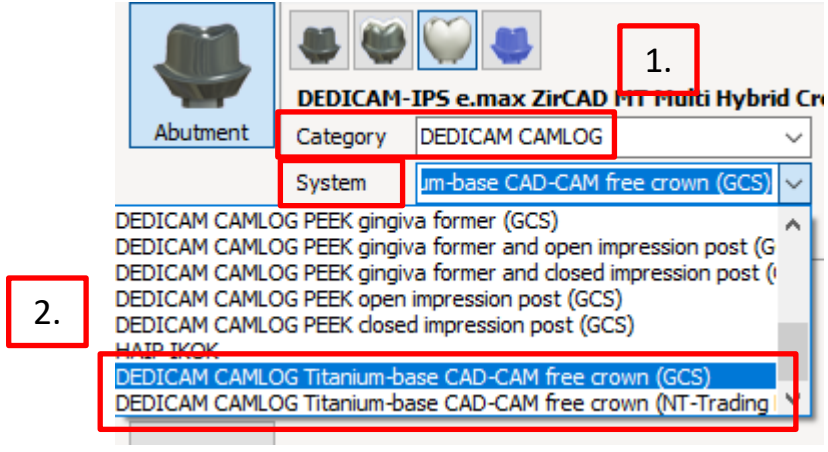
2. Choose CAMLOG or CONELOG Titanium-base CAD-CAM free crown from «System»

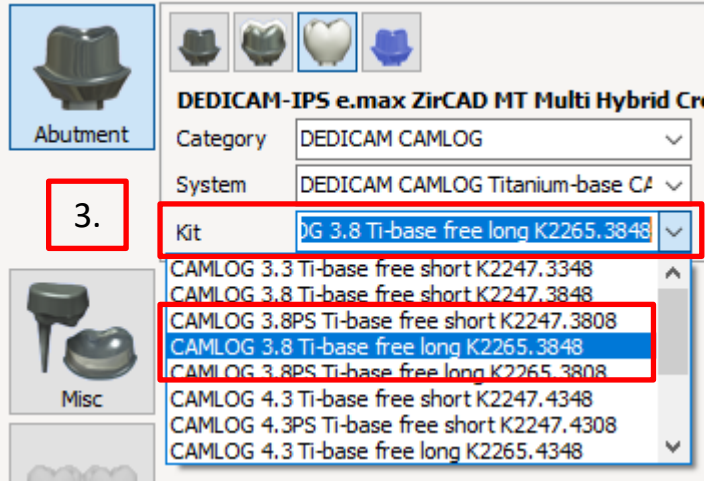
3. Selection of the diameter and the height of the chimney, and if available the gingival height under "Kit "

Example:

CAMLOG 3.8 Ti-base free long K2265.3848

Type and Ø Chimney height Art.-Nr.



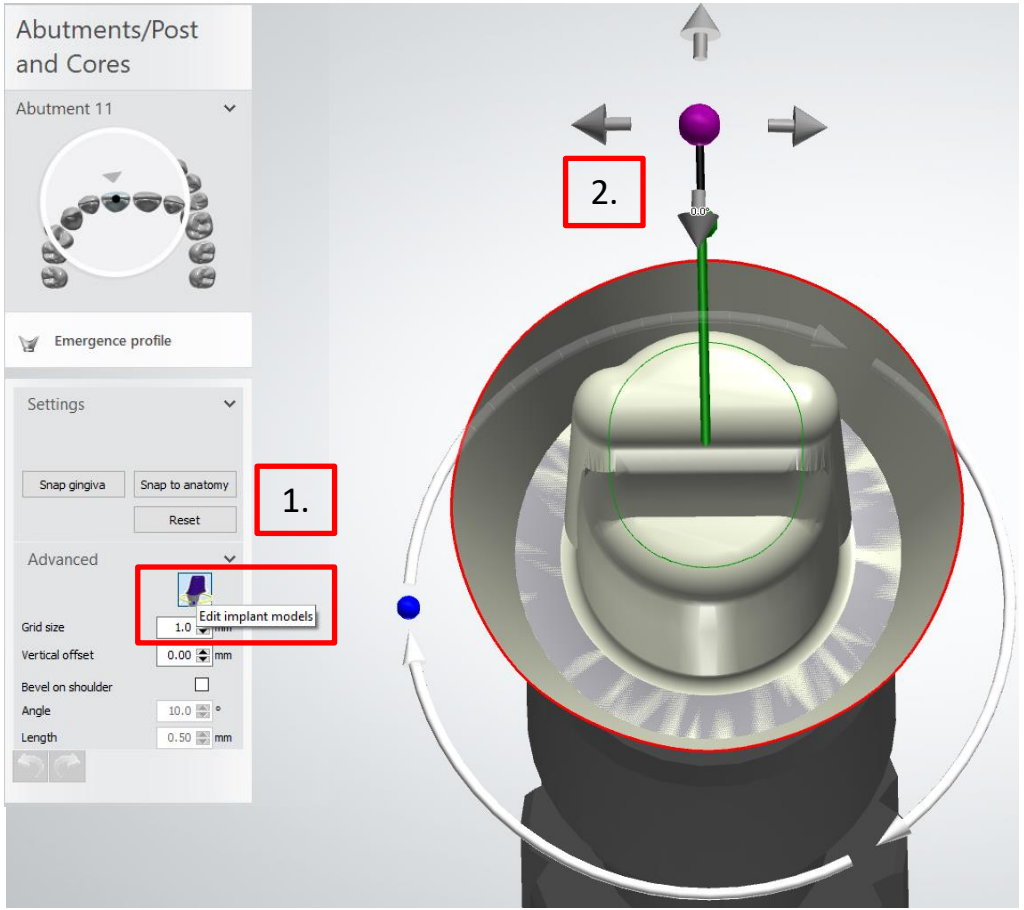


Design of an angulated screw channel

1. When the function "Edit implant models" is activated, the titanium base can be rotated to the positions available for the implant via the blue dot.

2. The screw channel can now also be angled over the purple dot. However, this can also be done in a later step.

This allows the alignment of the titanium base and the inclination of the screw channel to be set as required for the specific case.

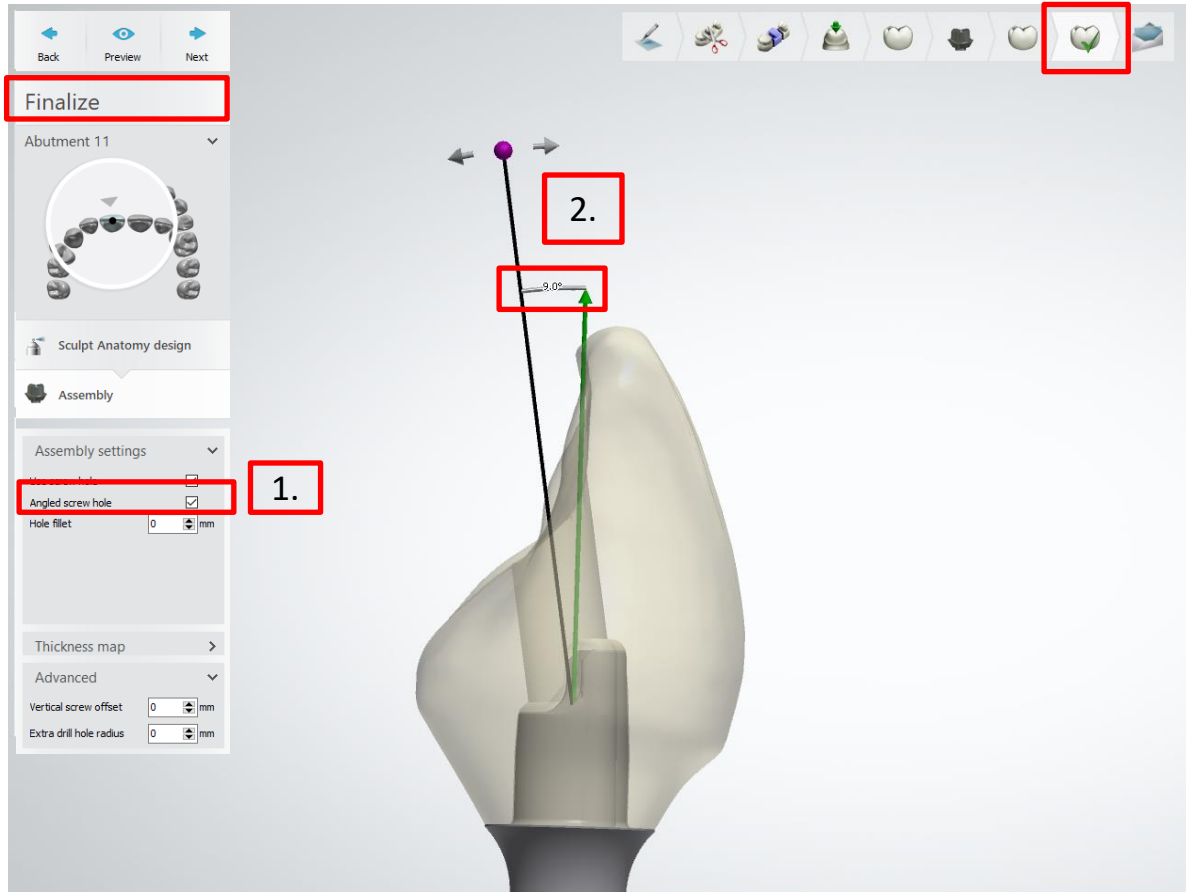


Design of an angulated screw channel

In the "Finalize" design step, the inclination of the screw channel can be adjusted again.

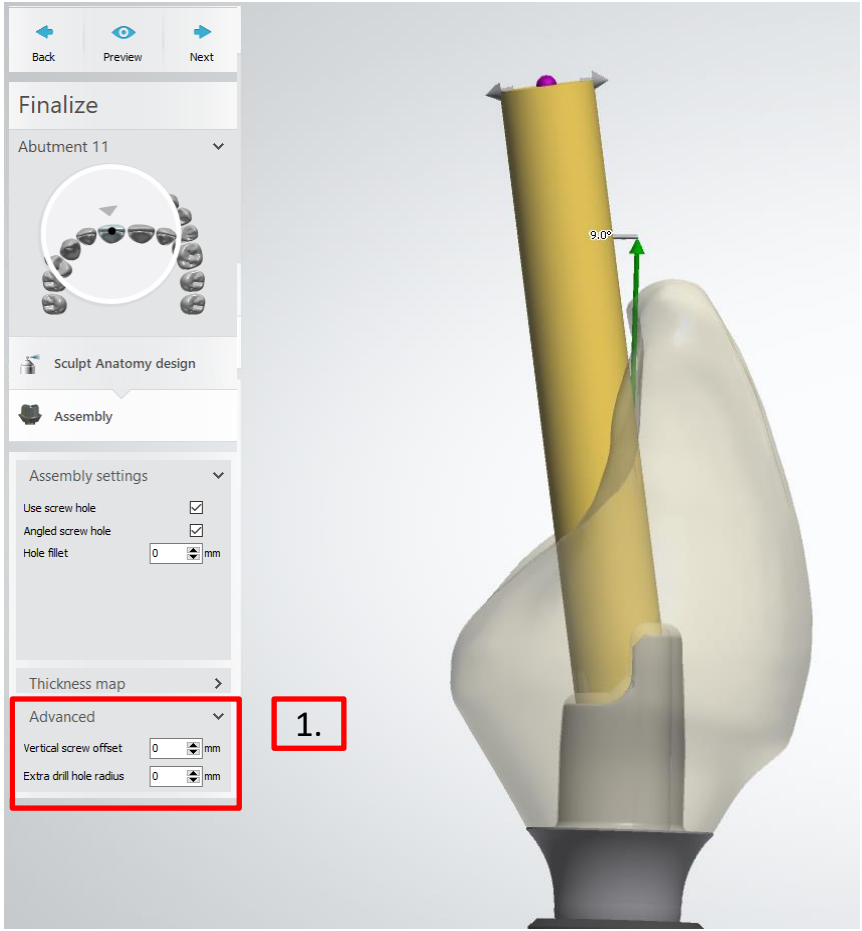
1. If necessary, activate the check mark "Angled screw hole" checkbox.

2. Note: The inclination of the screw channel causes the screw cannot be removed once the restoration is bonded to the titanium base.



Design of an angulated screw channel

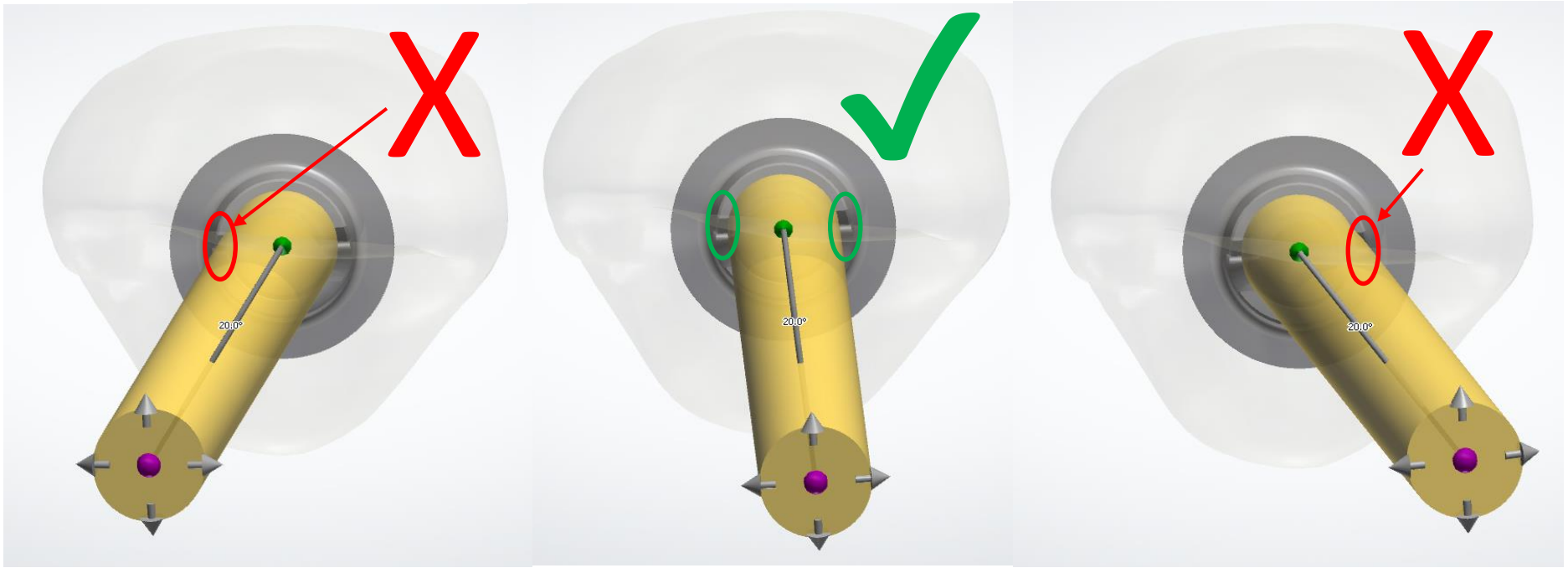
1. Attention: The values " Vertical screw offset" and “Extra drill hole radius" must not be changed.



Design of an angulated screw channel

In addition to the angulation of the screw channel, its positioning to the anti-rotation surfaces must be considered.

If the screw channel is positioned too far to the left or right and thus covers the titanium base's anti-rotation surface, the restoration's anti-rotation function will be lost. There is no control on the production side.



Disclaimer

The information provided does not qualify the viewer to adopt or implement the product in a clinical setting. For proper use of the product(s), please refer to the relevant instructions for use (IFU) and work instructions.

BioHorizons® Implants and Multi-unit abutments are manufactured by BioHorizons.
CAMLOG®, CERALOG®, CONELOG® and iSy® products, in addition to all custom-made DEDICAM® products, are manufactured by: ALTATEC GmbH | Maybacherstr. 5 | 71299 Wimsheim | Germany

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