QUICK GUIDE

For ASC Abutment & Crown Design

⁊ Preat®

ABUTMENT DESIGN GUIDELINES

SCREW CHANNEL
0-30°

POST HEIGHT
4-12mm

MAX POST ANGLE
30°
(except Astra® EV)

MIN. WALL THICKNESS
0.5mm

GINGIVAL HEIGHT
0.5-6.0mm*
if post is angled 17° or less
*0.9-9.0mm for Neodent® GM™

Post Angulation	Max Gingival Height
0-17°	6mm
17.1-19°	5mm
19.1-21°	4mm
21.1-25°	3mm
25.1-30°	2mm

MIN. GINGIVAL DIAMETER
3.3mm

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IMPLANT COMPATIBILITY

Manufacturer	Compatible Implant/Interface[1]
BioHorizons®	Tapered Internal 3.0mm
	Tapered Internal 3.5mm
	Tapered Internal 4.5mm
Dentsply Sirona	Astra TX 3.0mm
	Astra TX Aqua 3.5/4.0mm
	Astra TX Lilac 4.5/5.0mm
	Astra Tech EV 3.0mm
	Astra Tech EV 3.6mm
	Astra Tech EV 4.2mm
	Astra Tech EV 4.8mm
	Astra Tech EV 5.4mm
Hiossen	Mini
	Regular
Implant Direct™	Legacy™ 3.0mm
	Legacy™ 3.5mm
	Legacy™ 4.5mm
	Legacy™ 5.7mm
Keystone Dental	PrimaConnex™ TiLobe® 3.5mm
	PrimaConnex™ TiLobe® 4.1mm
	PrimaConnex™ TiLobe® 5.0mm
MegaGen	AnyRidge®

Manufacturer	Compatible Implant/Interface[1]
Neodent®	Helix GM™
Neoss®	Regular Platform 3.5/4.0/4.5/5.0/5.5mm
NobelBiocare™	NobelActive™ 3.0mm
	NobelActive™ NP
	NobelActive™ RP
	Tri-Lobe NP
	Tri-Lobe RP
	Tri-Lobe WP
	Tri-Lobe 6.0mm
Straumann®	BLX RB/WB
	BLX WB3
	Bone Level NC
	Bone Level RC
	Tissue Level RN
ZimVie (formerly Zimmer Dental)	3i Certain® 3.4mm
	3i Certain® 4.1mm
	3i Certain® 5.0mm
	3i Certain® 6.0mm
	Tapered Screw-Vent® 3.5mm
	Tapered Screw-Vent® 4.5mm
	Tapered Screw-Vent® 5.7mm

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HOW TO DESIGN A CROWN AND PREAT ASC PATIENT-SPECIFIC ABUTMENT (SPLIT FILE)

1. In your CAD software, **start your order** and **Import Scan** for your case.

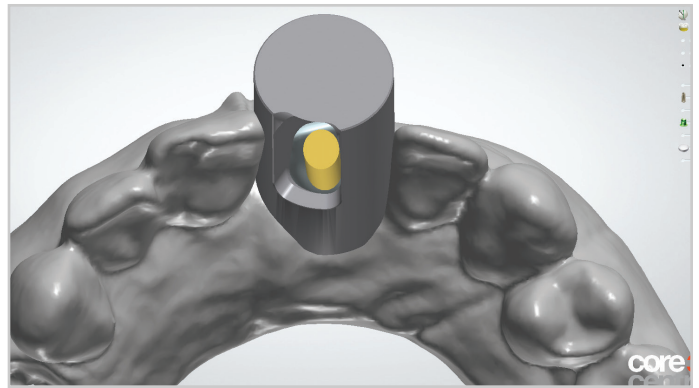2. **Select** and **align** the appropriate scan body for each implant site to be restored.

    Note: the Advanced Scan Acceptance feature of the Preat Choice Library allows you to select from an extensive range of scan bodies from the implant manufacturers and common third-party providers.

    For more information, see the *Scan Body Reference Guide*.

3. **Select** the **ASC Ti Blank** from abutment options.

4. Turn on **Blank Setting**.

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5. You will see a visual shell of the ASC Ti Blank so you can visualize the ASC channel in relation to the window within the ti blank.
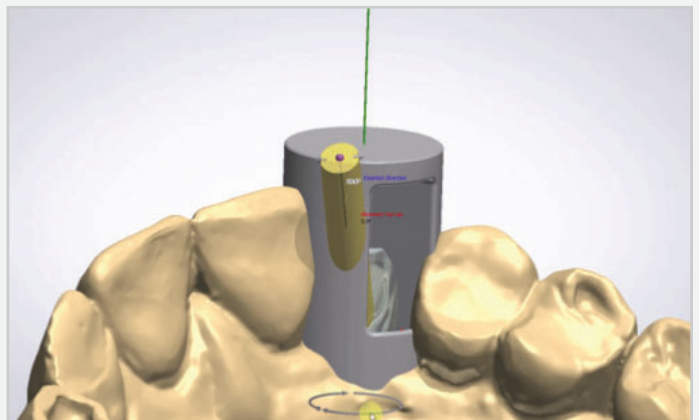

6. **Rotate the ti blank** until the window is in the general area where you wish to place the ASC channel.

   In 3shape, click and drag the mouse to rotate the ti blank.

   In exocad, select **Detect Implant Analog Position** then click and drag the ti blank into the desired position.
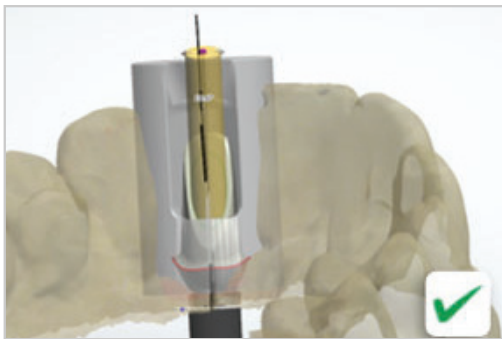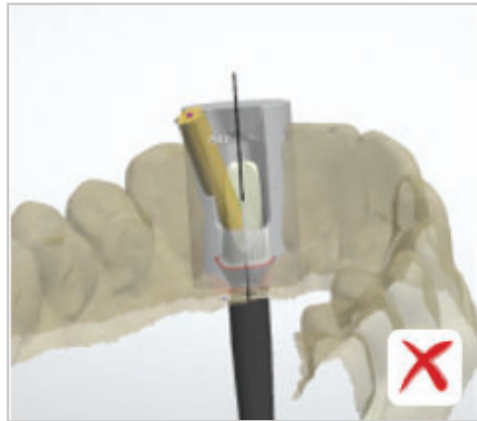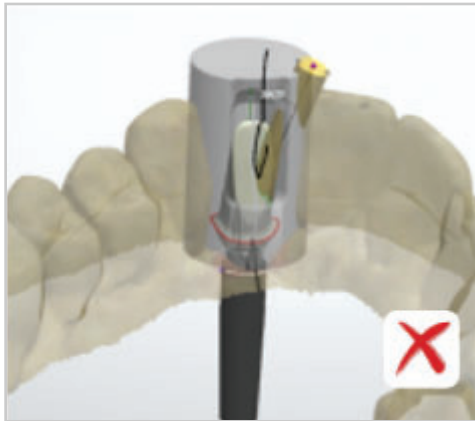
   You can rotate the ti blank to each indexing position.

   The window is designed to accommodate 360° rotation of the ASC channel with some minor limitations for Nobel Biocare® Tri-Lobe and Straumann® Bone Level-compatible connections.
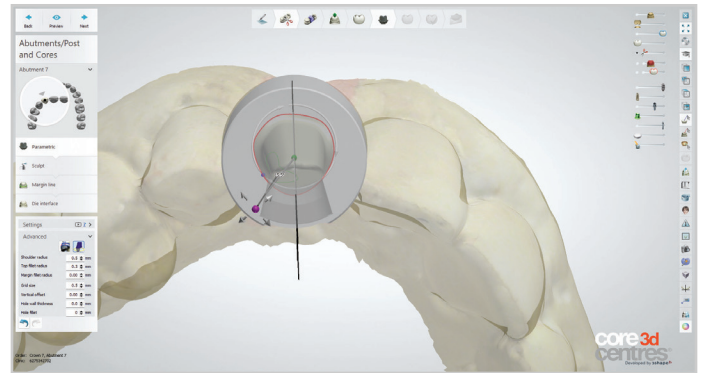
7. Adjust the angulation of the ASC channel vertically or horizontally to the optimal location within the sides and bottom of the window.

You can extend beyond the top of the window to accommodate the full angulation range from 0-30° off-axis.
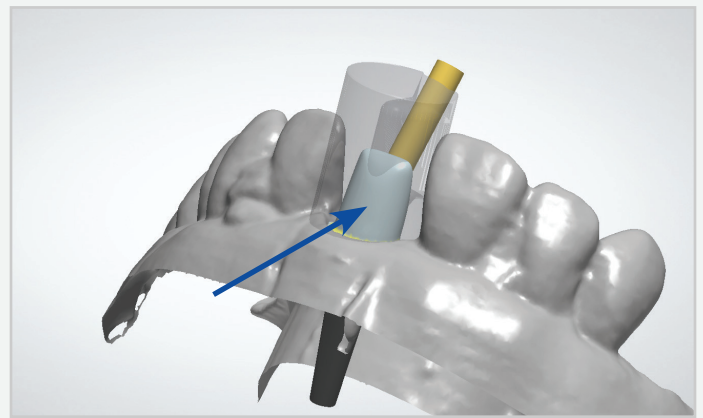
8. Finalize abutment design.

Keep in mind that, due to 3shape limitations, although you will see abutment material within the ti blank window, that will not be part of the milled abutment.

9. Include orientation feature (optional).

If it is your preference to add an orientation feature on your abutments, you can do so. If you are submitting your design for milling by Preat or milling in-house on a 4-axis mill, place this feature 180° from the ASC.

10. If you want to design the crown using a split file technique, proceed to the next step.

If you are ready to mill, export design for milling.

The exported 3shape abutment design will not reflect the ti blank window which will not be milled.

Final milled abutment

How abutment design will appear in 3Shape

11. Begin to design the initial crown with respect to the surrounding teeth.

    Some software programs offer different crown options with varying predesigned occlusal anatomies to select from and/or the ability to mirror the teeth on the other side of the arch if present and acceptable.
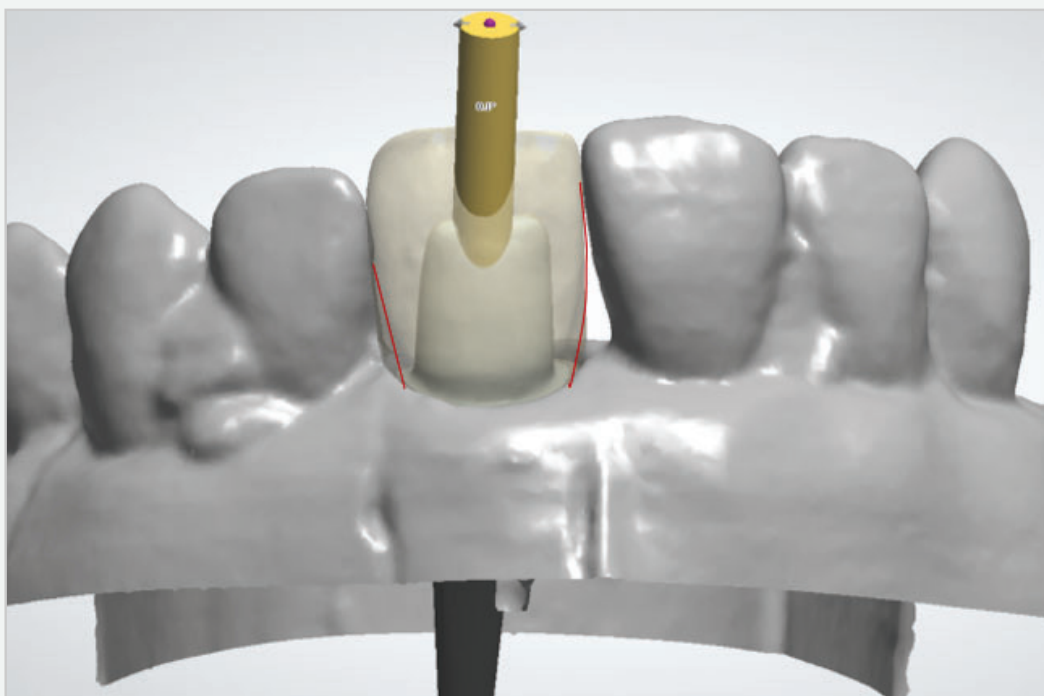
    The software should automatically construct an ideal crown proposal which can then be adjusted as needed with the design tools.
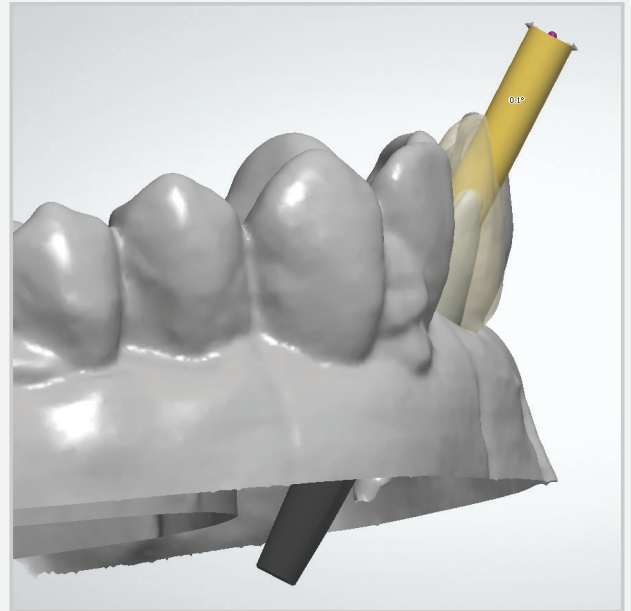
12. When designing the crown, it is important to ensure proper interproximal contacts exist and that adequate occlusion with the opposing teeth exists whenever possible.

    A slight overlap of the cusps with the opposing dentition is recommended as the software should then alleviate the occlusion to match a proper bite and said overlap ensures no gaps in occlusion exist wherever a contact is needed.

13. After occlusion and interproximal contacts have been achieved, it's important to evaluate the software's automatic emergence profile design, to ensure that the crown follows the same emergence as the abutment and that their surfaces combine in a smooth and seamless transition. It is also important to make sure it follows the surrounding tissue and that no abnormal spaces occur where food can get trapped in.


Example of a crown lacking proper emergence profile on the right side and too much interproximal contact on the left.

14. When finished, verify that the emergence profile height and diameter does not violate the safety requirements established by the software. *(Areas that go beyond the safety limits are usually red).*

15. A crucial factor when designing split files is ensuring the cement gap has the correct specifications.

> **For single crowns**, the cement gap should be 0.02-0.03mm plus either 0.03-0.04mm extra cement gap (dry milling) or 0.05-0.06mm (wet milling).
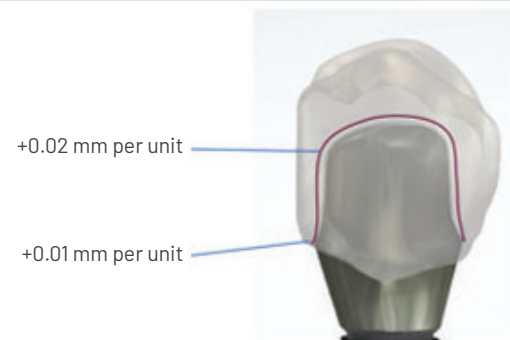
Split file parameters:
Cement Gap Dry Milling (Zirconia)

0.02-0.03 mm

Extra Cement Gap
0.03-0.05* mm
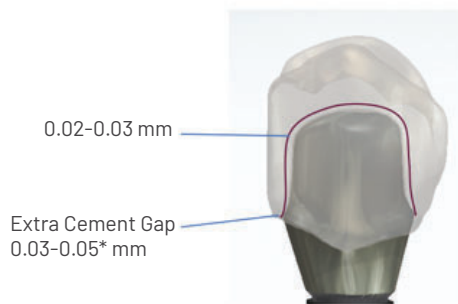
Split file parameters:
Cement Gap Wet Milling (Ceramic)

0.02-0.03 mm

Extra Cement Gap
0.05-0.06 mm
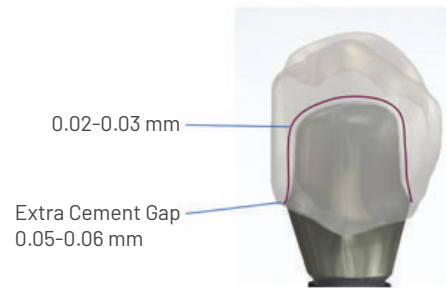
For bridges, add an additional 0.02mm per unit to the cement gap and 0.01mm per unit to the extra cement gap.

+0.02 mm per unit

+0.01 mm per unit

16. **As a final step**, design the screw access hole that will go through the crown.

    You can adjust the radius of the hole or the offset between the abutment and the crown for optimal seating.

    It is recommended to make the screw access hole slightly larger to offset any design issues.
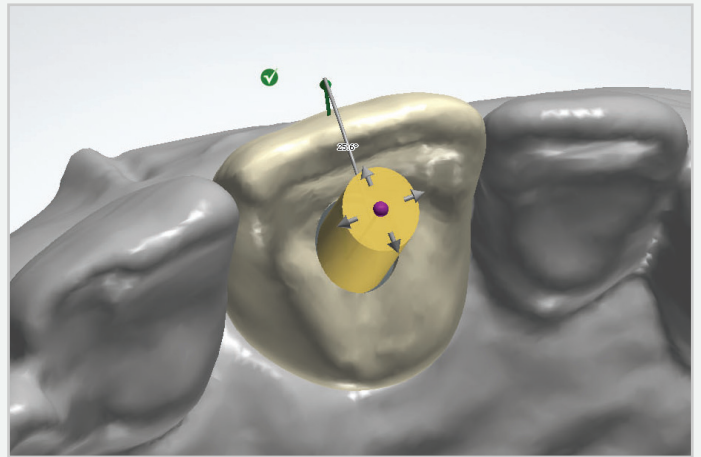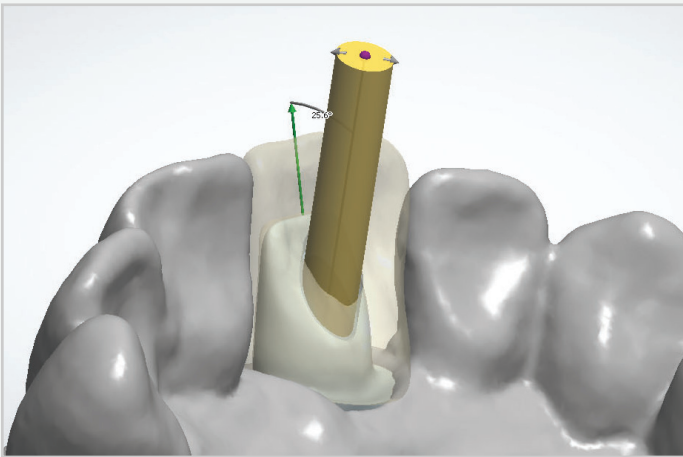
17. **Finalize design.** Mill the crown and abutment, then verify the fit.

HOW TO DESIGN A PREAT ASC PATIENT-SPECIFIC ABUTMENT

1. In your CAD software, **start your order** and **Import Scan** for your case.

2. **Select** and **align** the appropriate scan body for each implant site to be restored.
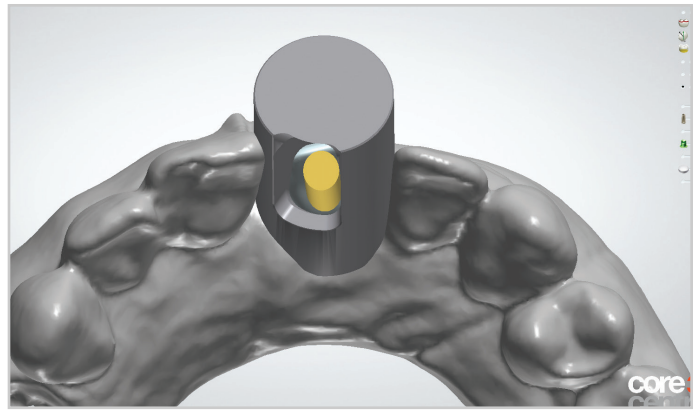
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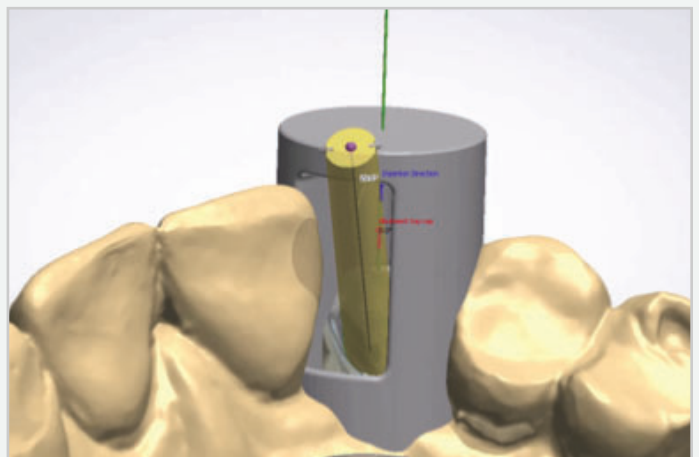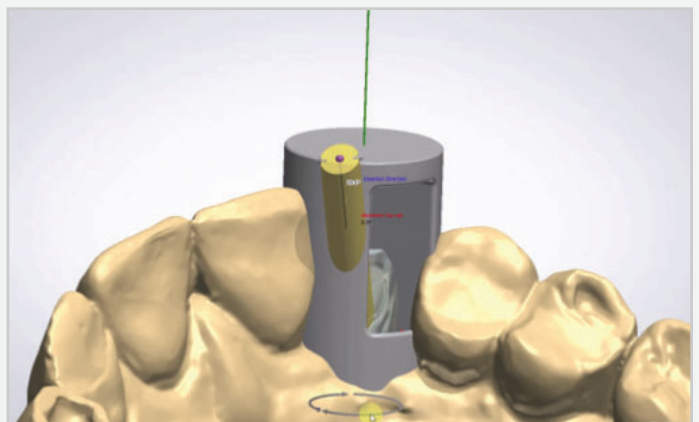
6. **Rotate the ti blank** until the window is in the general area where you wish to place the ASC channel.

   In 3shape, click and drag the mouse to rotate the ti blank.

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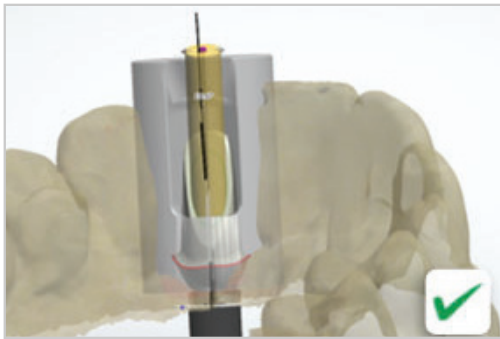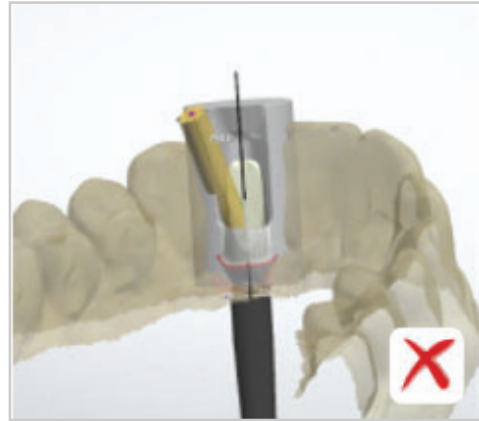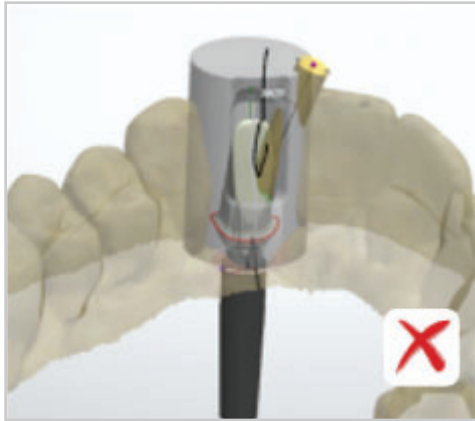
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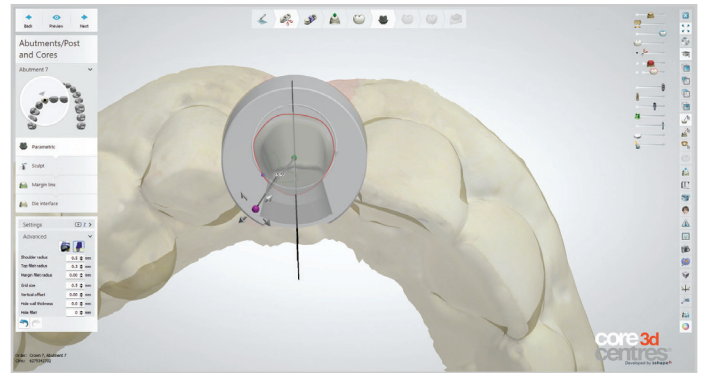

![Preat logo]

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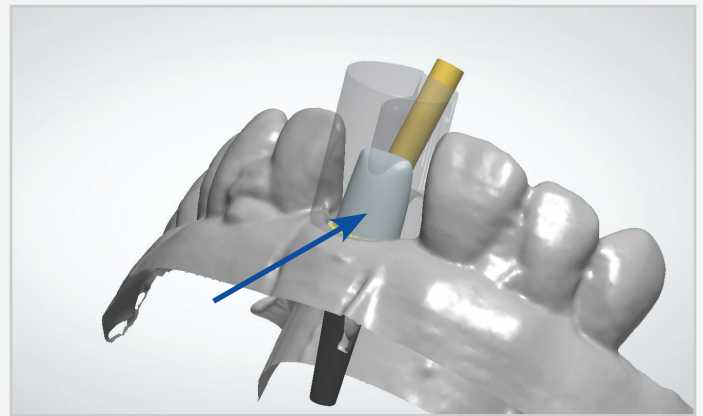
8. Finalize abutment design.

Keep in mind that, due to 3shape limitations, although you will see abutment material within the ti blank window, that will not be part of the milled abutment.

9. Include orientation feature (optional).

If it is your preference to add an orientation feature on your abutments, you can do so. If you are submitting your design for milling by Preat or milling in-house on a 4-axis mill, place this feature 180° from the ASC.

10. If you are ready to mill, export design for milling.

The exported 3shape abutment design will not reflect the ti blank window which will not be milled.

Final milled abutment

How abutment design will appear in 3Shape

![Preat logo]

HOW TO DESIGN A CROWN FOR PREAT ASC PATIENT-SPECIFIC ABUTMENT (RESCAN PROCESS)

1. **Predesign steps:** After the ASC Patient-Specific Abutment has been milled and checked for accuracy.

   Mount it on the model and obtain the following scans:

   A. Scan the Occlusion.
   B. Scan the arch with finished abutment without gingiva.
   C. Scan the abutment with multi-die fixture
   D. Scan the arch with gingiva and without abutment.

2. **Setting up the case:** Create a new screw retained crown case in the patient or case manager software by selecting the relevant tooth/teeth.

   **Select Screw Retained Crown** from the indication list, and the required material and color.

3. **Load the case** and begin by marking the margin on the abutment that you wish to build the crown on.
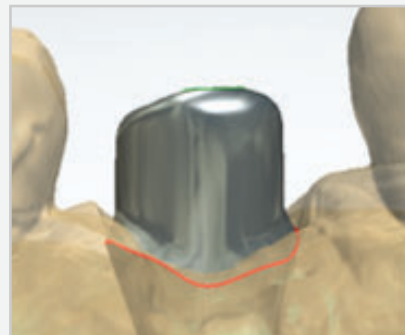
4. **Begin to design the initial crown** with respect to the surrounding teeth.

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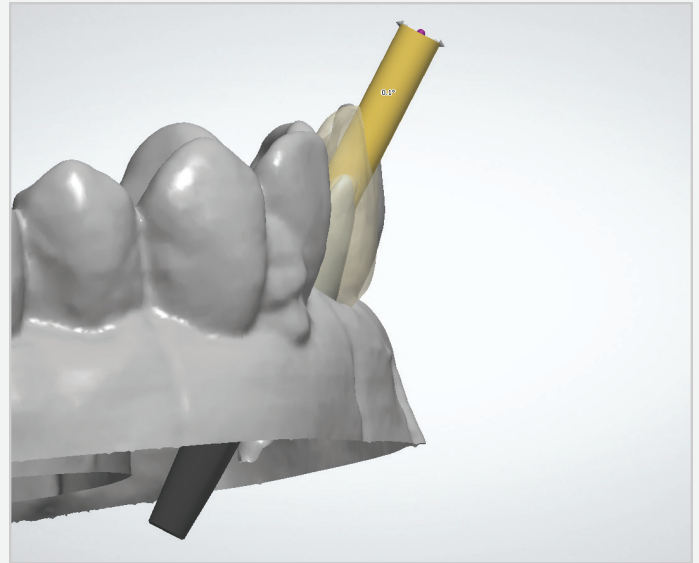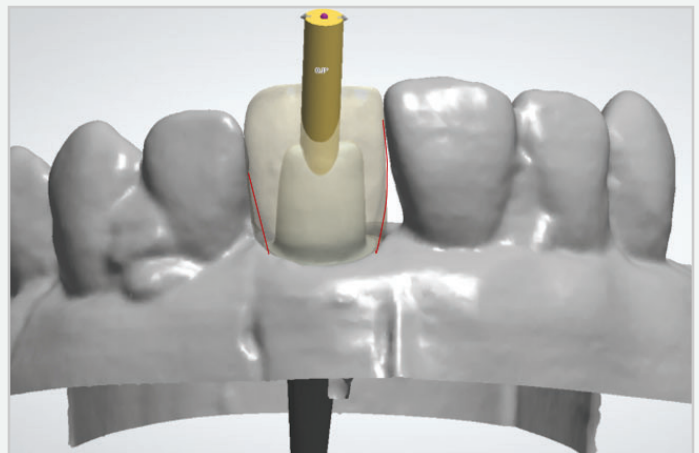

5. When designing the crown, it is important to ensure proper interproximal contacts exist and that adequate occlusion with the opposing teeth exists whenever possible.

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6. After occlusion and interproximal contacts have been achieved, it's important to evaluate the software's automatic emergence profile design, to ensure that the crown follows the same emergence as the abutment and that their surfaces combine in a smooth and seamless transition.

   It is also important to make sure it follows the surrounding tissue and that no abnormal spaces occur where food can get trapped in.

Example of a crown lacking proper emergence profile on the right side and too much interproximal contact on the left.

![Preat logo] **Preat**®

7. When finished, verify that the emergence profile height and diameter does not violate the safety requirements established by the software. (Areas that go beyond the safety limits are usually red).

8. **As a final step**, design the screw access hole that will go through the crown. You can adjust the radius of the hole or the offset between the abutment and the crown for optimal seating. It is recommended to make the screw access hole slightly larger to offset any design issues.
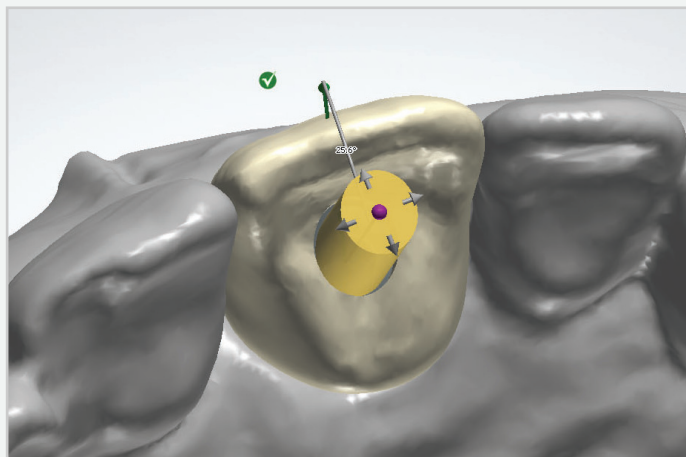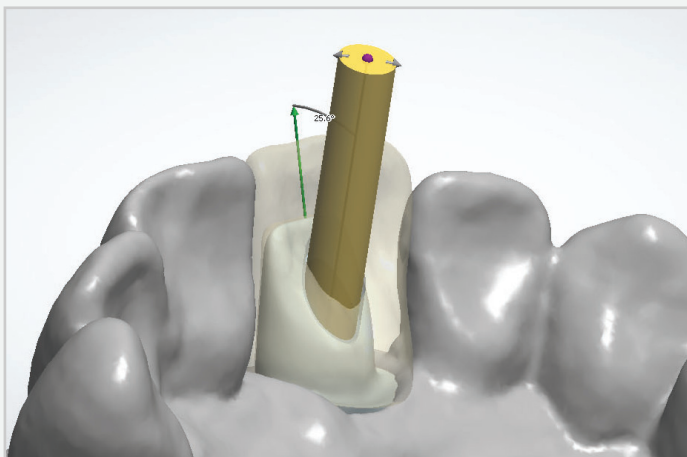
9. **Finalize crown design** and mill, then verify the fit.