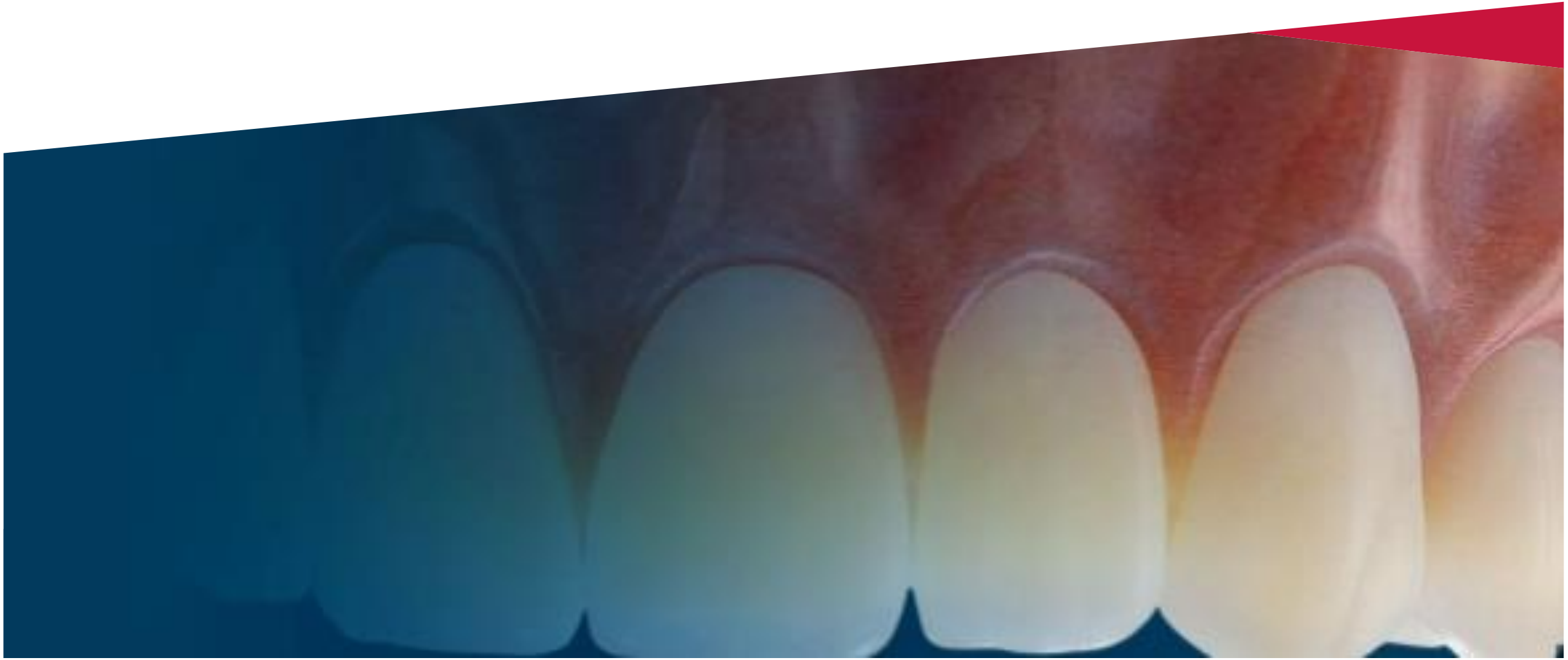
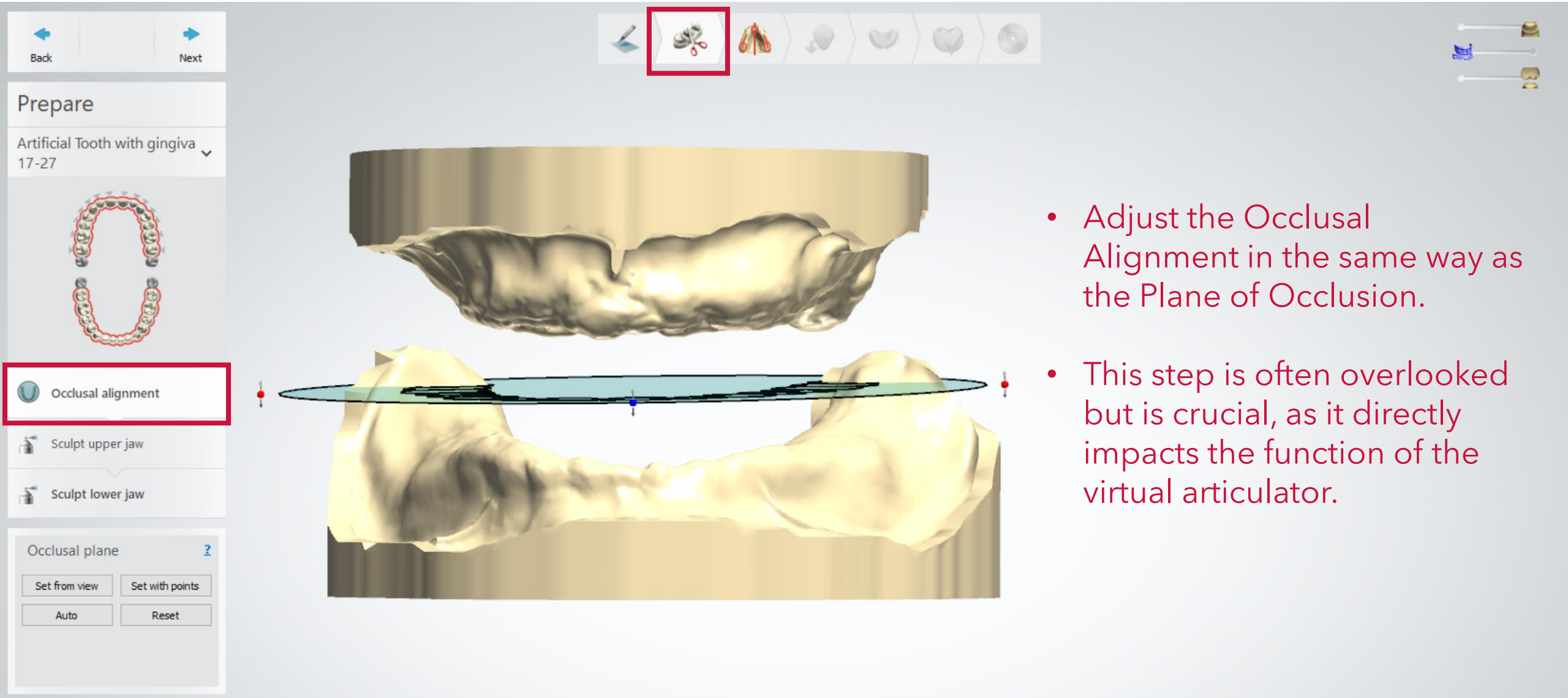


Denture – TrueDent by Stratasys

Designing in 3Shape Step by step

3shape

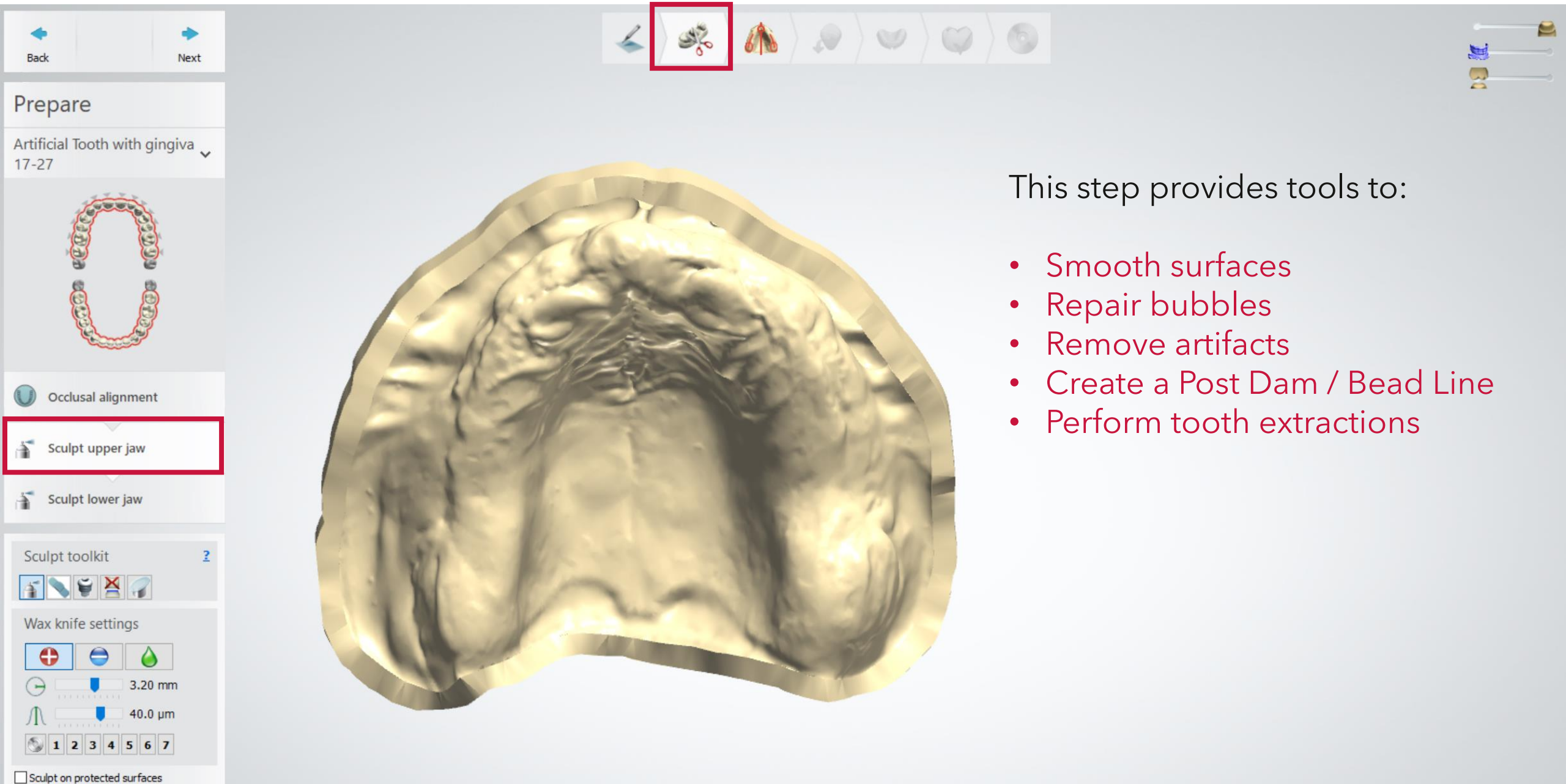
Occlusal Alignment



- Adjust the Occlusal Alignment in the same way as the Plane of Occlusion.
- This step is often overlooked but is crucial, as it directly impacts the function of the virtual articulator.

3shape

Sculpt Upper & Lower Jaw



This step provides tools to:

- Smooth surfaces
- Repair bubbles
- Remove artifacts
- Create a Post Dam / Bead Line
- Perform tooth extractions

Occlusal Plane

Back
Next

Model analysis

Artificial Tooth with gingiva
17-27

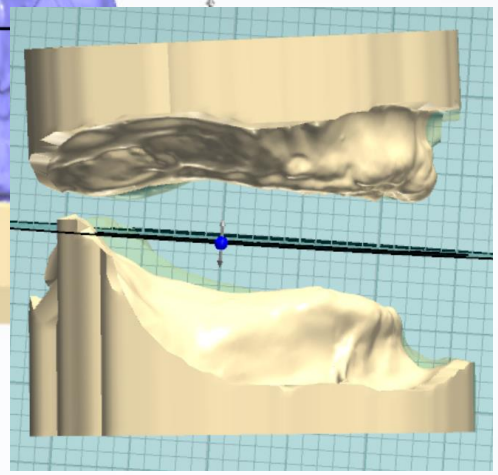
Occlusal plane
Characteristic points
Upper jaw boundary
Lower jaw boundary

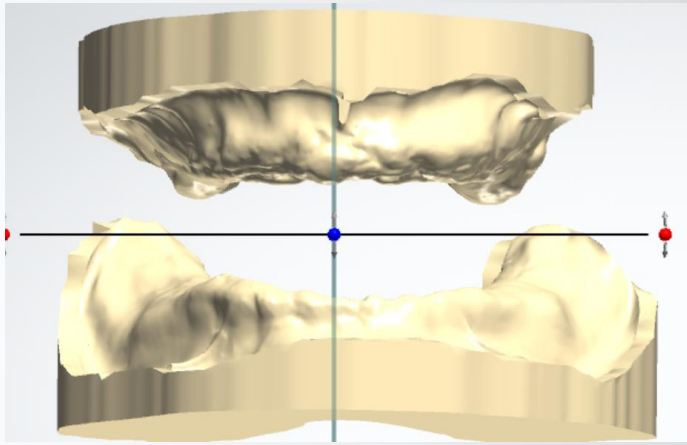
Instruments

Occlusal plane is set

Setting the plane of Occlusion

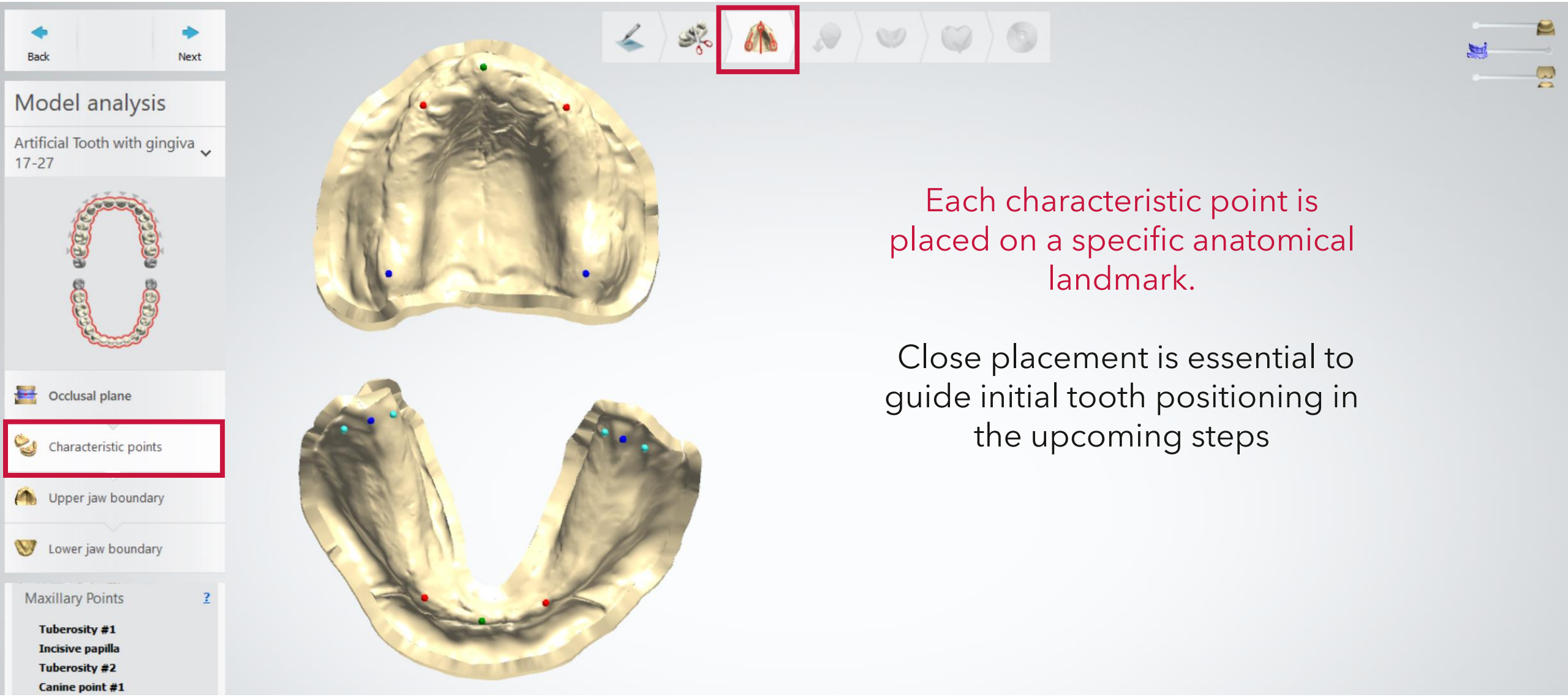
If the Occlusal Plane is off…
the entire case is wrong!
Take your time.





3shape

Characteristic Points

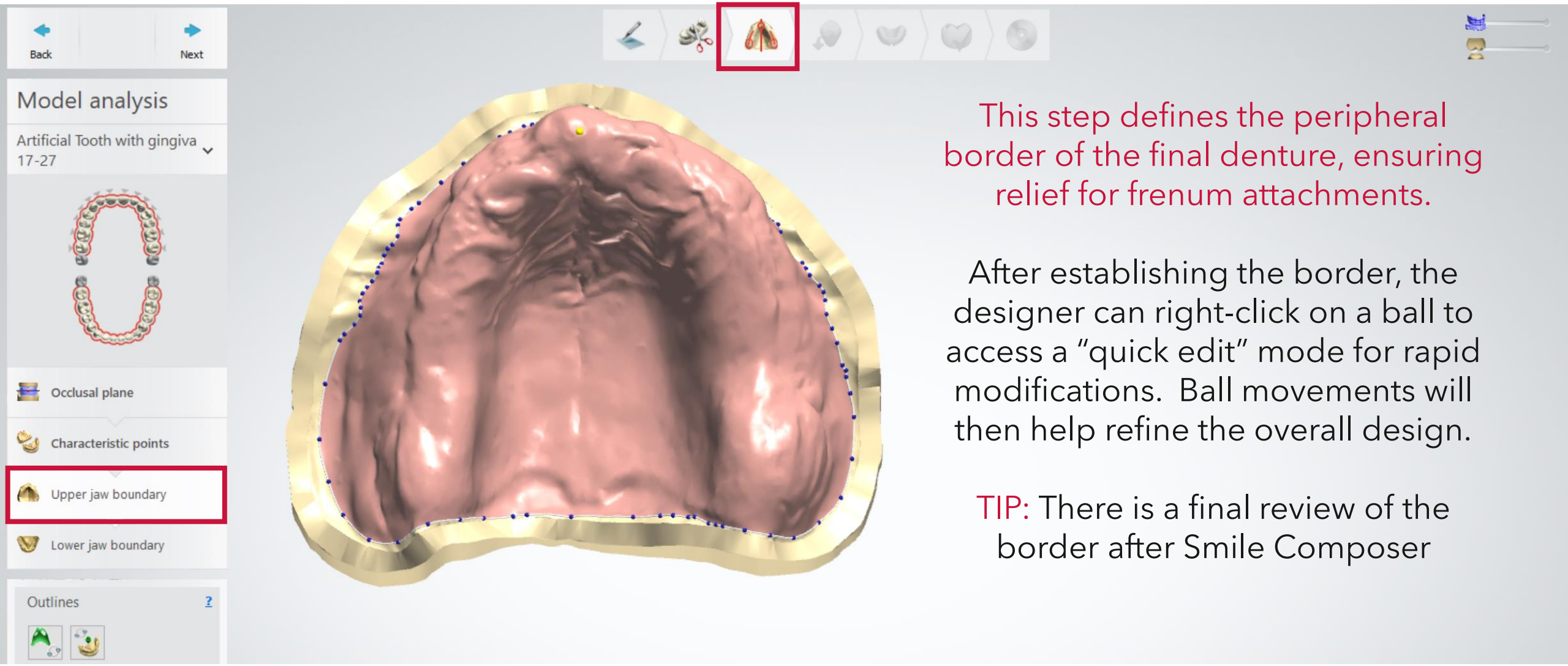


Each characteristic point is placed on a specific anatomical landmark.

Close placement is essential to guide initial tooth positioning in the upcoming steps

3shape

Upper Jaw Boundary



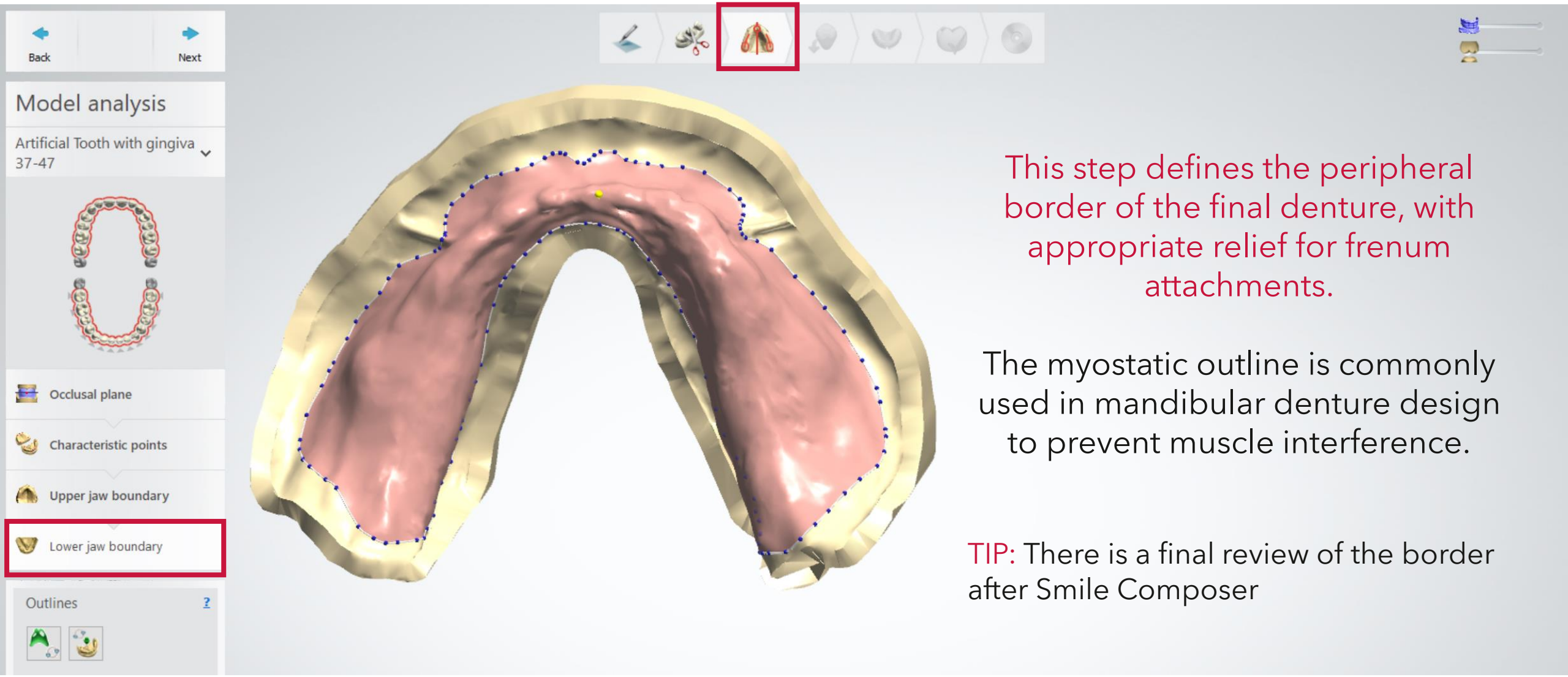
This step defines the peripheral border of the final denture, ensuring relief for frenum attachments.

After establishing the border, the designer can right-click on a ball to access a "quick edit" mode for rapid modifications. Ball movements will then help refine the overall design.

TIP: There is a final review of the border after Smile Composer

3shape

Lower Jaw Boundary



This step defines the peripheral border of the final denture, with appropriate relief for frenum attachments.

The myostatic outline is commonly used in mandibular denture design to prevent muscle interference.

TIP: There is a final review of the border after Smile Composer

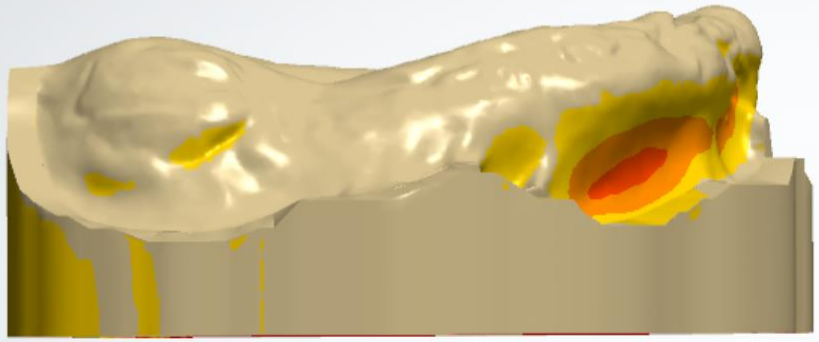
3shape

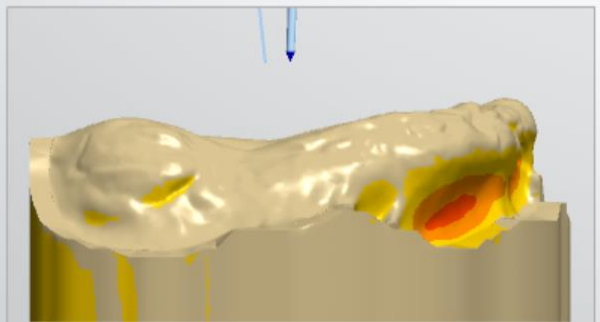
Block out – Path of insertion for both arches

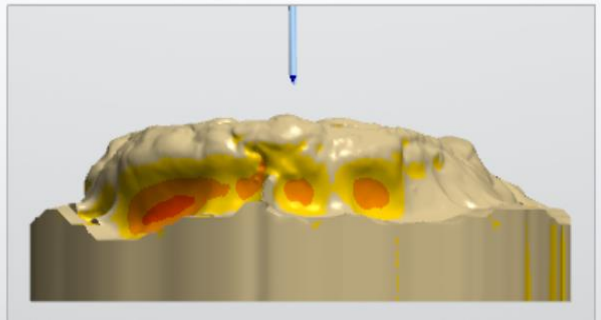
The insertion angle can be adjusted and evaluated simultaneously in the windows below for a full perspective.

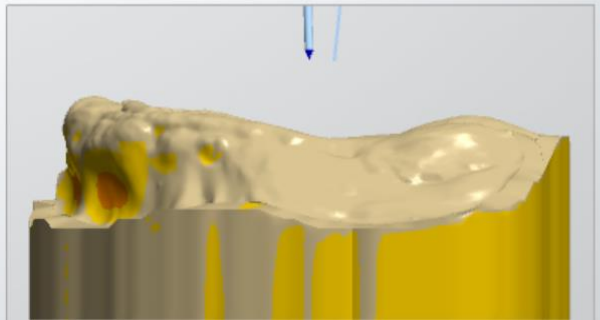
The undercut gauge, to the right assists designers in evaluating the depth of the undercuts and effectively determine the best path of insertion.

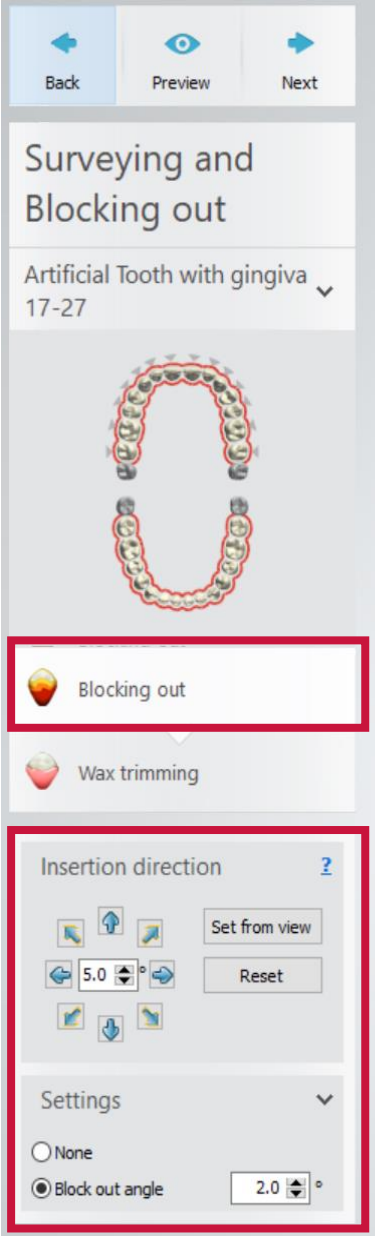
Designers can choose to automatically block out undercuts to a specified depth or manually block out in the next step of Wax trimming.

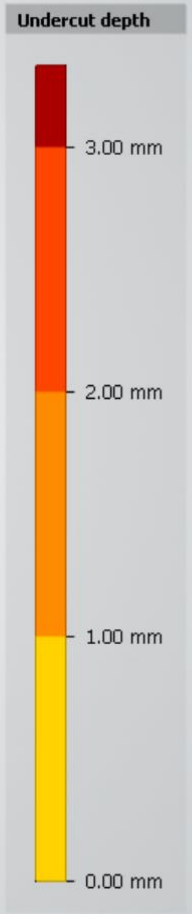




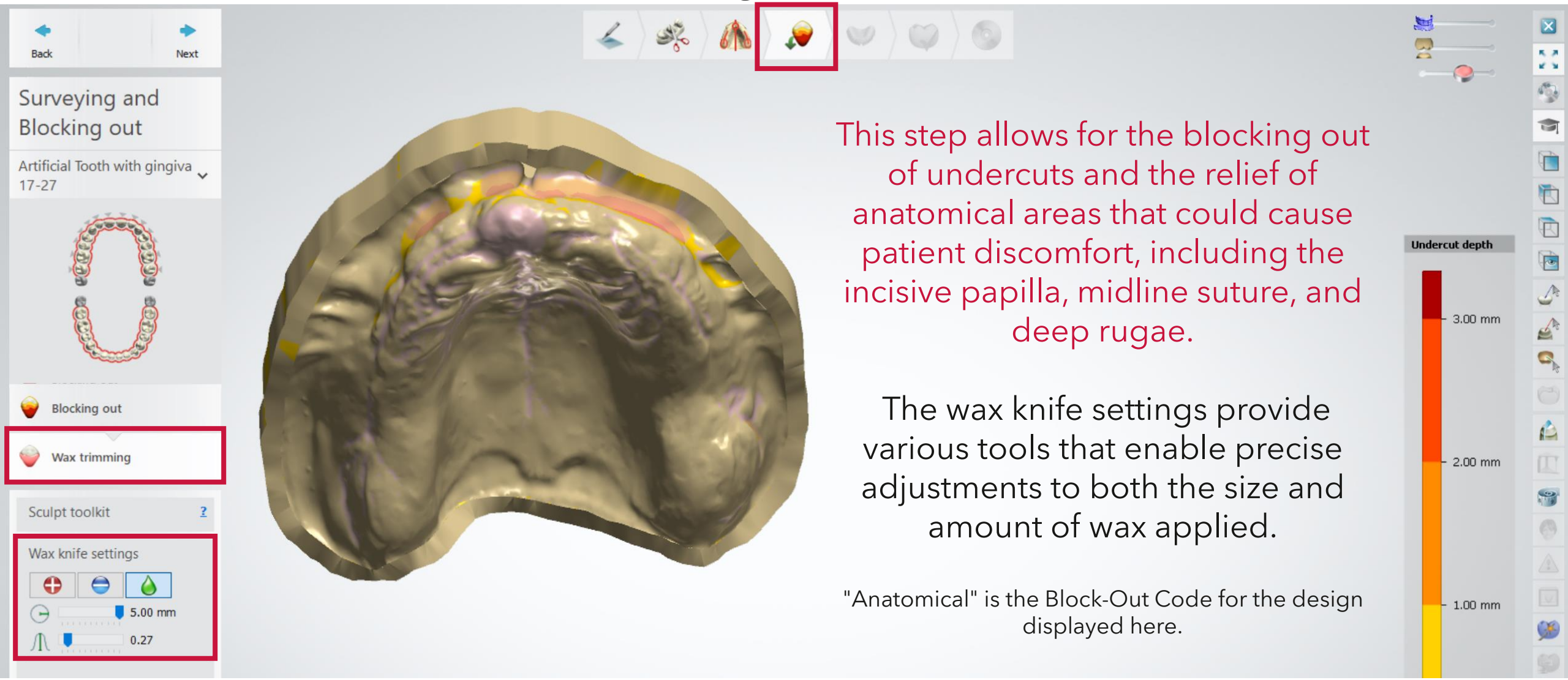








Wax Trimming for both arches



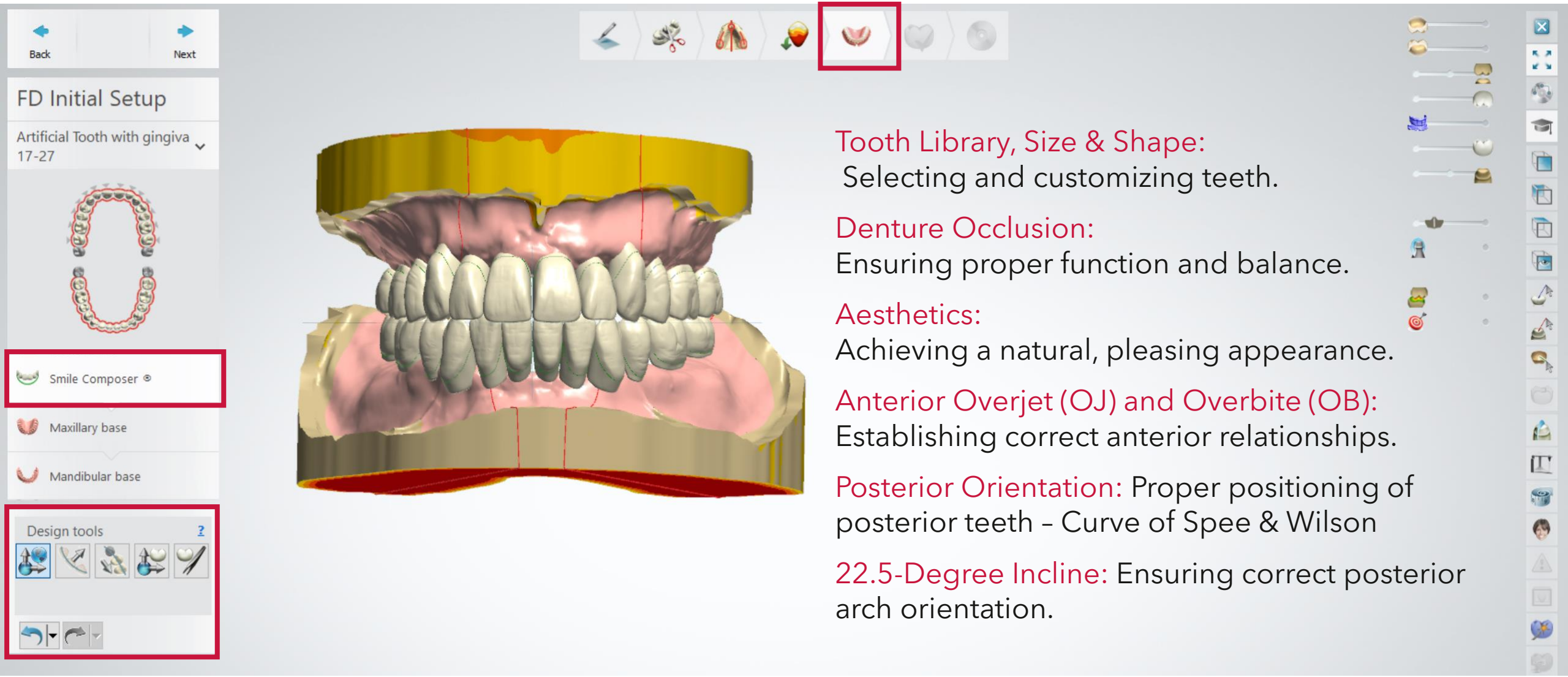
This step allows for the blocking out of undercuts and the relief of anatomical areas that could cause patient discomfort, including the incisive papilla, midline suture, and deep rugae.

The wax knife settings provide various tools that enable precise adjustments to both the size and amount of wax applied.

"Anatomical" is the Block-Out Code for the design displayed here.

3shape

Smile Composer



Tooth Library, Size & Shape:
Selecting and customizing teeth.

Denture Occlusion:
Ensuring proper function and balance.

Aesthetics:
Achieving a natural, pleasing appearance.

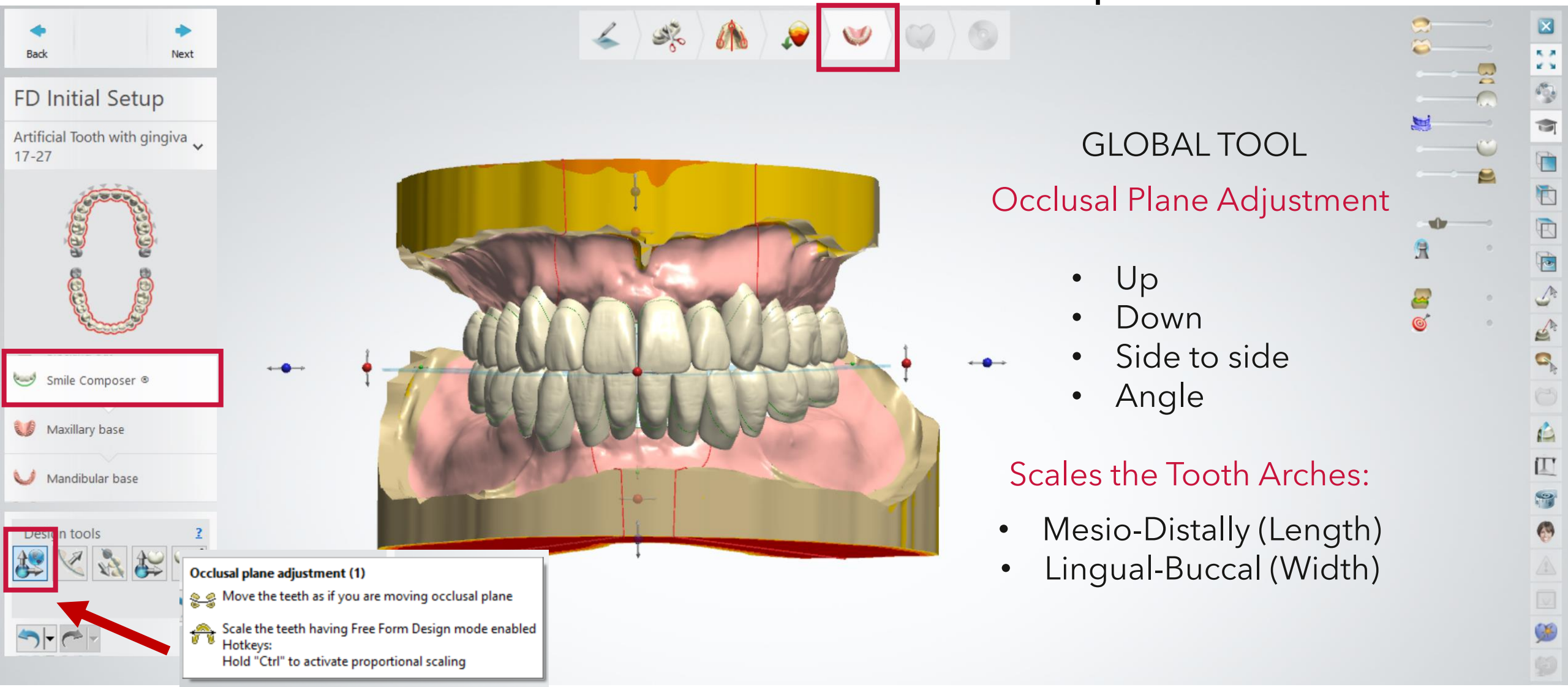
Anterior Overjet (OJ) and Overbite (OB):
Establishing correct anterior relationships.

Posterior Orientation: Proper positioning of posterior teeth – Curve of Spee & Wilson

22.5-Degree Incline: Ensuring correct posterior arch orientation.

3shape

DESIGN TOOLS - Smile Composer



GLOBAL TOOL

Occlusal Plane Adjustment

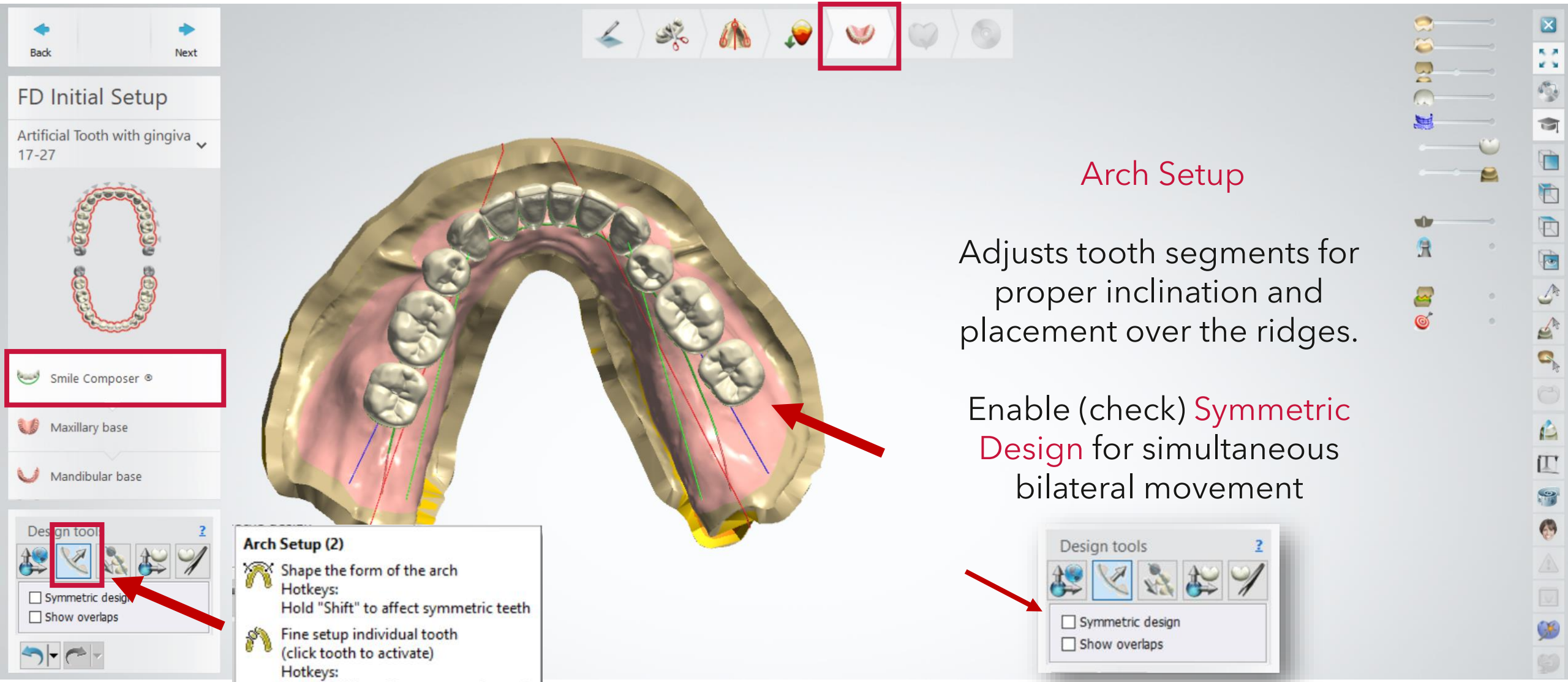
- Up
- Down
- Side to side
- Angle

Scales the Tooth Arches:

- Mesio-Distally (Length)
- Lingual-Buccal (Width)

3shape

DESIGN TOOLS - Smile Composer



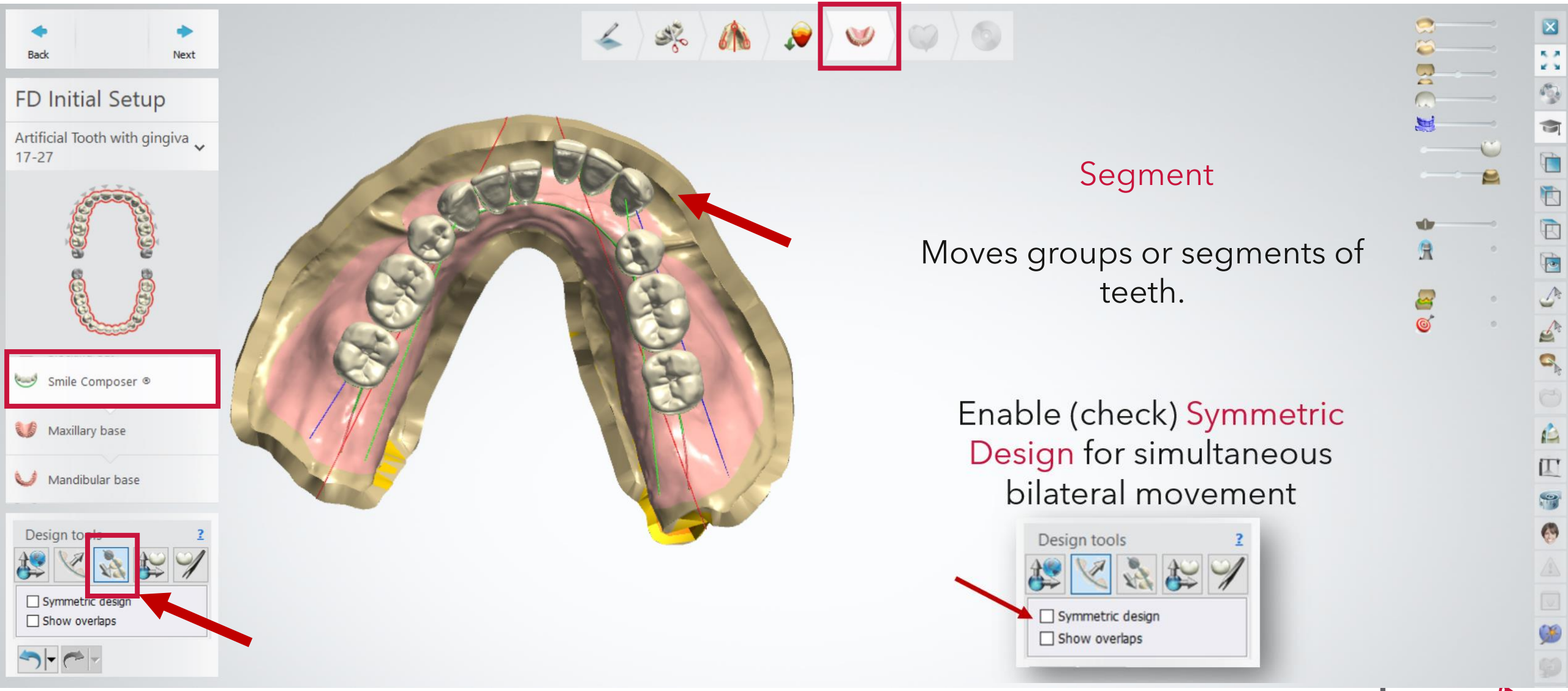
Arch Setup

Adjusts tooth segments for proper inclination and placement over the ridges.

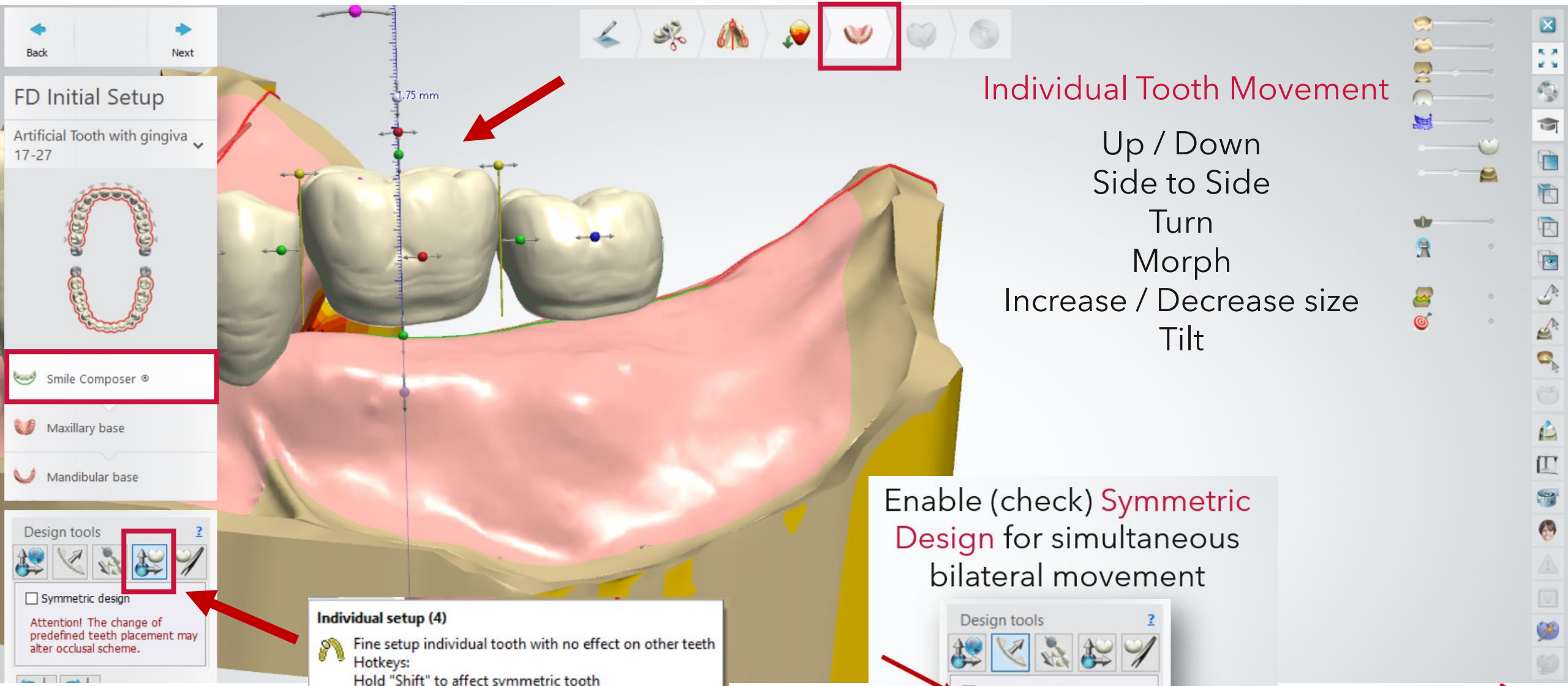
Enable (check) Symmetric Design for simultaneous bilateral movement

3shape

DESIGN TOOLS - Smile Composer



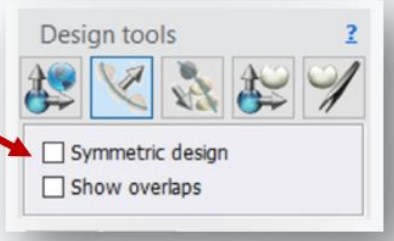
DESIGN TOOLS - Smile Composer



Individual Tooth Movement

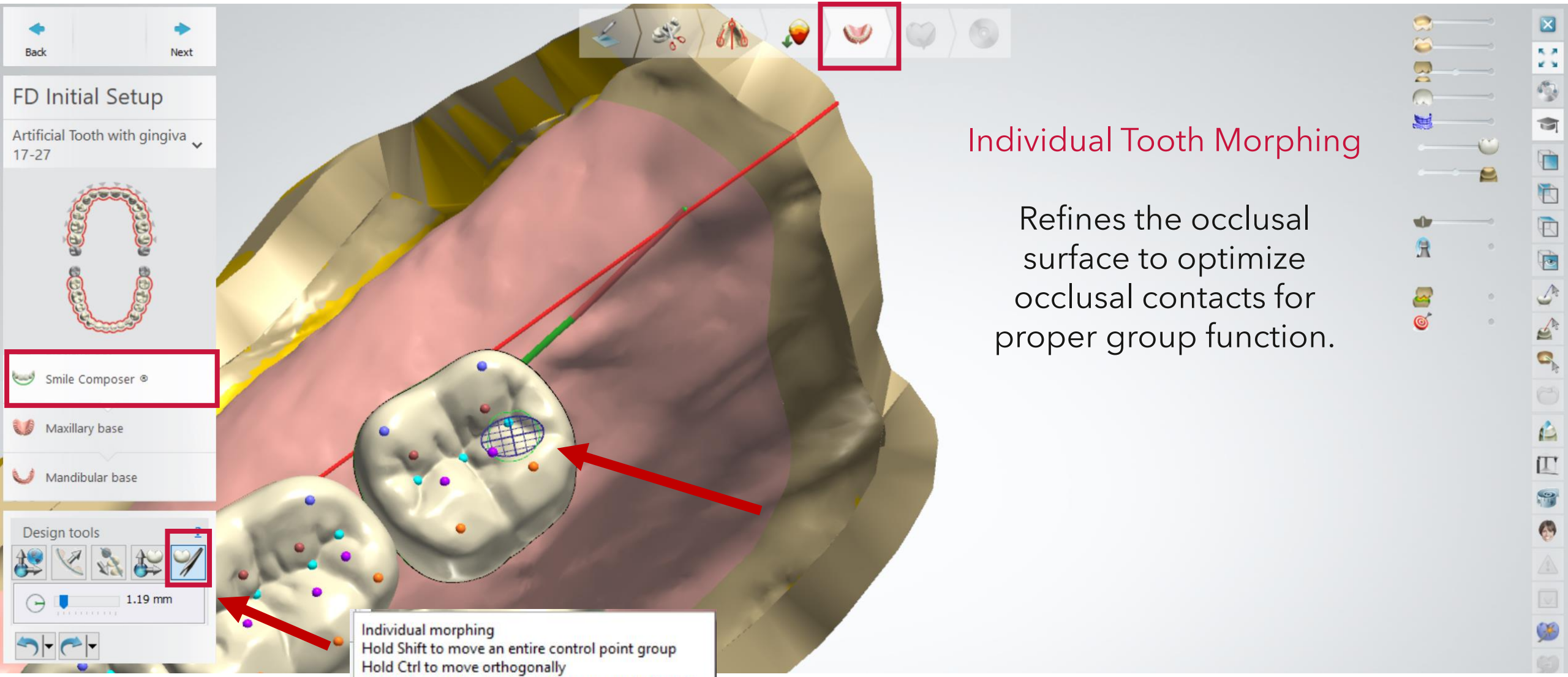
Up / Down
Side to Side
Turn
Morph
Increase / Decrease size
Tilt

Enable (check) Symmetric Design for simultaneous bilateral movement



3shape

DESIGN TOOLS - Smile Composer



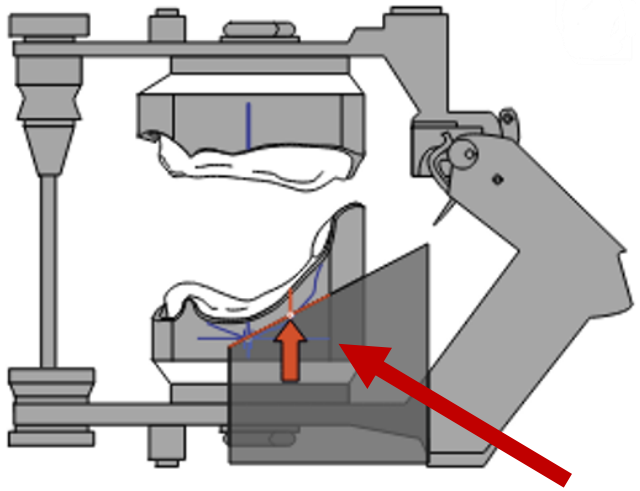
Individual Tooth Morphing

Refines the occlusal surface to optimize occlusal contacts for proper group function.

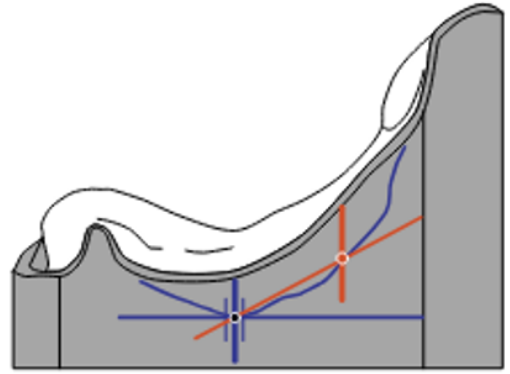
3shape

Denture Design Fundamentals

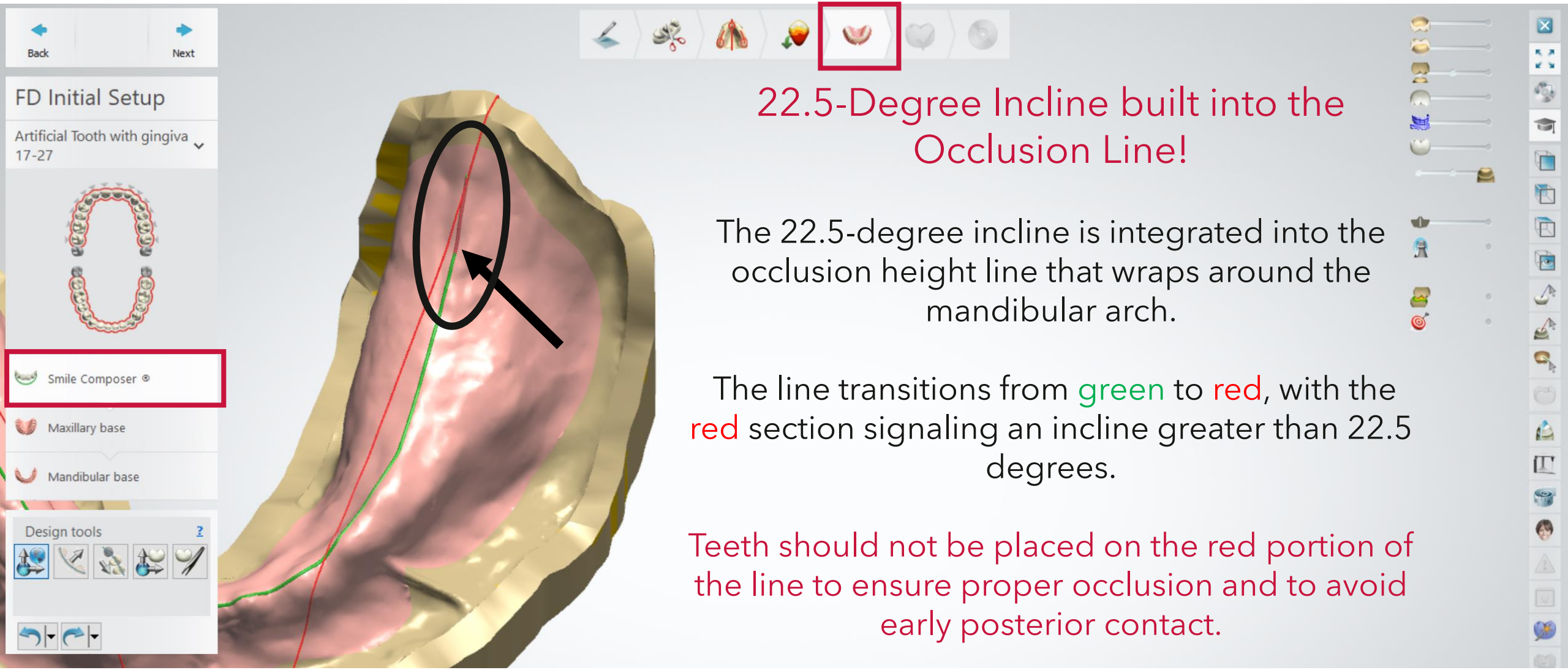
22.5-Degree Incline & Mandibular First Molar Placement



- Traditionally determined using diagnostic measurements on an analog setup.
- The mandibular first molar is positioned at the lowest point of the mandibular ridge.
- Posterior teeth should not extend beyond the 22.5-degree incline as the ramus inclines distally, ensuring proper occlusal function and preventing premature interference.
- Aligning these fundamentals with posterior teeth over the mandibular crest and the Curve of Spee apex at the center of the mandibular first molar enhances bilateral occlusal function and stability.



DESIGN TOOLS - Smile Composer



22.5-Degree Incline built into the Occlusion Line!

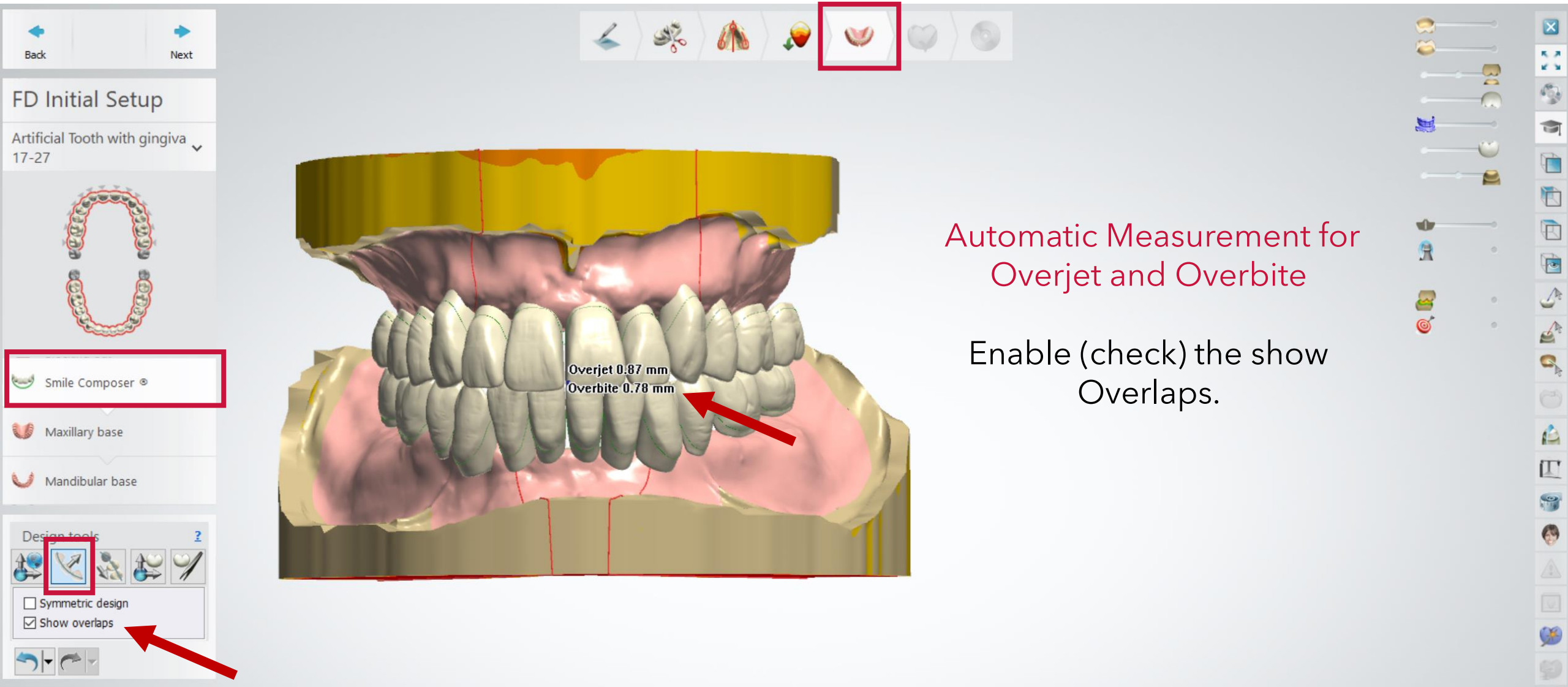
The 22.5-degree incline is integrated into the occlusion height line that wraps around the mandibular arch.

The line transitions from green to red, with the red section signaling an incline greater than 22.5 degrees.

Teeth should not be placed on the red portion of the line to ensure proper occlusion and to avoid early posterior contact.

3shape

DESIGN TOOLS - Smile Composer

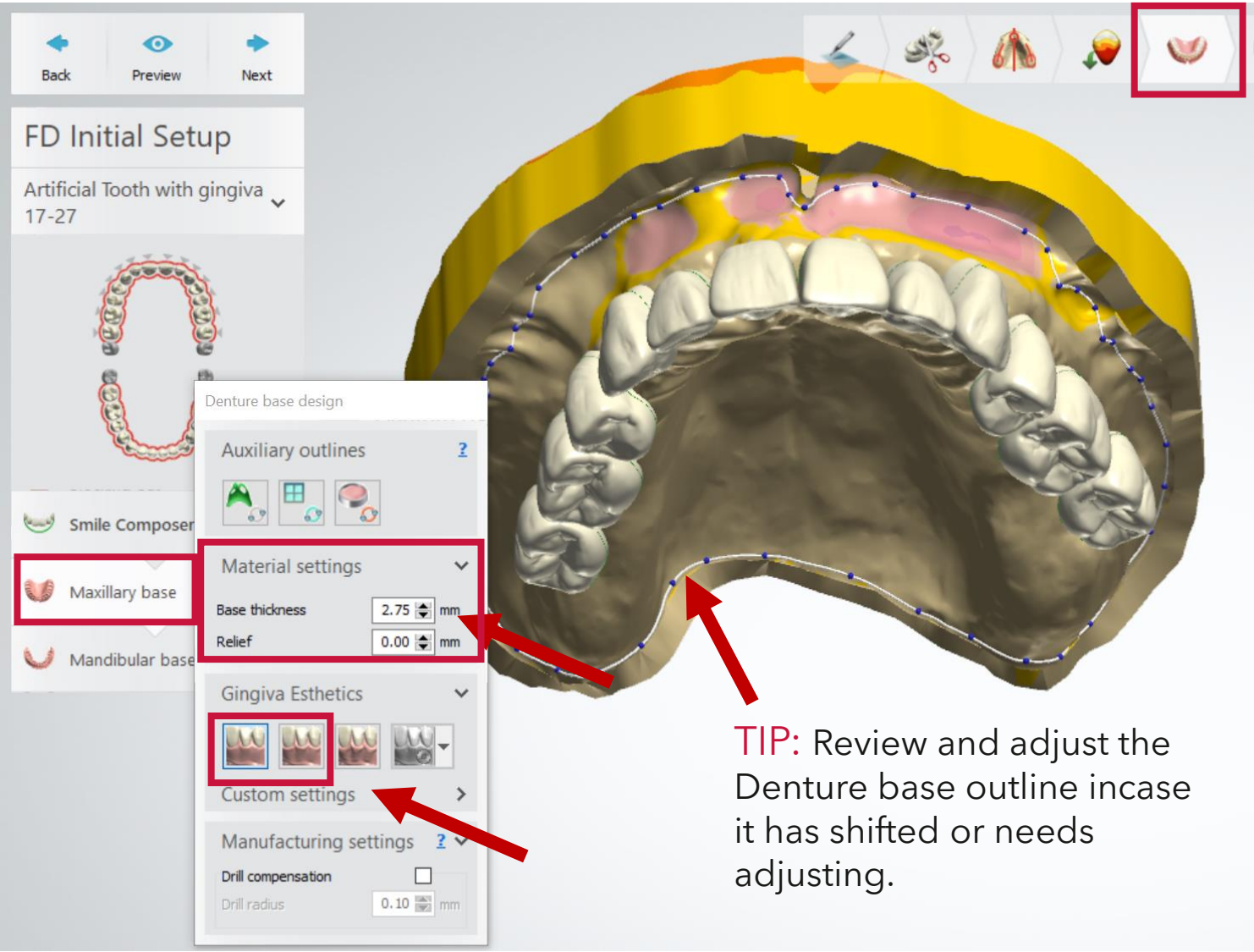


Automatic Measurement for Overjet and Overbite

Enable (check) the show Overlaps.

3shape

Maxillary Base – Material & Gingival Settings



TIP: Review and adjust the Denture base outline incase it has shifted or needs adjusting.

MATERIAL SETTINGS

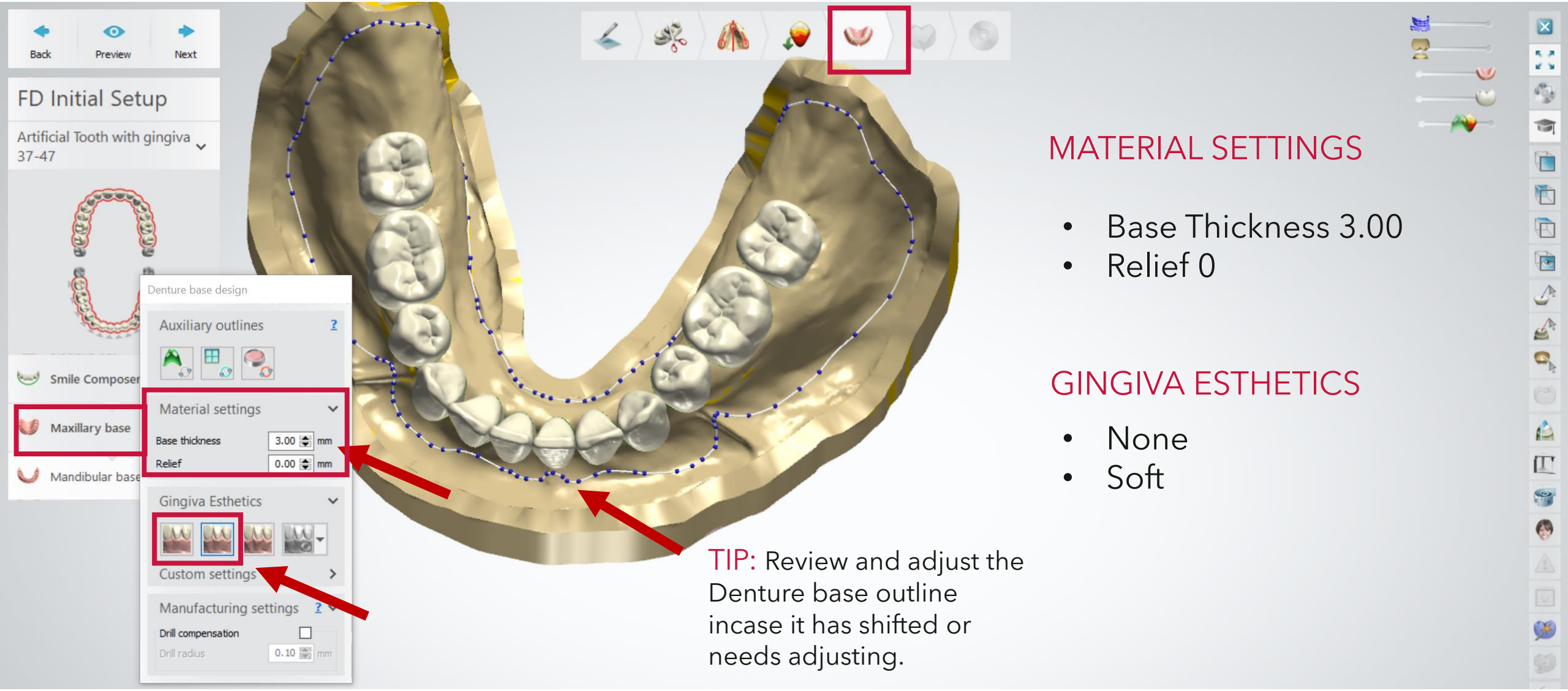
- Base Thickness 2.75
- Relief 0

GINGIVA ESTHETICS

- None
- Soft

3shape

Mandibular Base – Material & Gingival Settings



MATERIAL SETTINGS

- Base Thickness 3.00
- Relief 0

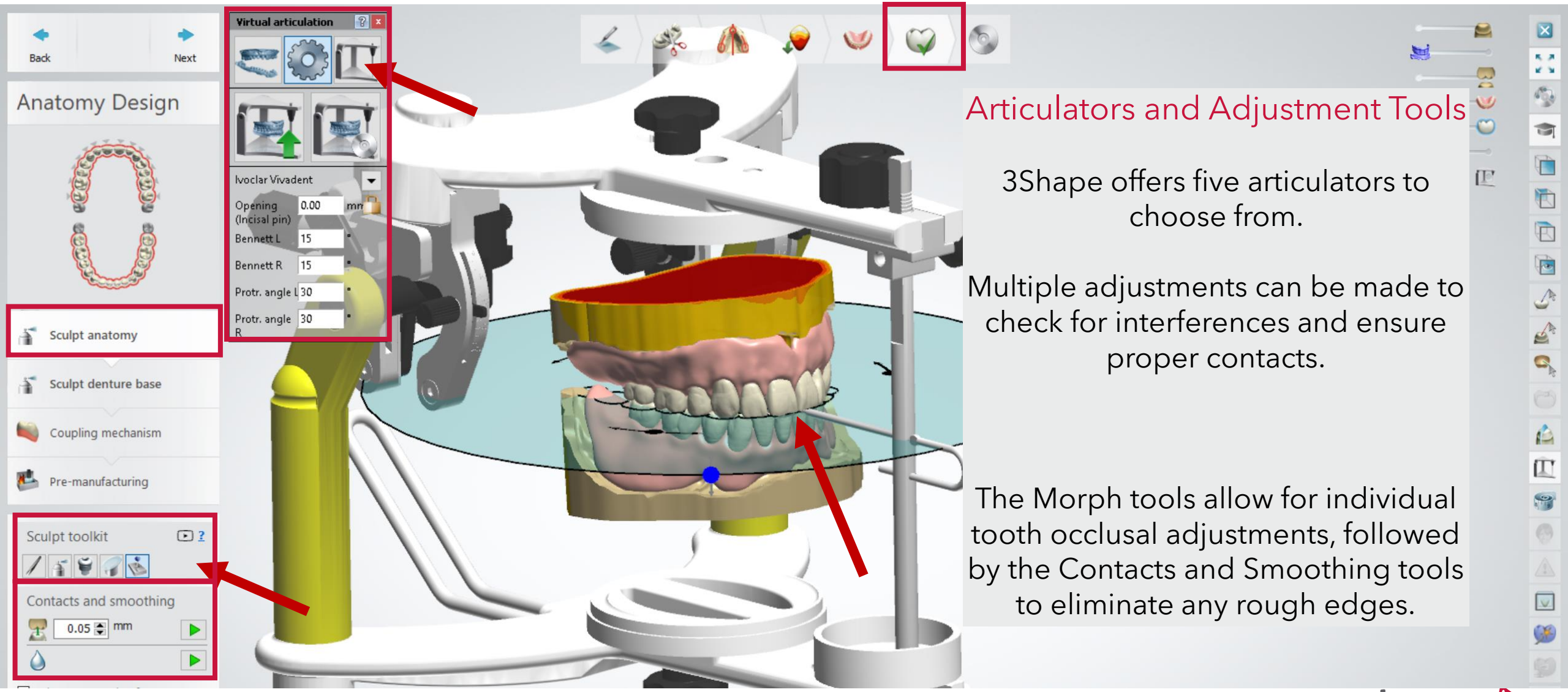
GINGIVA ESTHETICS

- None
- Soft

TIP: Review and adjust the Denture base outline incase it has shifted or needs adjusting.

3shape

Sculpt Anatomy – Articulator & Tools



Articulators and Adjustment Tools

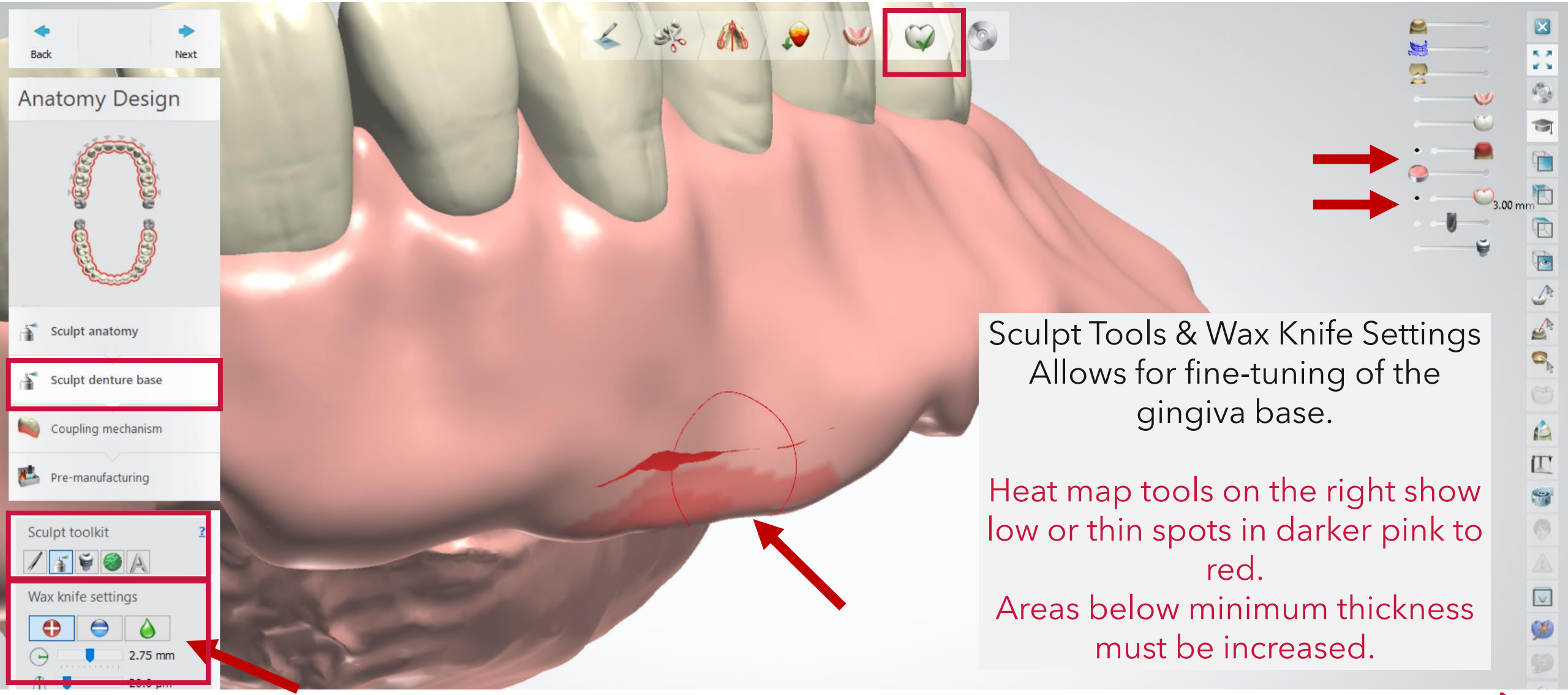
3Shape offers five articulators to choose from.

Multiple adjustments can be made to check for interferences and ensure proper contacts.

The Morph tools allow for individual tooth occlusal adjustments, followed by the Contacts and Smoothing tools to eliminate any rough edges.

3shape

Sculpt Denture Base

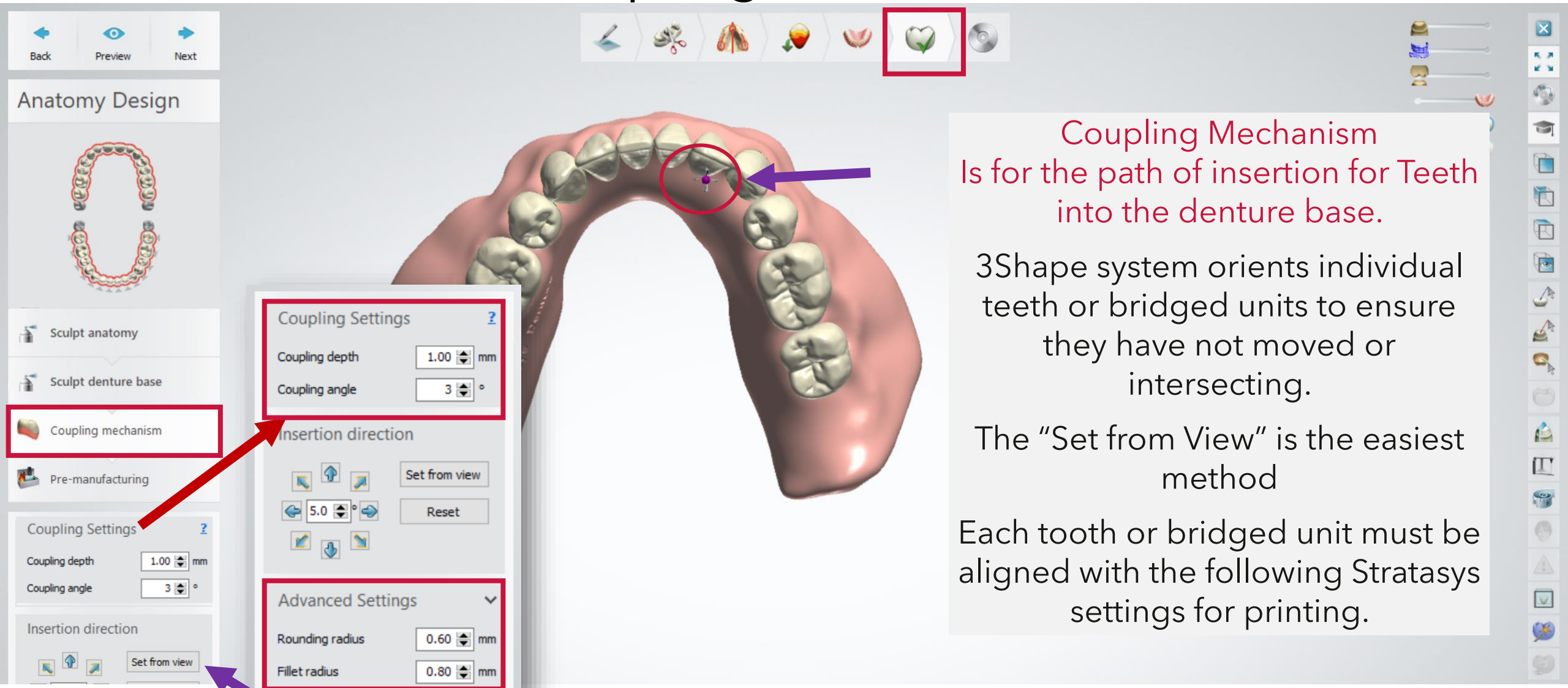


Sculpt Tools & Wax Knife Settings
Allows for fine-tuning of the gingiva base.

Heat map tools on the right show low or thin spots in darker pink to red.
Areas below minimum thickness must be increased.

3shape

Coupling Mechnism



Coupling Mechanism
Is for the path of insertion for Teeth into the denture base.

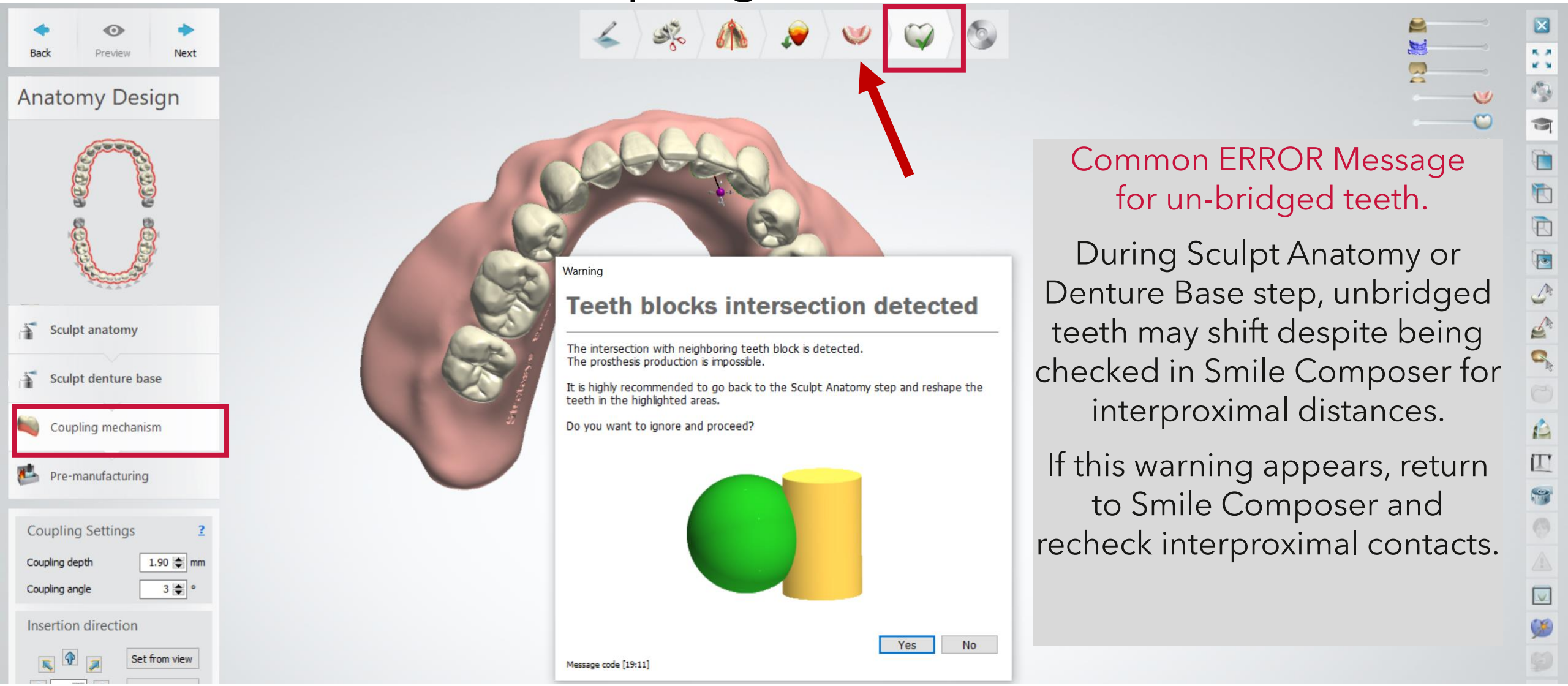
3Shape system orients individual teeth or bridged units to ensure they have not moved or intersecting.

The “Set from View” is the easiest method

Each tooth or bridged unit must be aligned with the following Stratasys settings for printing.

3shape

Coupling Mechnism



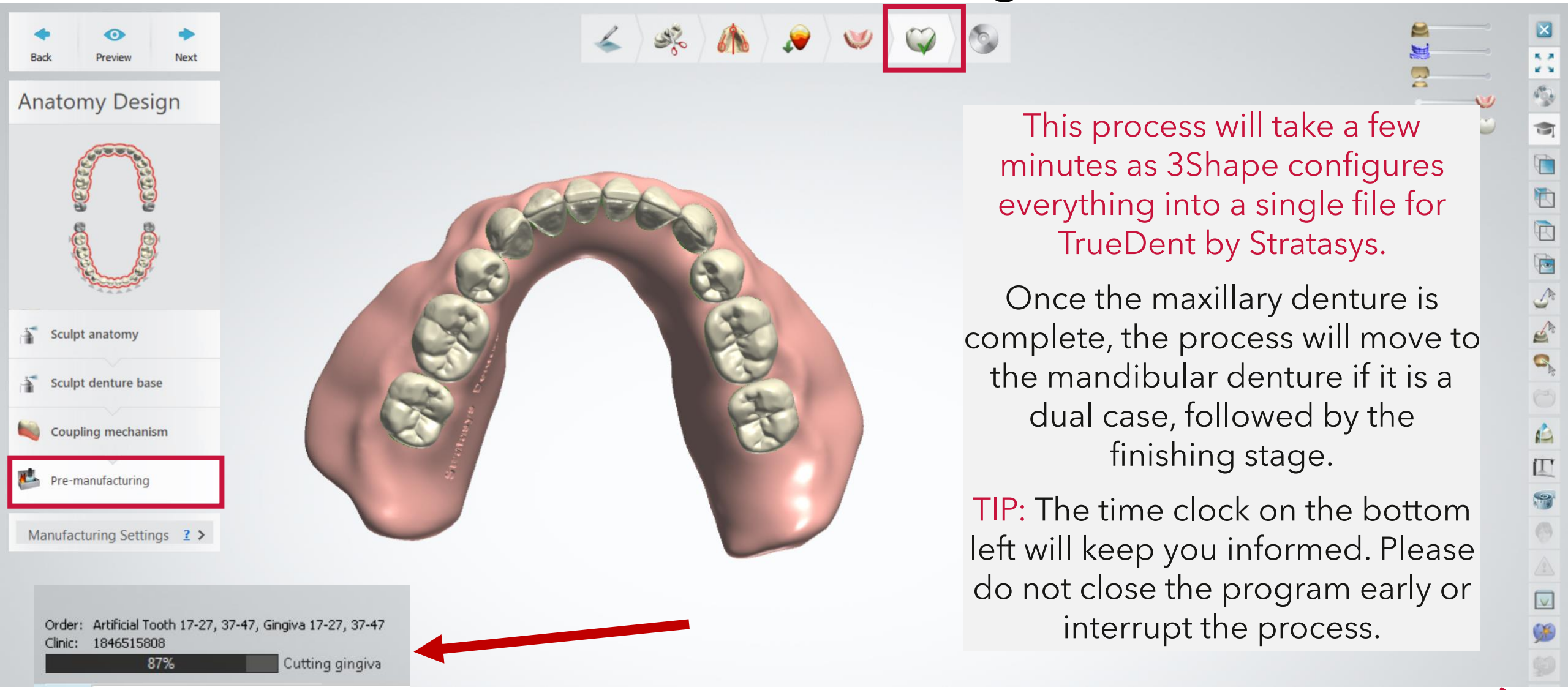
Common ERROR Message for un-bridged teeth.

During Sculpt Anatomy or Denture Base step, unbridged teeth may shift despite being checked in Smile Composer for interproximal distances.

If this warning appears, return to Smile Composer and recheck interproximal contacts.

3shape

Pre-manufacturing.

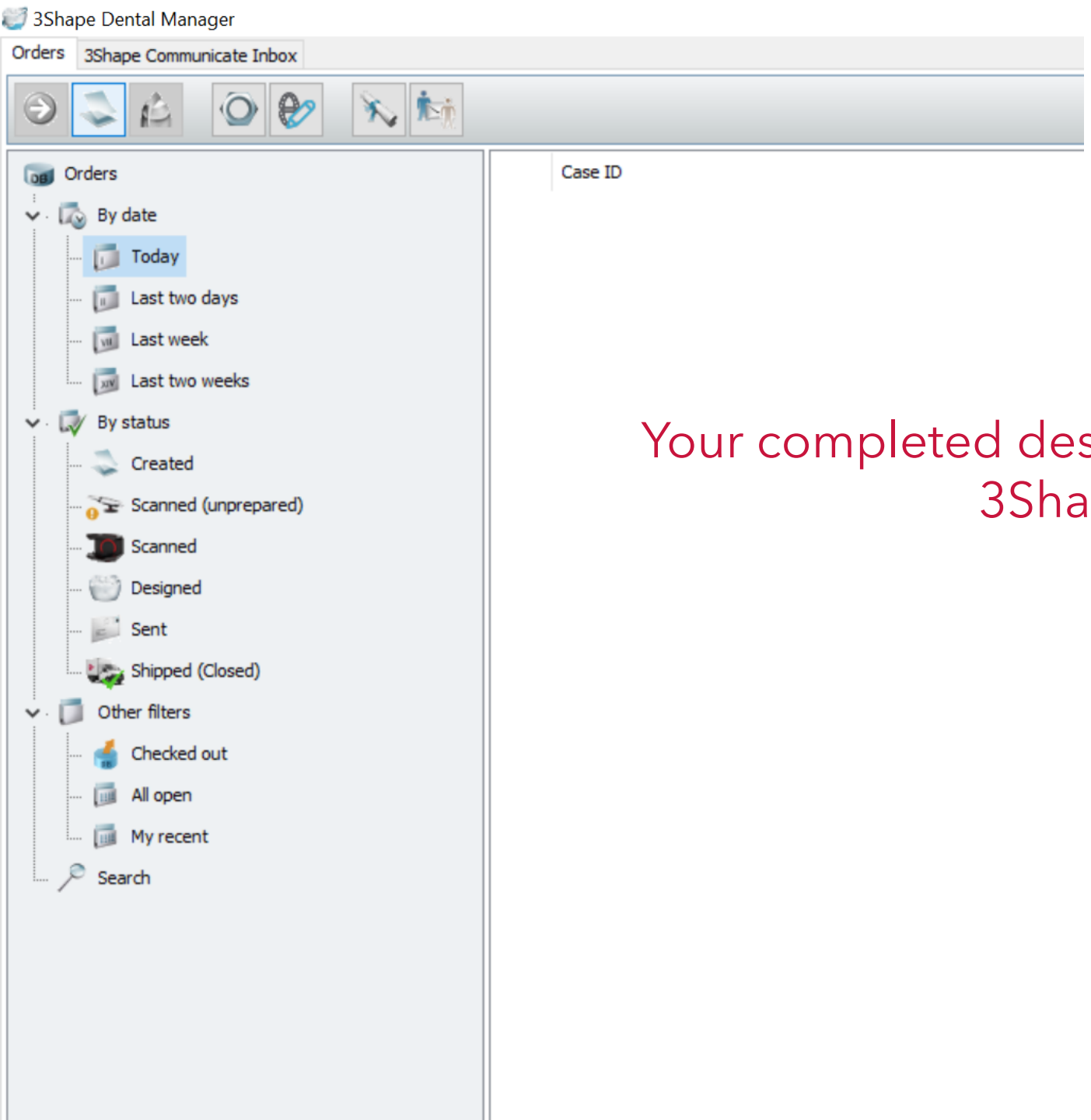


This process will take a few minutes as 3Shape configures everything into a single file for TrueDent by Stratasys.

Once the maxillary denture is complete, the process will move to the mandibular denture if it is a dual case, followed by the finishing stage.

TIP: The time clock on the bottom left will keep you informed. Please do not close the program early or interrupt the process.

3shape



Your completed design File Folder can be found in the 3Shape Dental Manager.

3shape

Thank you

3shape