ClinicCAD Beta

Program Version 0.9.5
June 2024

Medit ClinicCAD (Beta)

Table of Contents

Getting Started

Overview and General Information

Medit ClinicCAD is an easy-to-use CAD solution for the in-office creation of various dental appliances. The app supports working with both prepared and pre-op scan data. Easily design restorations for prepared teeth using the teeth libraries or existing scan data. Or import your pre-op data to create an eggshell crown or bridge. In Medit ClinicCAD, you will be able to design the following restorations:

- crown (with screw holes and handles)
- bridge (with pontics)
- eggshell crown or bridge
- veneer
- coping
- inlay/onlay
- cervical inlay

This is a beta version of the program.

Medit ClinicCAD is a CAD software intended to support the digital modeling of dental restorations via the provided tools; it uses the patient's anthropometric data to generate the output. It does not perform any interpretation or modification of the patient's scanned data; therefore, it does not substitute medical review, advice, or treatment from a trained professional.

Intended Use and Disclaimer

Medit ClinicCAD was not developed for medical or clinical use. As such, it cannot be used for the following purposes:

- diagnosing, treating, mitigating, or preventing diseases/injuries/disorders.
- inspecting, replacing, or transforming a structure or function.

The software is designed solely for the purpose of creating digital models of appliances using 3D scanned data.

Medit does not take responsibility or liability for any improper use of the software or misunderstanding of the information and guidance given in the program.

The user assumes full responsibility for

- the final design results and their further fabrication.
- treatment decisions based on the generated results.

⚠ The Medit ClinicCAD software application does not modify the patient's anthropometric scan data, which remains accessible to healthcare professionals, as depicted through the Medit Scan software's 3D graphical representation tools.

⚠ Medit ClinicCAD has direct integration with a third-party cloud-based printing software (SprintRay’s RayWare Cloud). Medit does not assume responsibility for issues related to the functionality, compatibility, or performance of third-party software. For any problems or inquiries related to the third-party software, including but not limited to technical issues, updates, or licensing, please contact the relevant manufacturer.

Beta Limitations

All core functionality is available for testing in this beta; however, there are some limitations:

- Beta is provided in English only.
- Automatic data selection in the Pre-Op Data module is supported on Windows with NVIDIA cards and on macOS with Monterey 12.3 or higher.
- To design a cervical inlay, register it as “Offset Substructure” in the Medit Link form.
- No tutorial materials(such as Tutorial Page or Medit Help Center) are available at the moment. Please refer to this guide or videos on our YouTube page.

System Requirements

Windows

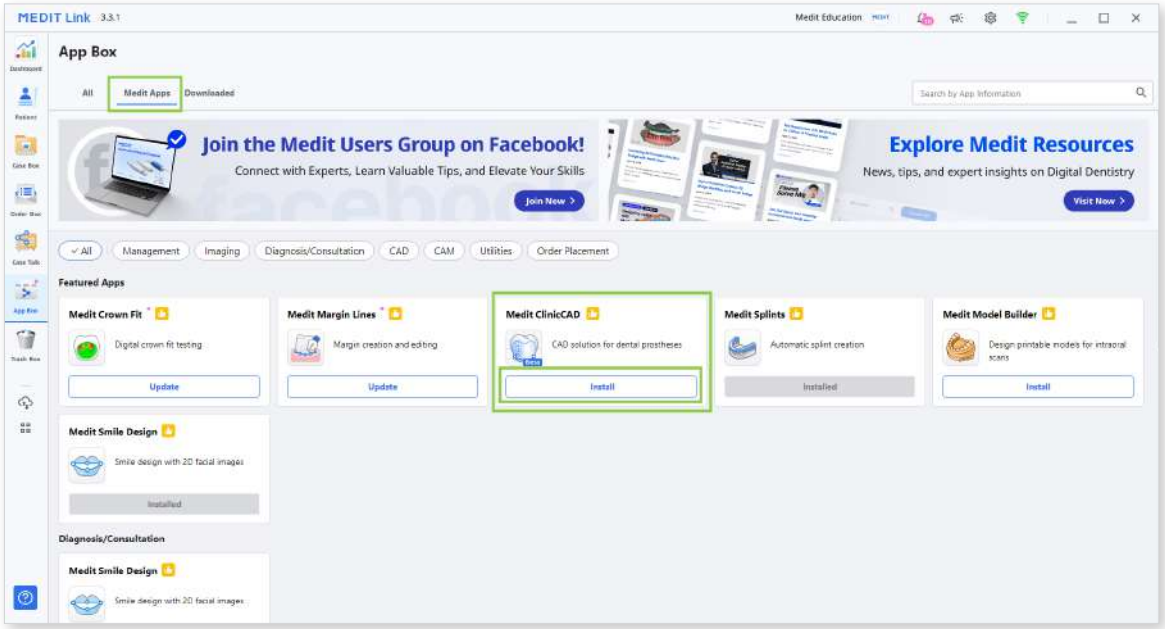
CPU	Intel Core i5 2.6 GHz or higher
RAM	16 GB or higher
Graphic Card	NVIDIA GeForce GTX 1060 (2 GB) or higher
OS	Windows 10 64-bit, Window 11 64-bit

macOS

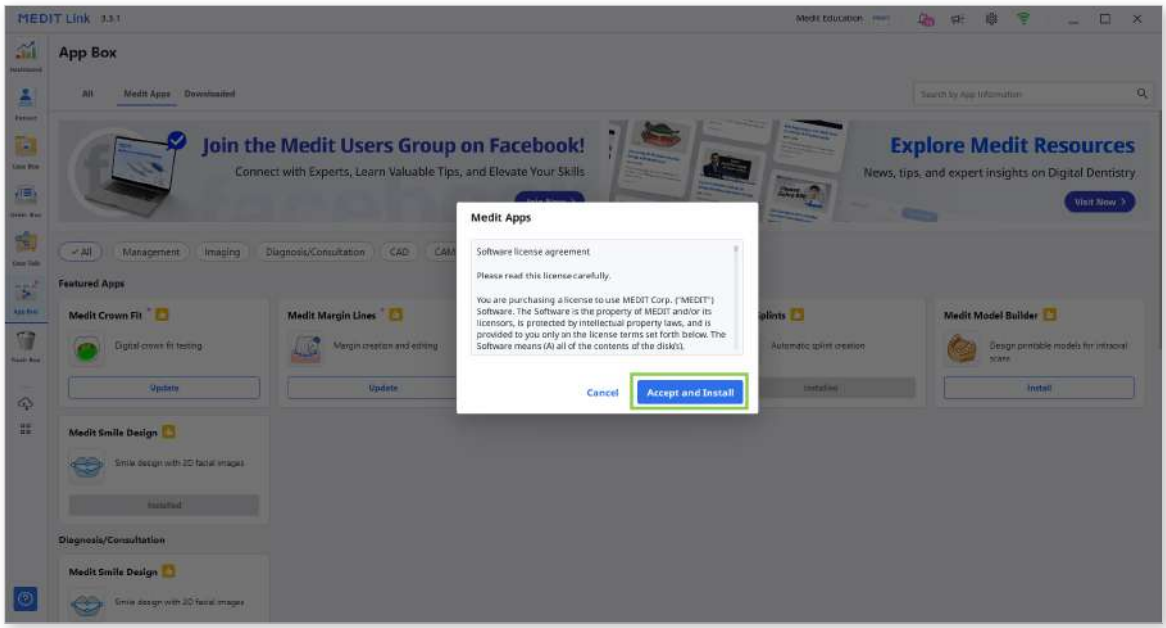
Chip	M1/M2 or higher
CPU	8-core or higher
RAM	16 GB or higher
OS	Monterey 12

Installation Guide

1. Log in to your Medit Link account and go to the App Box on the left-hand menu.
2. In the Medit Apps tab, find the Medit ClinicCAD app and click "Install."



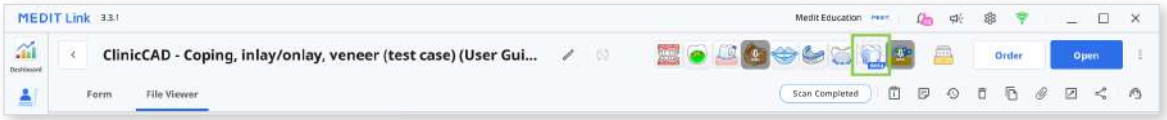
3. Read the Software License Agreement and confirm app installation by clicking "Accept and Install."



4. The app will be downloaded and installed automatically. It may take several minutes to finish the installation process.

> ⚠ Do not turn off the PC or close Medit Link during the installation process.

5. Once the app is installed, you can run it from any case in Medit Link by clicking the app icon in the top right corner of the Case Detail window.



Data Managemet

Preparing Data

Medit ClinicCAD supports working with both prepared and pre-op scan data. You must have data for at least one arch to run the app.

Prepared data can be used to design any restoration, while pre-op data alone allows you to design only eggshell-type crowns and bridges.

- If needed, the pre-op data can be imported together with the prepared one and used for reference when editing the restoration.
- If your case has separate scan data for the maxilla/mandible and the abutment, the two will be automatically combined. After running the app, you will find the combined data in the Assign Data window. The new file will have either of these titles: Maxilla with Abutment or Mandible with Abutment.
- If your case has dynamic occlusion data captured in Medit Scan for Clinics, it will be automatically imported into the app. Use it for reference when adapting and adjusting the restoration.

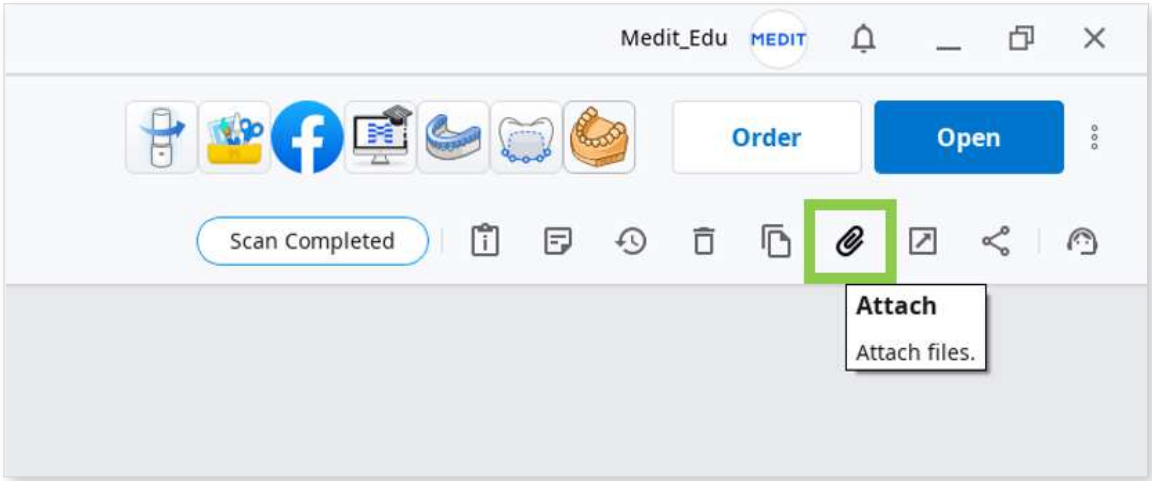
You must gather all the data for the project in one case before running the app, as it cannot be imported afterward. There are two ways to add data to a Medit Link case.

1. Complete all necessary scans in Medit Scan for Clinics or Labs, and all acquired data will be automatically saved to your case.

Use the “Solid” option when scanning data in Medit Scan for Labs.

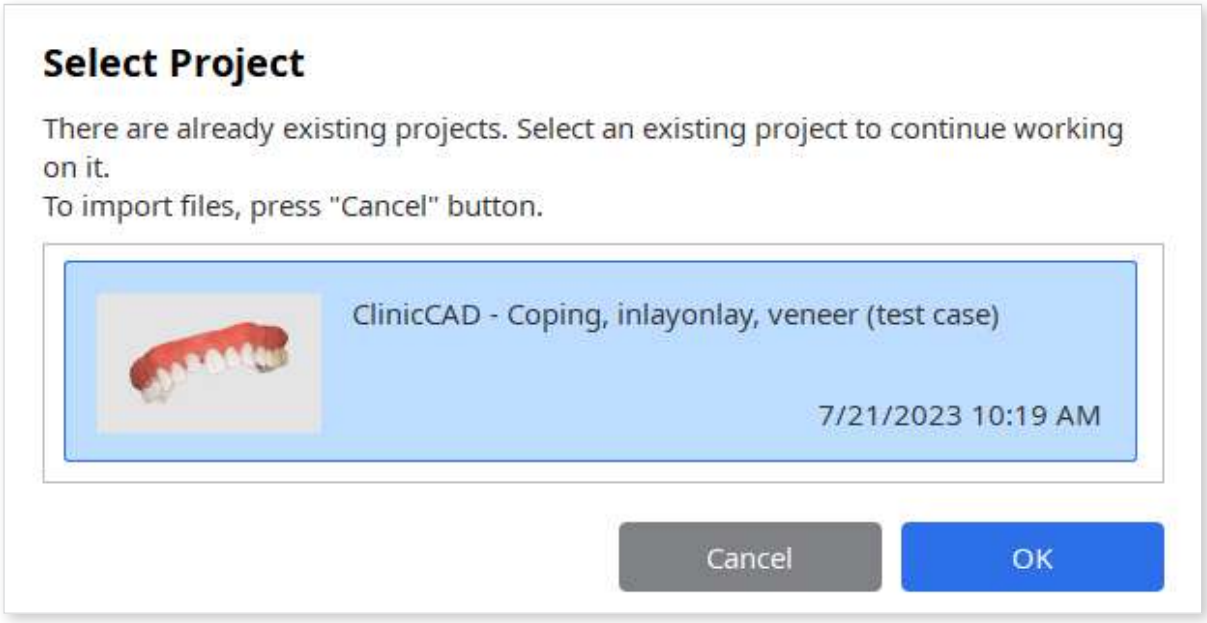
Ensure that the data for your target teeth has no major holes. Use “Fill Hole” before running the app if needed.

2. Add scan data that is stored locally by importing it through the “Attach” feature in the Case Detail window.



You can also continue working on your previously saved projects if you run the app from the same case again.

Projects that were created in Medit Temporaries are not supported by Medit ClinicCAD.



Medit ClinicCAD does not modify or interpret the original 3D data for medical use; the software only provides the anatomical geometries to create virtual models of the restorations.

3D Data Control

You can control imported 3D data using a mouse alone or both mouse and keyboard.

3D data control using a mouse

Use	Description	Image
Zoom	Scroll the mouse wheel.	
Zoom Focus	Double-click on the data.	
Zoom Fit	Double-click on the background.	
Rotate	Right-click and drag.	
Pan	Hold both buttons (or wheel) and drag.	

3D data control using mouse and keyboard

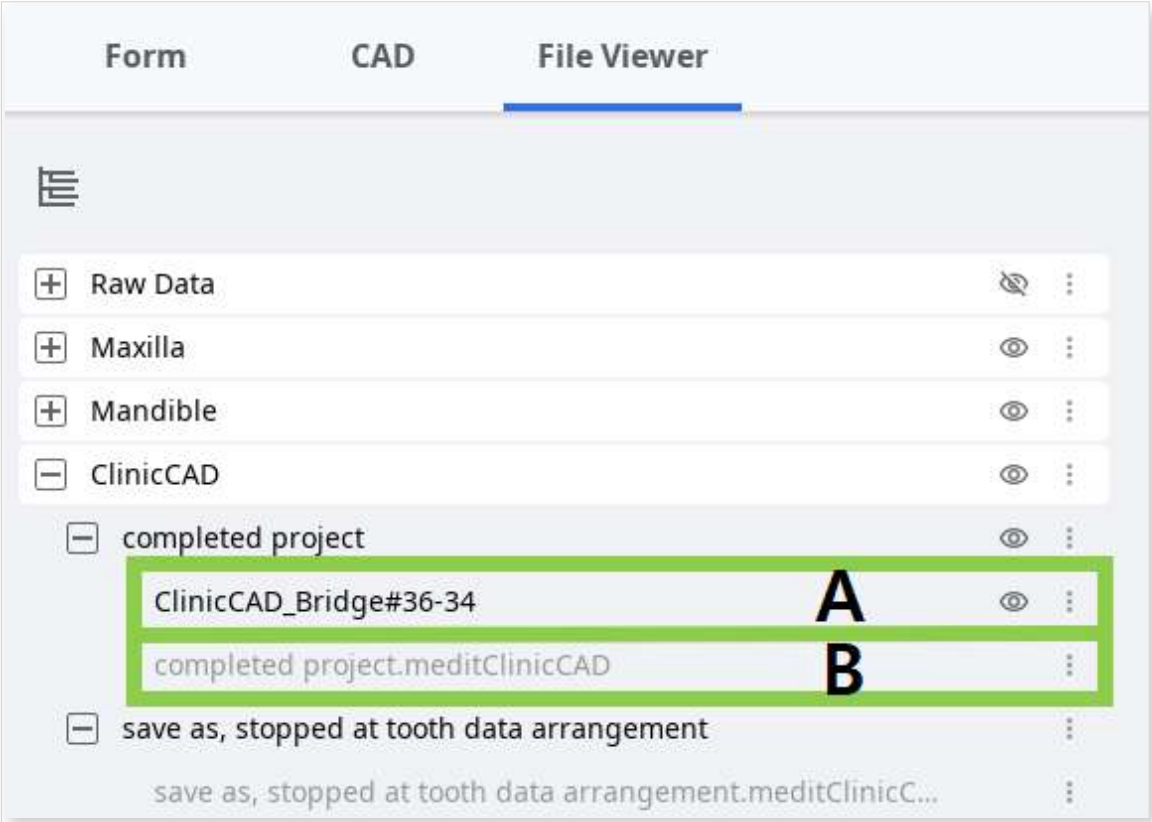
Use	Windows	macOS
Zoom		
Rotate		
Pan		

Saving Data

There are multiple options for saving your project data.

1. **“Complete” button in the final step**

   Use the “Complete” button when you have finished designing the restoration. It will create two files in the case: the project file and the restoration design file. The latter is the file that can be further used for printing or milling.



A) Restoration design file B) Project file

Complete Button Options (available in the final step only)

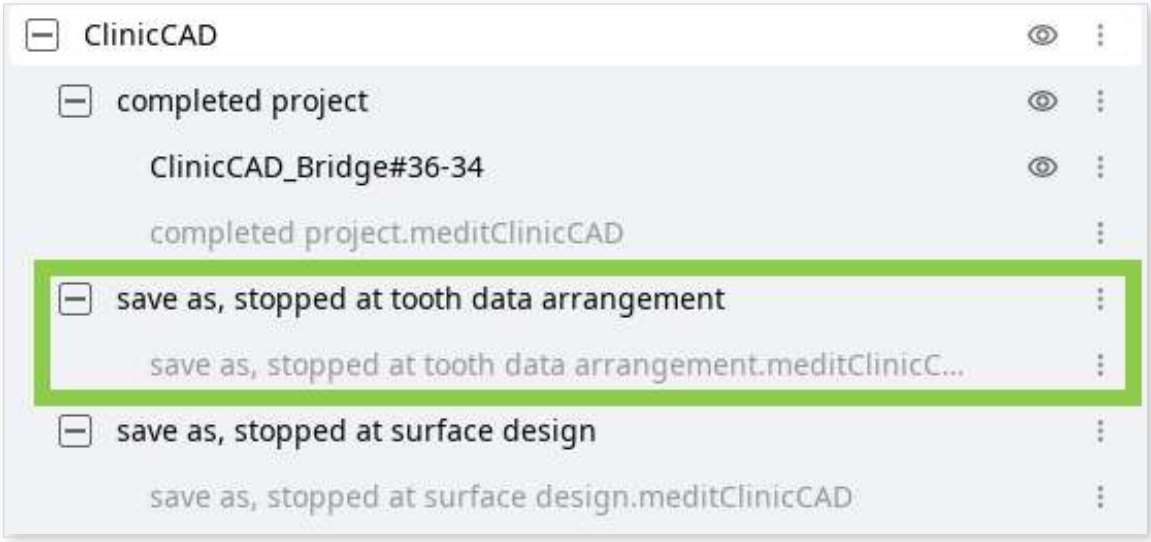
Use this feature to customize the “Complete” button by setting additional tasks that it will perform upon clicking.

1. Choose “Include Construction File” if you need a construction info file that is required for milling or CAM software.
2. Choose “Export to PC” if you want to download created files to your computer immediately after completing the project.

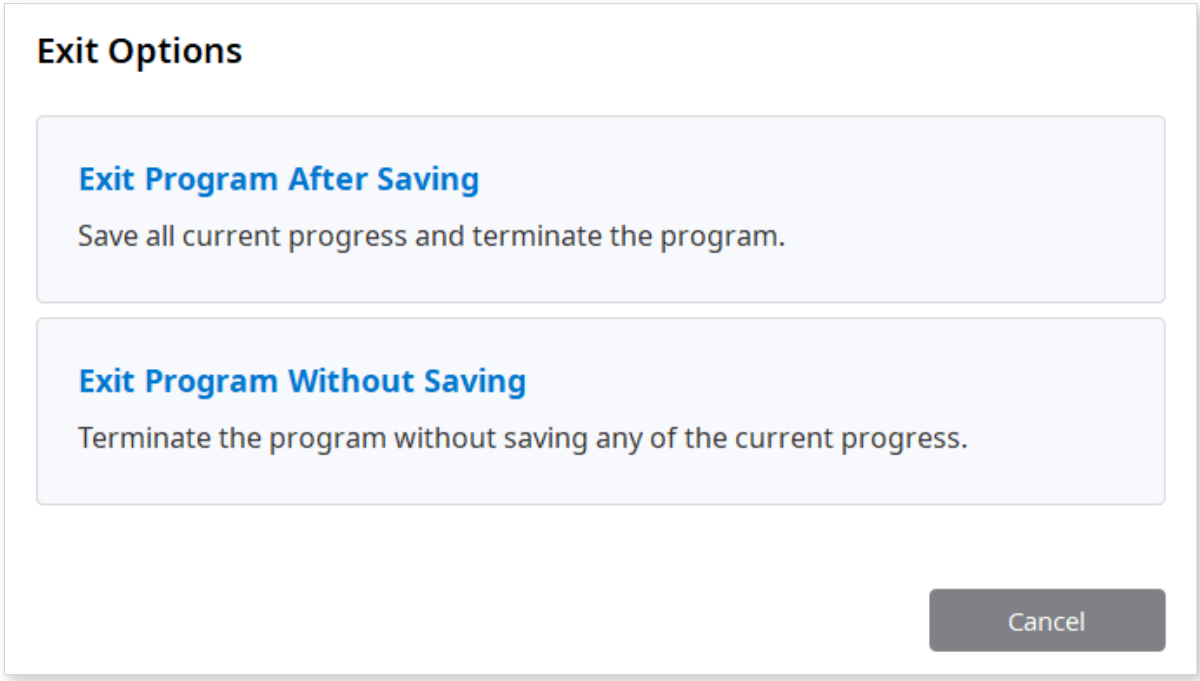
3. **“Save” or “Save As” options in Menu**

   These options create and affect only the project file. The project file records the work progress, allowing users to continue working on existing projects from where they left off.

   Use “Save As” to save a non-finished project or save the currently opened project under a new name. Use “Save” to overwrite the currently opened project.

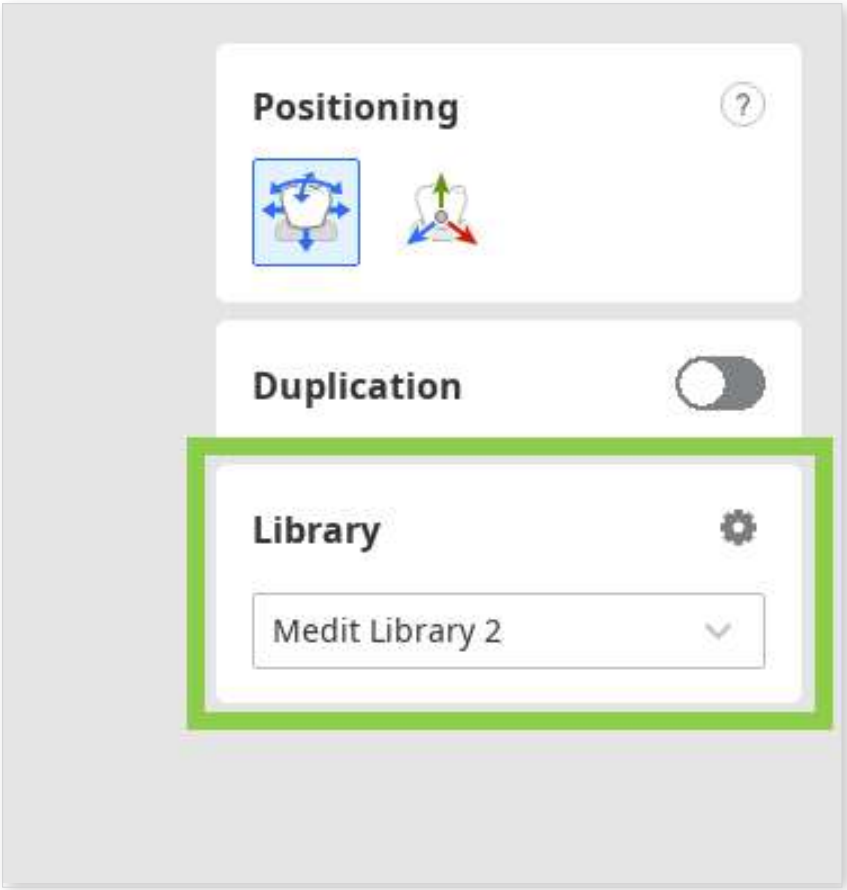


In addition, if you terminate the program using “Exit,” you will be asked whether or not to save the work in progress.



Libraries Management

Teeth libraries are provided when designing restorations based on the scan data of already prepared teeth (Prepared Data Module). There are 4 default libraries, but users can expand the list of available libraries via Libraries Management.



The Libraries Management feature provides tools for managing the list of available libraries and editing the library data. To use this feature, click the gear icon in the Library toolbox.

Note that you can have a maximum of 50 libraries. The complete list of your libraries is stored locally, so if you log in on a different computer, only the default libraries will be available.

If you have exported teeth data as a library from Medit Ortho Simulation, it will be automatically added to your list of libraries upon launching the program.

How to manage the libraries list

Users can add, delete, export, and modify libraries in the list using the tools provided in the management widget on the right.

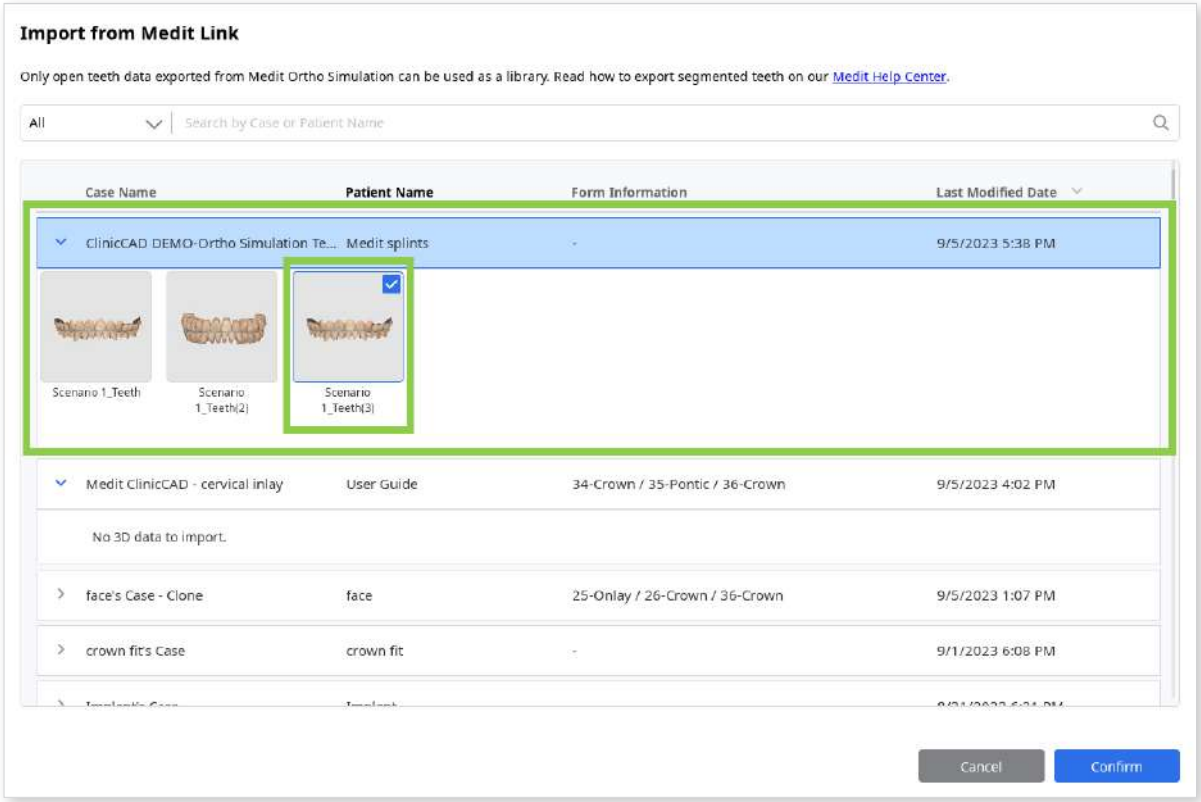
> Note that the default libraries can be modified only after cloning.

	Import from PC	Import the teeth library stored on your computer. > This feature supports only Medit ClinicCAD libraries saved in .meditLib format.
	Export	Export the teeth library to the local PC or Medit Link.
	Clone	Create a copy of the library.
	Delete	Delete the library
	Rename	Change the name of the library.
	Reset	Restore the library data by undoing all sculpting.

There is one more option for adding a library to the list - “Import from Medit Link.” This feature allows you to browse Medit Link cases for segmented teeth data and import it as a library into the app.

To use this option, you must have a case with segmented teeth data that was exported from Medit Ortho Simulation with the ‘open teeth’ setting.

Currently, only the ‘open teeth’ segmented data generated by Medit Ortho Simulation can be used in this feature.

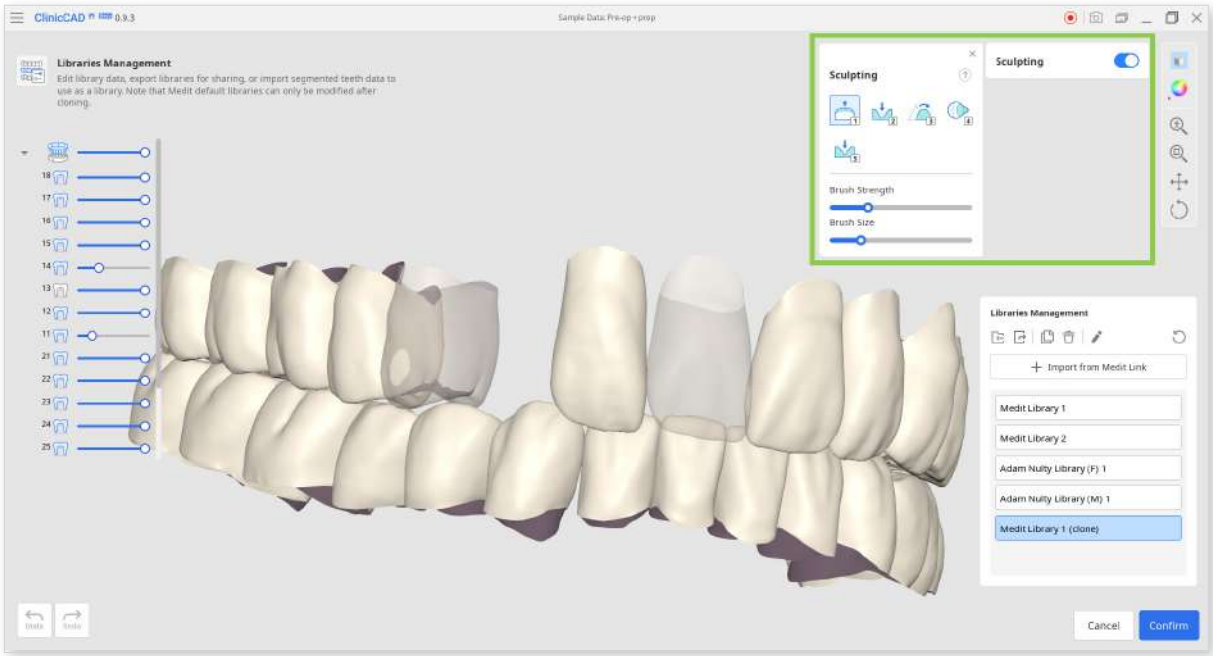


How to edit library data

Teeth data of a library can be edited using “Sculpting.” With the provided tools you can add, remove, smooth, or morph teeth data of a selected library.

Adjust the tooth’s visibility in the Data Tree for a more comfortable editing process.

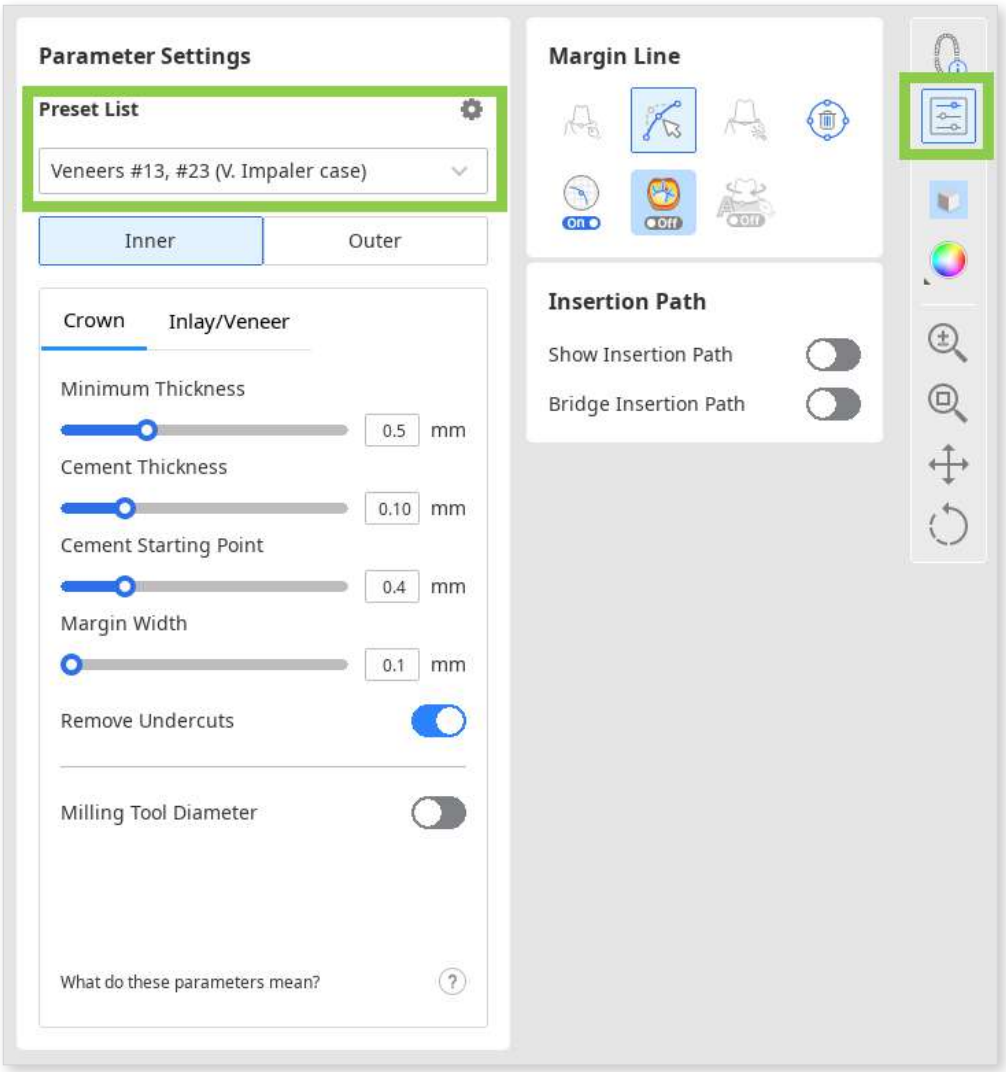
Note that the default libraries can be modified only after cloning.



Presets Management

In Medit ClinicCAD, users can manually configure printing parameters or use presets. The list of available presets is provided in the Parameter Settings widget.

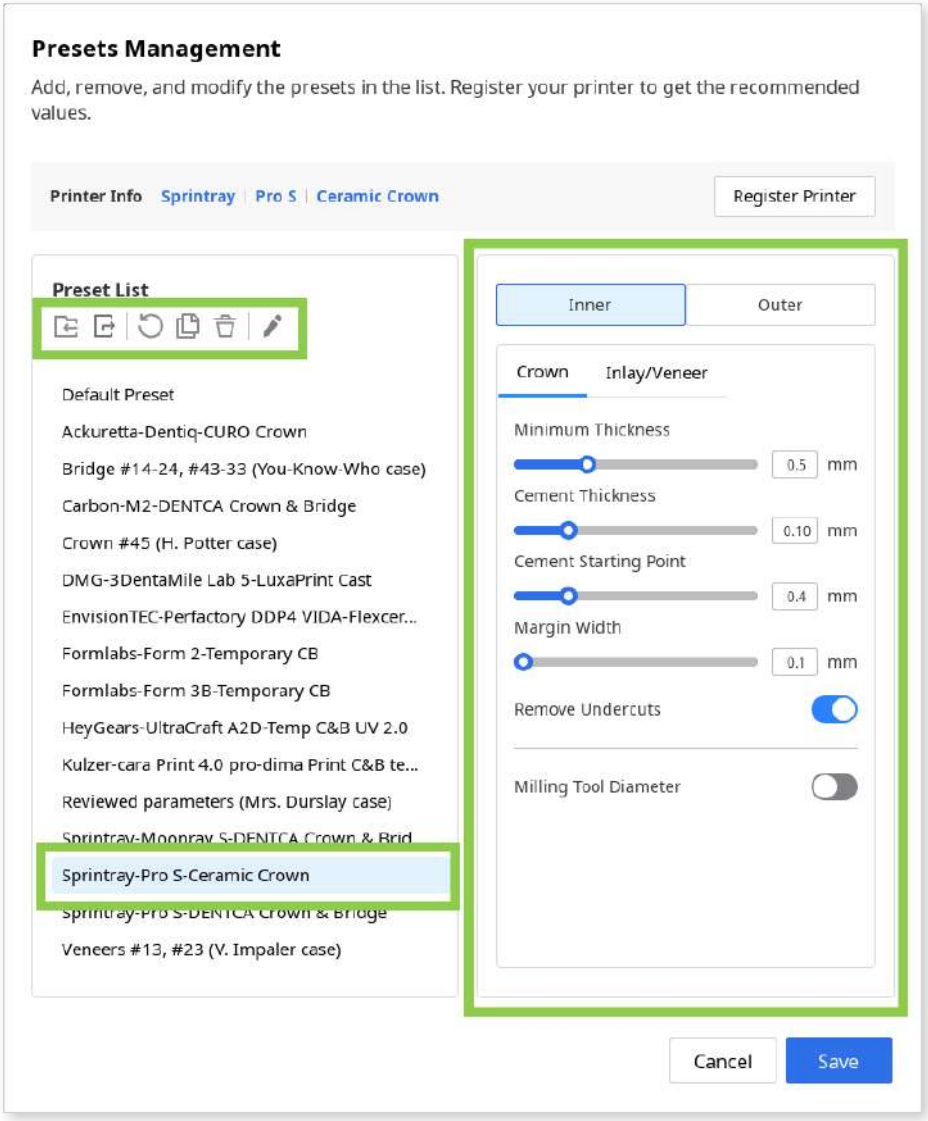
If you do not register your 3D printer upon the initial launch of the app, you will have only the default preset in your list. To expand and control your preset list, use the Presets Management feature (the gear icon next to Preset List).



The Preset Management feature allows you to control the preset list, edit the available presets, import preset files received from another user, or get the recommended preset by registering your 3D printers.

How to manage the preset list

Users can export, delete, rename, and edit the values of the preset selected in the list on the left.

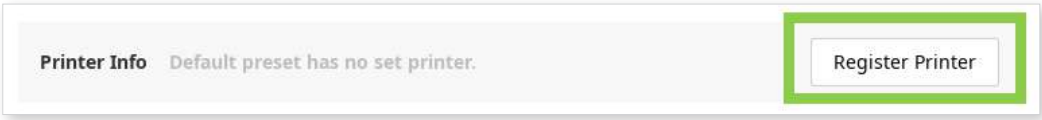


After making changes, you can restore the preset values back to the recommended ones via “Reset.”

- If you received a preset file from another Medit user, add it to your list by importing it from the local storage.
- Even if you change the original name of the recommended preset, it will always be shown at the top in “Printer Info.”

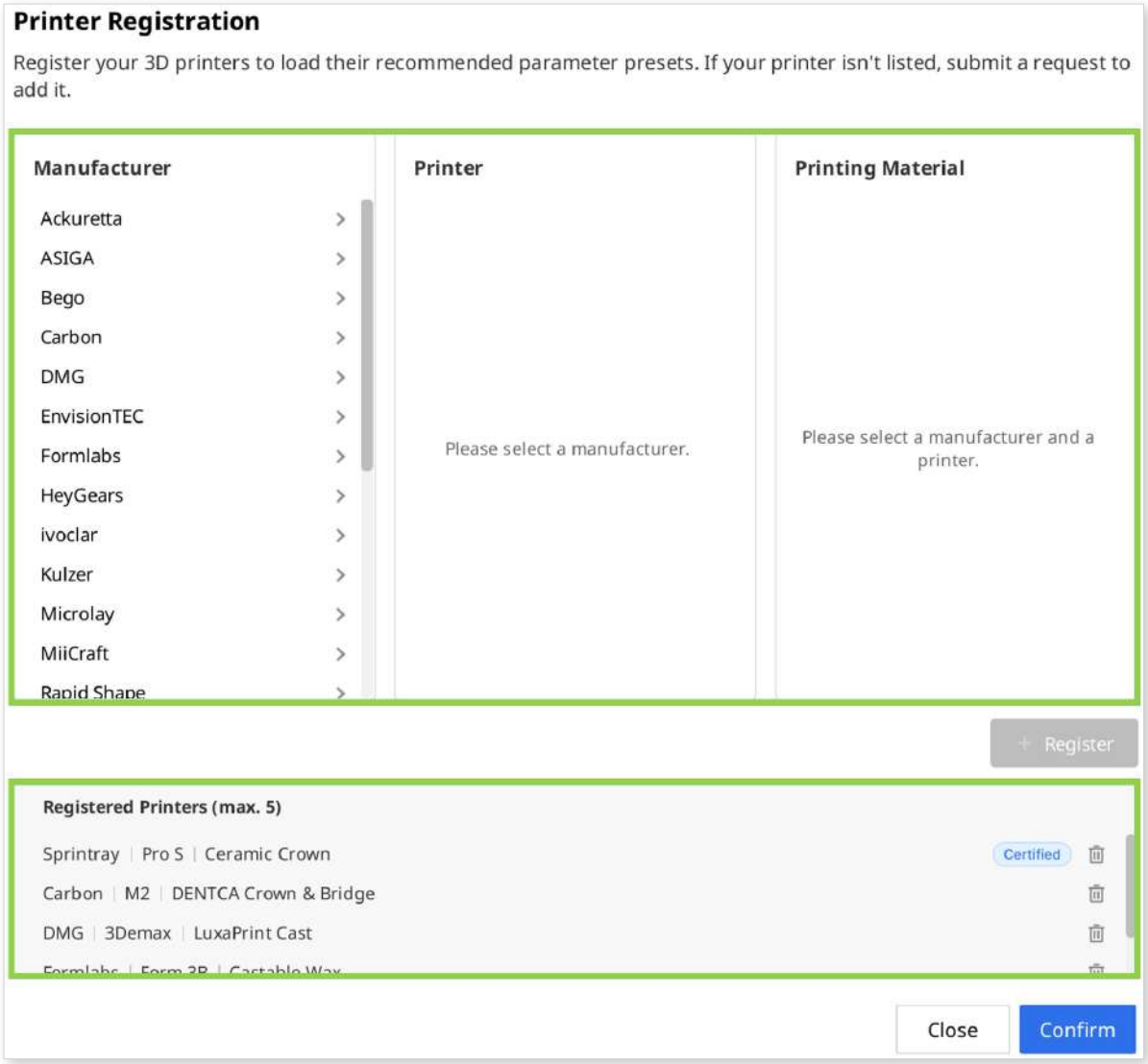
How to get recommended preset

If you skipped printer registration upon the initial app launch, use the “Register Printer” button to add it later.



To register your printer, select its manufacturer > printer > printing material. You can register up to 5 printers.

Once you register your printers, click “Confirm,” and a preset with recommended values will be added to your list.



If your printer isn’t listed, scroll down in the manufacturer section and click “Printer Request.”

User Interface

User Interface at a Glance

A. Title Bar
B. Guide Message
C. Data Tree
D. Action Control Buttons
E. Data Alignment & Editing Tools
F. 3D Data
G. Teeth Form
H. Toolboxes
I. Side Toolbar

Title Bar

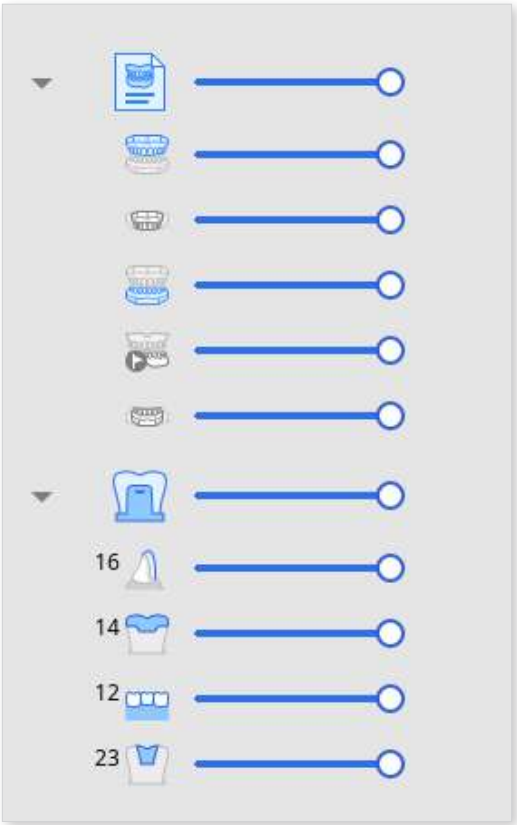
The Title Bar is the ribbon at the top of the application window that contains basic controls on the right and the menu on the left. It also displays the app name and the opened case name.

Menu	Manage the opened project, access available assistance resources, and check app details.
Help Center	Go to the Medit Help Center page dedicated to this app.
Start Video Recording	Start and stop the video recording of the screen.
Screenshot	Take a screenshot. Capture the app with or without the title bar using automatic selection, or click and drag to capture only the desired area.
Screenshot Manager	View, export, or delete the screenshots. Upon completion, all captured images will be saved to the case automatically.
Minimize	Minimize the application window.
Restore	Maximize or restore the application window.
Exit	Close the application.

Data Tree

The Data Tree is located on the left side of the screen and it shows the list of data you are using in groups. You can show or hide data by clicking its icon in the tree or change its transparency by moving the corresponding slider.

All data in the Data Tree is organized under two main groups: Scan Data Group and Restorations. Note that its structure will slightly change depending on the objectives of a specific step or tool. The below image is an example from the final step.



Scan Data Group

- Maxilla
- Dynamic Maxilla
- Mandible
- Pre-Op for Mandible
- Dynamic Mandible

Restorations

- Veneer #16
- Onlay #14
- Bridge #12-21
- Inlay #23

Action Control Buttons

There are five buttons that control the overall work process. They are located in both bottom corners of the application window.

The “Complete” button will appear at the final step only.

Button	Description
Undo	Undo the previous action.
Redo	Redo the previous action.
Prev	Go back to the previous step.
Next	Apply changes and move to the next step.
Complete	Complete the design process and save the restoration to Medit Link.

Side Toolbar

The Side Toolbar is located on the right side of the screen; it offers a number of tools that may be required at any step of the design workflow.

Management Tools

	Form Info	Show or hide the form information registered in Medit Link. In the first step, you can also edit it.
	Parameter Settings	Adjust the parameters for creating the inner and outer surfaces of the restoration.
	Shortcut Keys	View and manage keyboard shortcuts.

Display Tools

	Grid Settings (mm)	Show or hide the grid. (Overlay on/off) Click multiple times to control overlay options.
	Data Display Mode	Change between different data display options. (Textured/Textured with Edges/Monochrome/ Monochrome with Edges)

Analysis Tools

	Contact Areas with Adjacents	Turn on to show the areas of contact between restoration and adjacents. Use while sculpting the outer surface of the restoration to add or remove material to ensure optimal fitting.
	Contact Areas with Antagonists	When on, this function shows the areas of contact between the restoration and the antagonists. Turn on when sculpting the outer surface of the restoration to check the occlusion.
	Minimum Thickness	Turn on to see thin areas on the restoration. Use while sculpting to make sure that the restoration is not too thin to print or mill.

Data Control Tools (for touch screen/mouse)

	Zoom	Zoom in and out by click-and-drag.
	Zoom Fit	Zoom to fit data to the screen.
	Pan	Move data by click-and-drag.
	Rotate	Rotate data by click-and-drag.

Toolboxes

Toolboxes beside the Side Toolbar are different at every step. Each Toolbox represents a task that can be performed in this step and provides all the necessary features for completing it.

Below are the explanations for the features provided in toolboxes across the entire app.

Margin Line

	Manual Creation	Manually create a margin line based on the selected points.
	Edit	Add, move, or delete the control points to edit the margin line. Hold down the Ctrl key for freehand editing of the line.
	Auto Creation	Automatically create a closed margin line based on the selected point.
	Delete	Delete the margin line.
	Section View	Display the section of the area where the mouse is located.
	Curvature Display Mode	See the curvature of the data through Color Map.
	Dynamic View Change	Turn on Dynamic View Change to automatically rotate data according to the view direction. Available only when using Manual Creation.

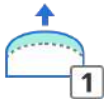
Positioning

	Move	Move the tooth freely without any constraints. Use shortcut keys to rotate and scale it.
	3D Manipulator	Scale, move, or rotate the tooth.

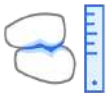
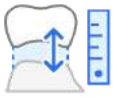
Selection

	Smart Single Tooth Selection	Automatically select the area of a single tooth, leaving out gingiva parts. Click and drag the mouse on the tooth.
	Brush Selection	Select all entities on a freehand-drawn path on the screen. Only the front face is selected.
	Brush Deselection	Deselect all entities on a freehand-drawn path on the screen. Only the front face is deselected.
	Clear All Selection	Clear all selected areas.

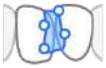
Sculpting

	Add	Add material to the restoration. Hotkey: 1
	Remove	Remove material from the restoration. Hotkey: 2
	Smooth	Smooth parts of the restoration. Hotkey: 3
	Morph	Morph the material on the restoration by dragging it with your mouse. Hotkey: 4
	Groove	Remove material from the restoration with a sharp blade to create grooves. Hotkey: 5

Adaptation

	Adapt to Adjacents	Adapt the restoration to adjacents.
	Adapt to Antagonists	Adapt the restoration to antagonists.
	Adapt to Gingiva	Adapt pontic to gingiva.

Connectors

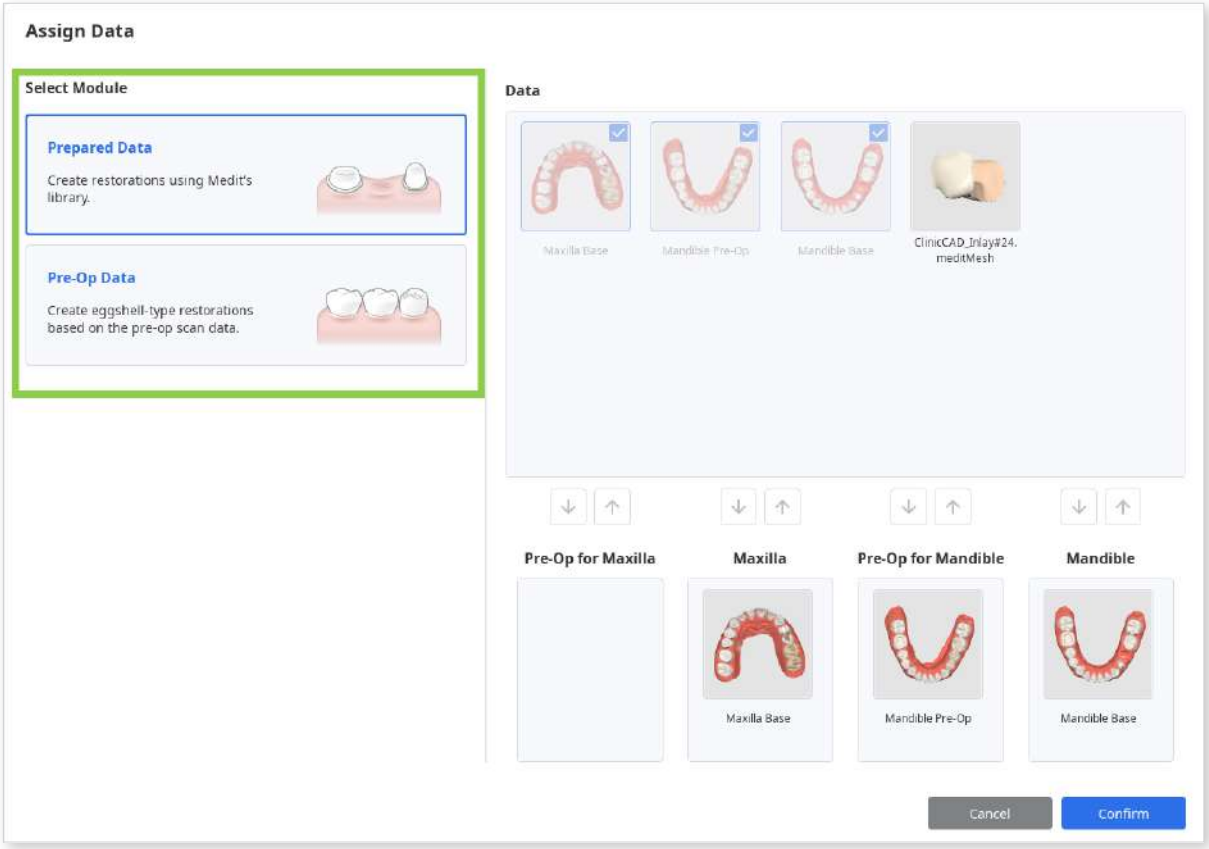
	Move	Drag the center point to adjust the connector’s position and cross-section area.
	Edit	Add, move, or delete the control points to reshape the connector.

Screw/Handle (tools for element control)

	Auto Set	Automatically place the chosen element at an optimal spot.
	Set Toward You	Turn all elements to face toward you.
	Delete All	Delete all elements. To delete one, right-click it.
	Move	Change the element position by dragging it.

Designing in Medit ClinicCAD

There are two modules for designing restorations in Medit ClinicCAD - Prepared Data and Pre-Op Data. You will choose one based on your available scans and target restoration when assigning scan data after opening the app.



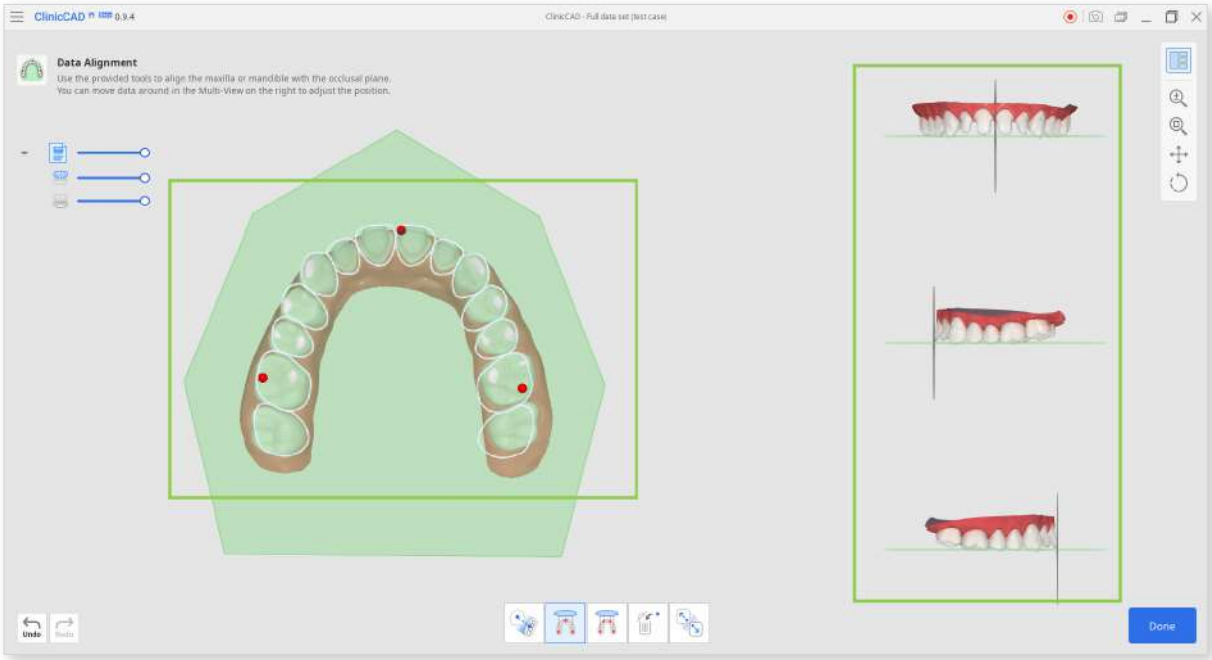
- In the prepared data module, the restoration is created based on the scan data of the already prepared tooth using the teeth libraries. But if needed, you can also import pre-op data for referencing tooth anatomy while designing the outer surface. In this module, you can design all types of restorations.
- In the pre-op data module, you can only design eggshell-type crowns and bridges based on the preoperational scan data. Note that this mode will be disabled if other types of restorations are registered in the Medit Link form.

Choose a module that suits your case and assign your available scan data to start.

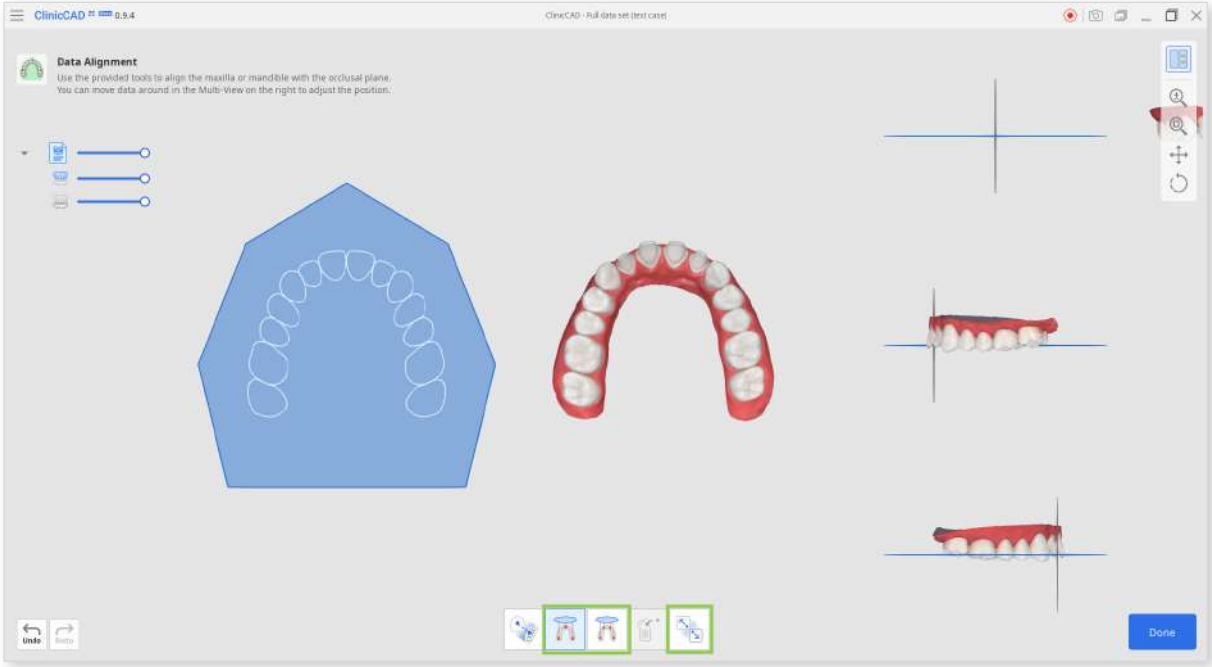
Data Alignment

After assigning scan data, you will enter the Data Alignment feature. It's essential to align the scan data with the occlusal plane before you begin working to ensure the accuracy of the subsequent automated processes.

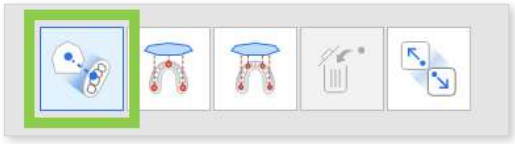
In most cases, the alignment will be performed automatically. Check the data position in Multi-View and make any necessary adjustments by moving the data with a mouse.



If the alignment has failed or is unsatisfactory, click "Detach Data" below and realign it again with "Align by 3 Points" or "Align by 4 Points."



- If you're working with a half arch data, use "Half Arch Alignment.” With it, you will be aligning data and plane based on the corresponding points selected on both.



When data is aligned, click "Done" to start designing.

You can return to data alignment from the first step of the design workflow by clicking the feature icon at the bottom. Note that this will reset all your previous work.

Data Editing

Data Editing is a tool that allows users to refine the imported scan data without leaving the program. It is provided in the first step of each module next to the Data Alignment tool.

This tool allows reviewing the imported scan data for any imperfections before creating restorations. With the provided tools, you can trim any excessive gingiva data, modify the data surface, and fill holes if any are present. Learn below how to do each mentioned task.

Note that using this tool after returning to the first step again will reset all your progress.

How to Trim Data

Trimming Tool is automatically activated once you enter.

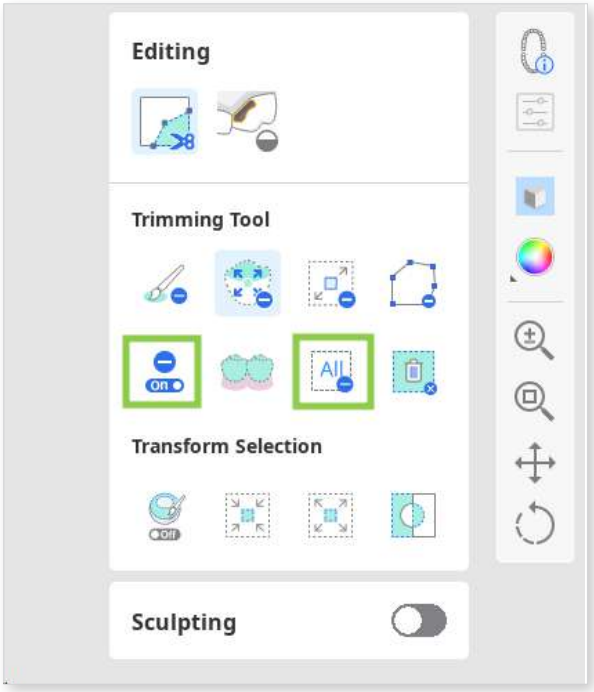
1. Start by choosing a selection tool that will help you to designate parts of the data you want to remove.

	Smart Teeth Selection	Automatically select all teeth of the arch, leaving out gingiva parts.
	Brush Selection	Select all entities on a freehand-drawn path on the screen. Only the front face is selected. The brush comes in three sizes.
	Smart Single Tooth Selection	Automatically select the area of a single tooth, leaving out gingiva parts. Click and drag the mouse on the tooth.
	Polyline Selection	Select all entities within a polyline shape drawn on the screen.
	Flood Fill Selection	Select the connected area based on the mouse movements.

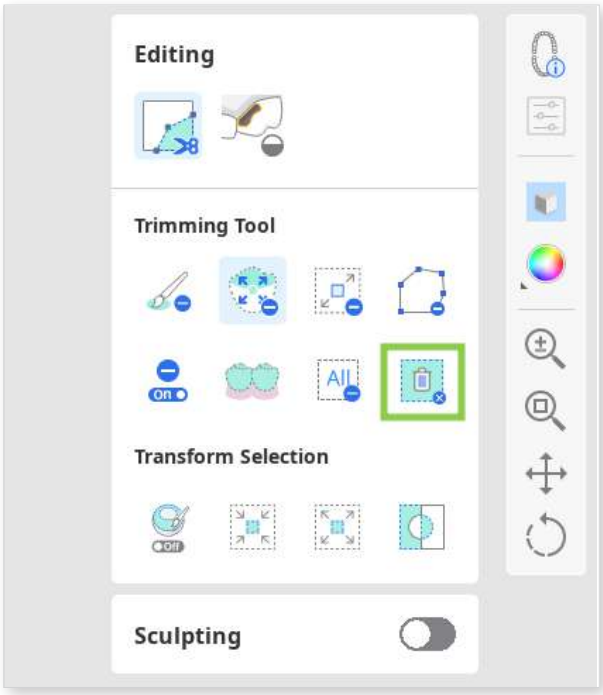
2. If needed, modify the selected area using the following tool options.

	Autofill Selected Area	Automatically fill in entities of the selected area.
	Shrink Selected Area	Reduce the selected area each time you press the button.
	Expand Selected Area	Expand the selected area each time you press the button.
	Invert Selected Area	Invert the selection.

- You can also turn on “Deselection Mode” to modify selection manually or use “Clear All Selection” to automatically deselect everything.



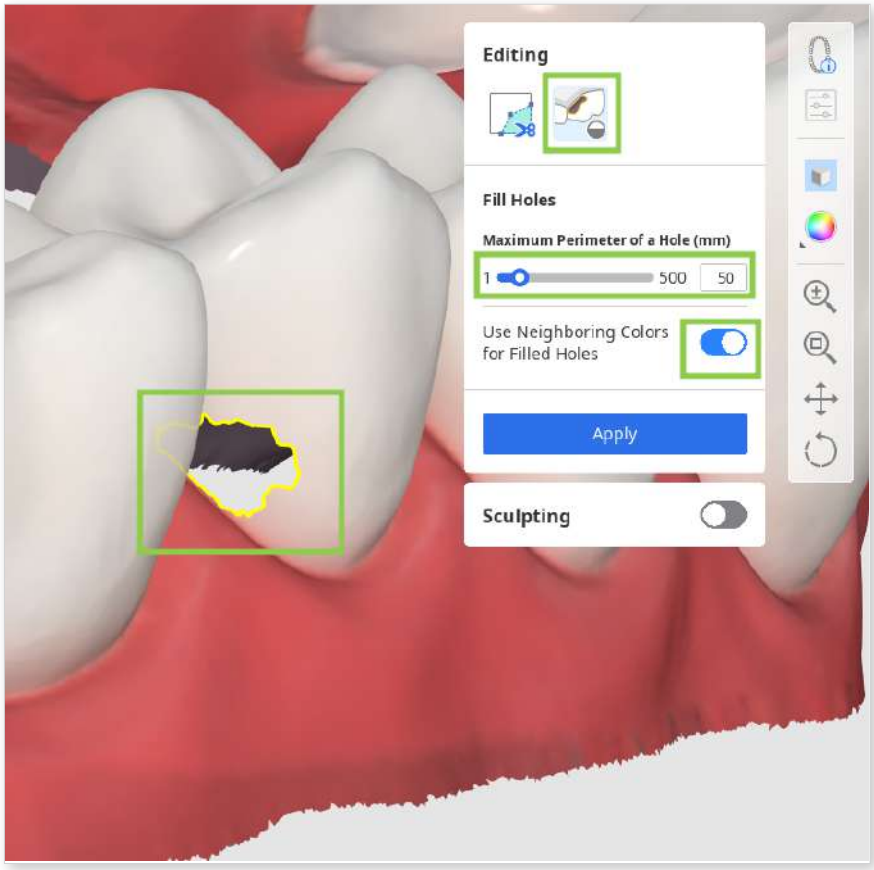
3. To complete the trim, click “Delete Selected Area.”



How to Fill Holes

1. Switch to the “Fill Holes” tool.

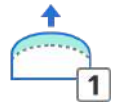
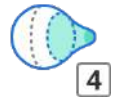
2. Locate any missing data areas and adjust the "Maximum Perimeter of a Hole." If the "Use Neighboring Colors for Filled Holes" option is on, the program will use the matching color palette to fill the area; otherwise, it is filled in grey.



3. Click “Apply” to fill the hole with the new mesh.

How to Sculpt Data

Find the area that needs modifications and, using the tools below, add, remove, smooth or morph its parts.

	Add	Use the mouse to add on part of the data. Hotkey: 1
	Remove	Use the mouse to remove parts of the data. Hotkey: 2
	Smooth	Use the mouse to smooth parts of the data. Hotkey: 3
	Morph	Use the mouse to morph parts of the data. Hotkey: 4
	Groove	Remove material from the restoration with a sharp blade to create grooves. Hotkey: 5

Prepared Data Module

Your workflow in this module depends on your target restoration. Check the table below to see what steps you will be working in based on your target.

	Margin & Insertion Path	Tooth Data Arrangement	Final Design
Bridge	O	O	O
Crown	O	O	O
Veneer	O	O	O
Inlay/Onlay	O	O	O
Coping	O	X	O
Cervical Inlay*	O	X	O

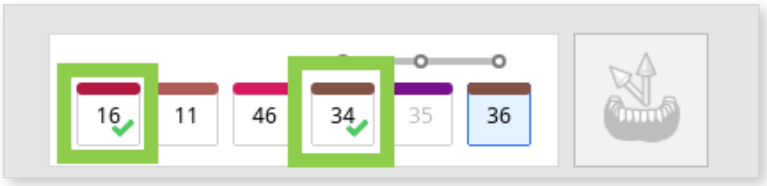
*Cervical inlay workflow will be explained separately in the appendix.

Margin & Insertion Path

In the first step, you must draw margin lines for all teeth numbers registered in the form and then set the insertion path for each restoration.

1. Start by checking the teeth form at the bottom. If a tooth number has a green check mark, the margin line for this tooth has already been created or was imported from the case.

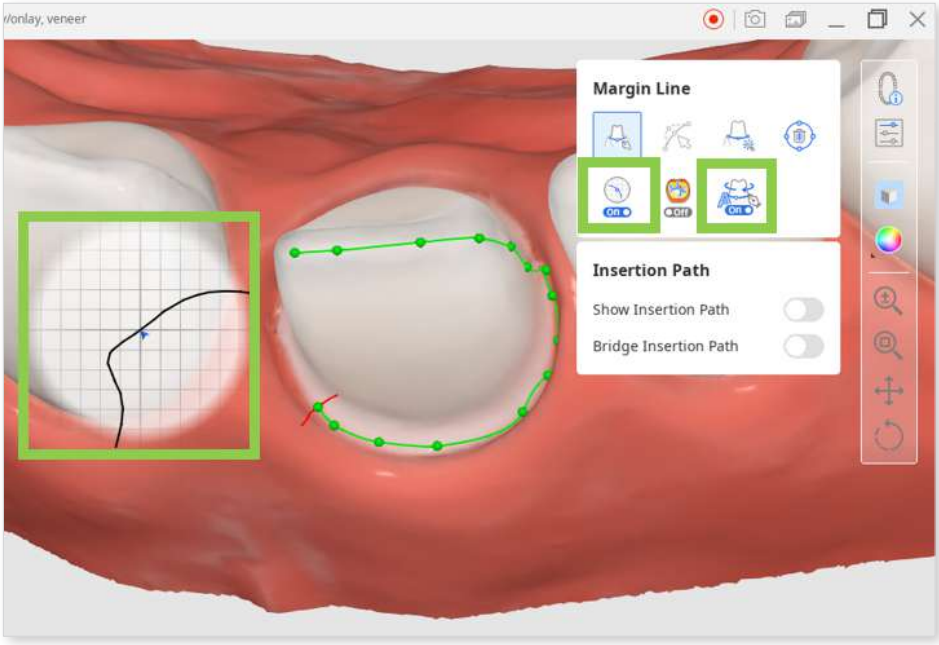
   Note that margin lines for coping, crowns, inlays, and onlays are created automatically.



2. Then, click the tooth number that does not have a margin yet and draw it using the “Auto Creation” or “Manual Creation” tool.

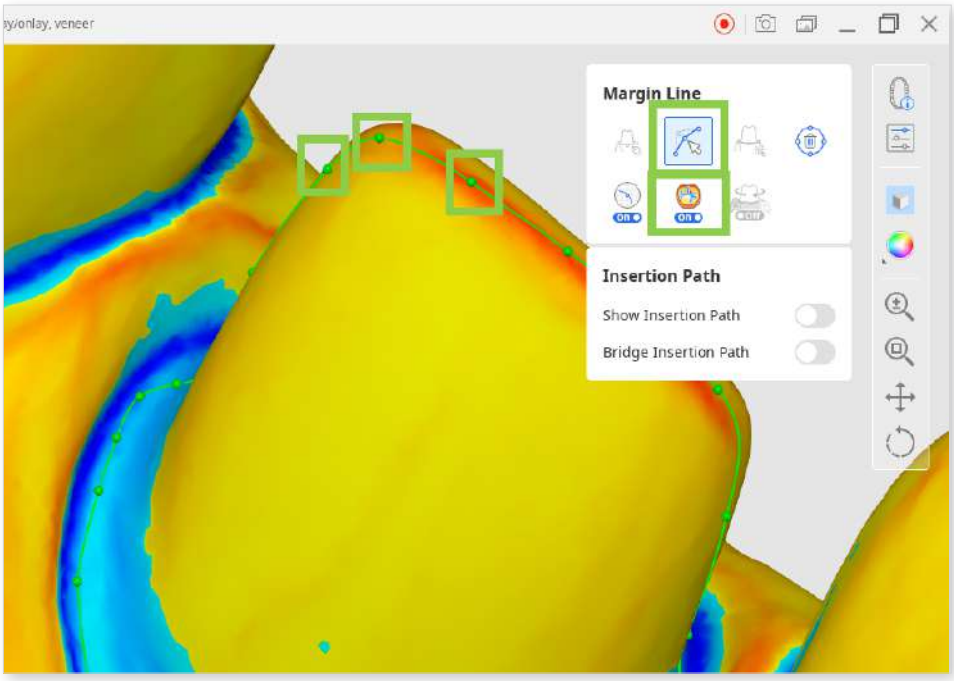
   ”Auto Creation” draws a margin based on one clicked point; “Manual Creation” draws a margin based on multiple points.

- Turn on “Section View” or “Dynamic View Change” to assist you when drawing the margin manually.



3. All margins can be edited by adding, moving, or deleting the control points. Click to add a point, right-click it to delete, and drag it to move.

   While editing, you can turn on “Curvature Display Mode” to better understand the depth.

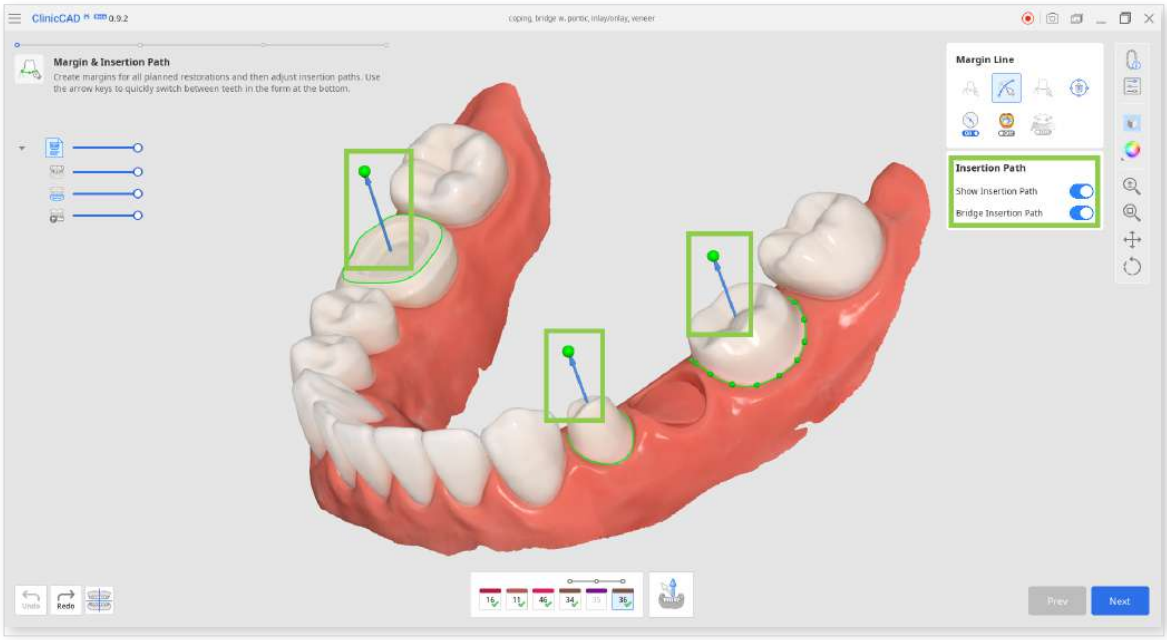


Hold down the Ctrl/Command key and drag the mouse to make minor freehand corrections quickly.

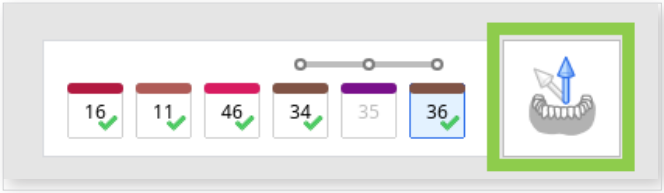
4. You can work on the insertion path only after margins for all target teeth have been created.

   Turn on “Show Insertion Path” and adjust the automatically set path by dragging the insertion path arrow. The grey arrow will indicate the original direction.

   > You can turn off “Bridge Insertion Path” to individually set the path for each crown in a bridge.



   Alternatively, you can rotate the 3D data and click “Set Arrow to Your Viewpoint” at the bottom.



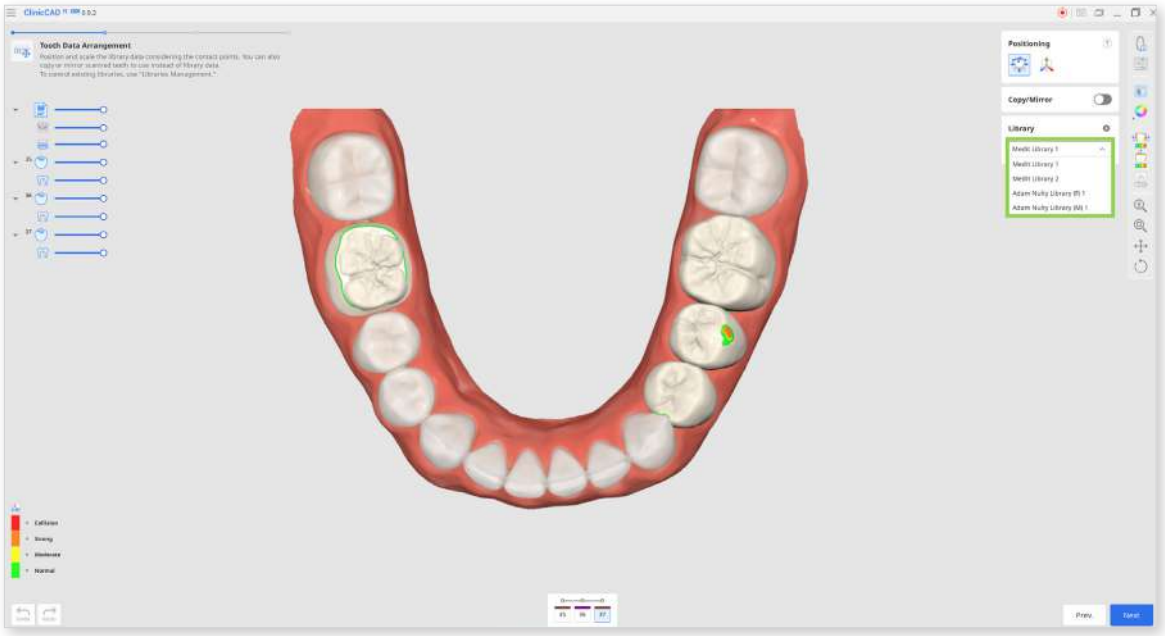
5. When done, click “Next” or press the space bar to move to the next step.

Tooth Data Arrangement

The purpose of this step is to arrange tooth data for your restorations. When you enter this step, the library data will automatically be placed based on the margins and insertion path you created.

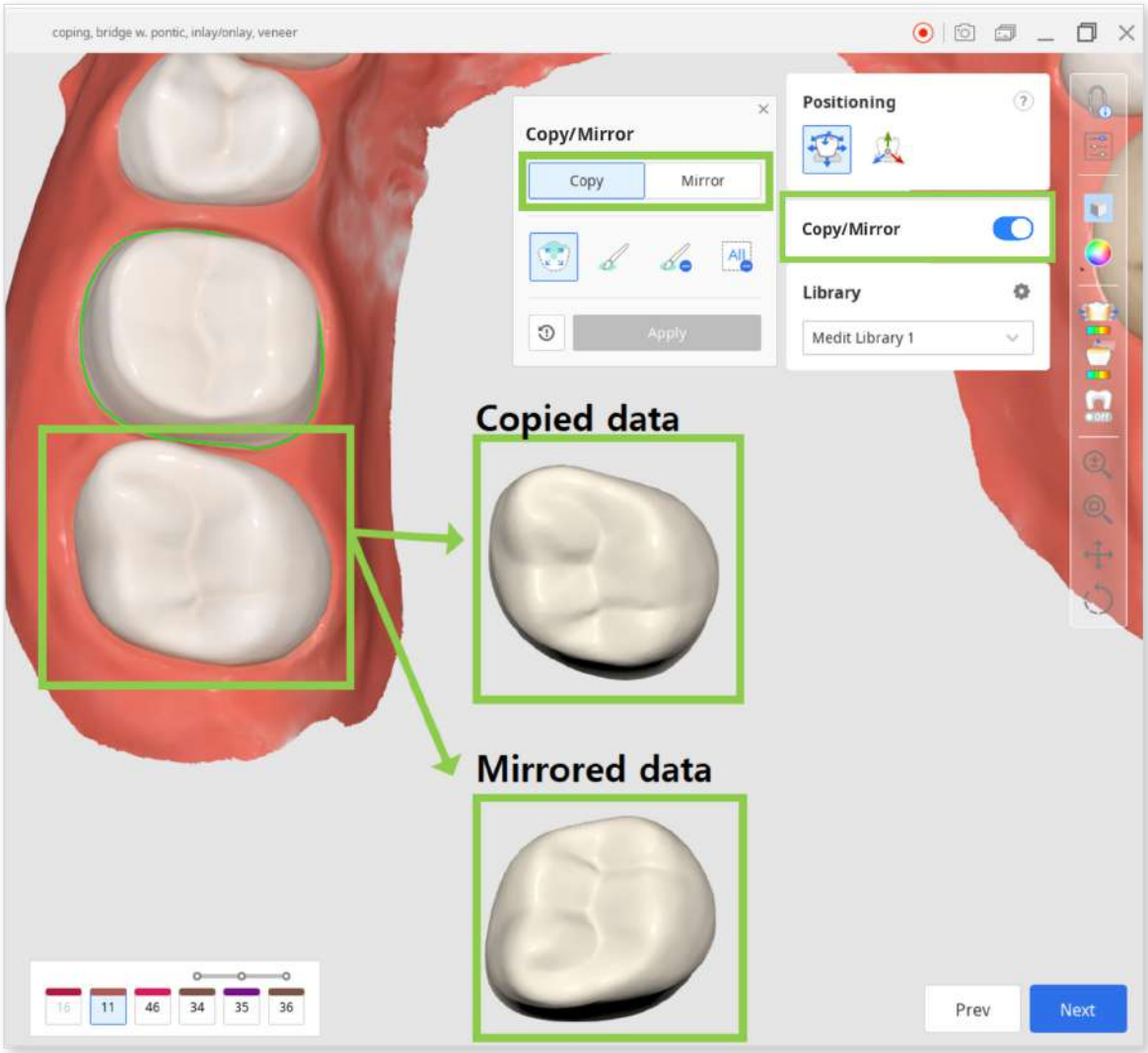
1. There are four default teeth libraries, and you can choose what library to use in the Library toolbox on the right.

> You can expand the list of available libraries to 50 or edit library data via “Libraries Management.”
>
> For more details on how to use it, go to **Data Management** > **Libraries Management** chapter of this guide.



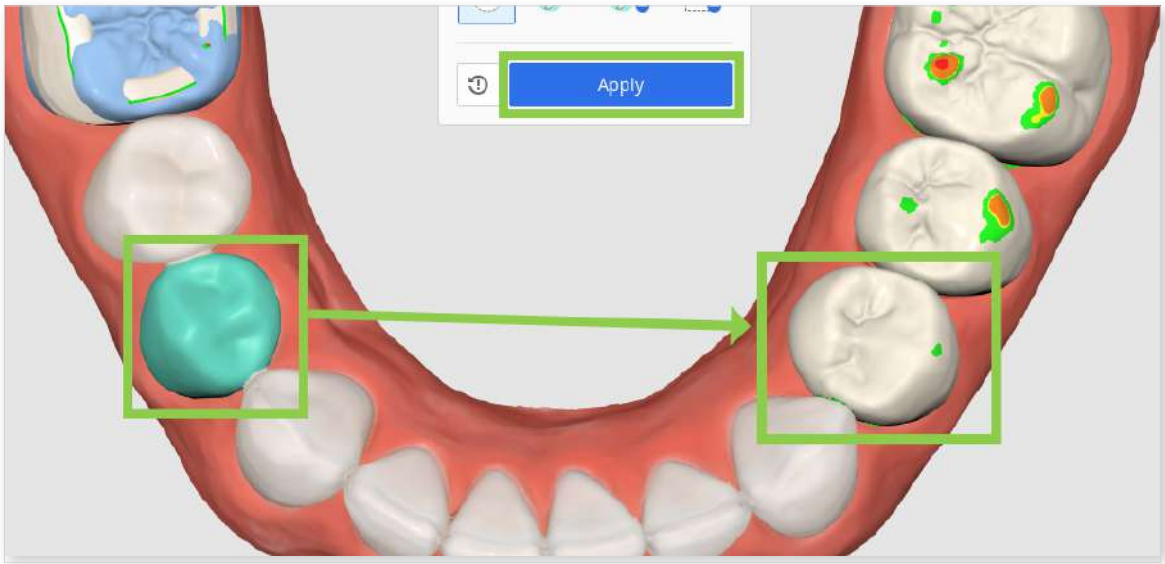
2. Alternatively, you can duplicate tooth data from your imported scans (prepared or pre-op) to use instead of a library one. For this, turn on “Copy/Mirror” and choose if you want to copy or mirror the scanned tooth. ”Copy” will create an exact replica of a scanned tooth, while “Mirror” will create a symmetrical one.

> Copy/Mirror is performed on a specific tooth at once and can be used together with the library data.



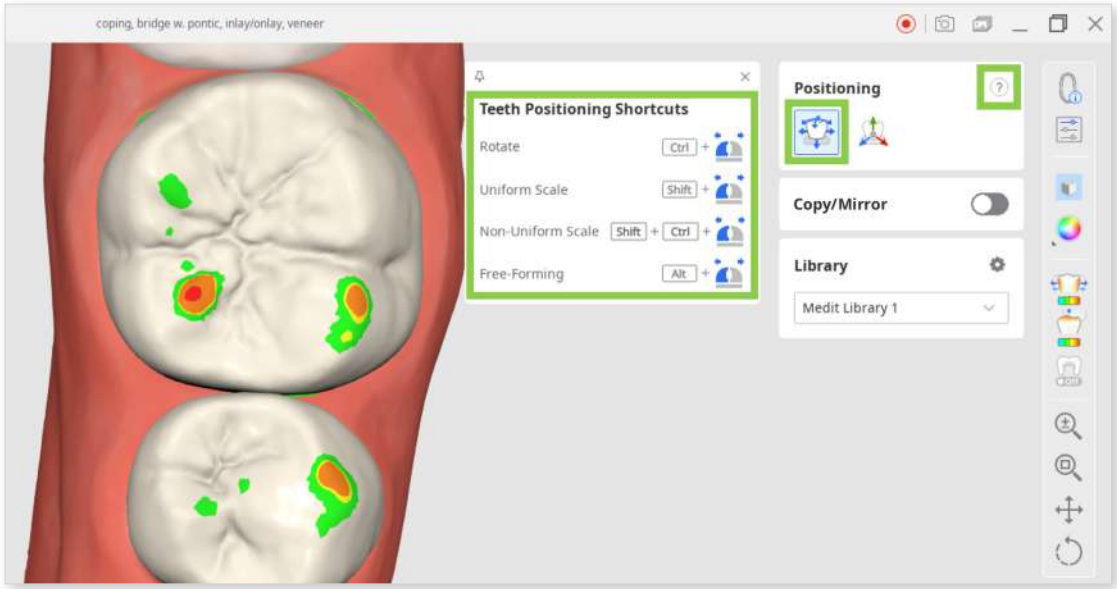
3. Choose a tooth number for which you want to substitute the library data with the scanned one, and then select the tooth that will be copied or mirrored. Selection can be performed using “Smart Single Tooth Selection” or “Brush Selection.” If you need to correct the selected area, use the deselection features.

4. Once the data is selected, click “Apply” to complete.

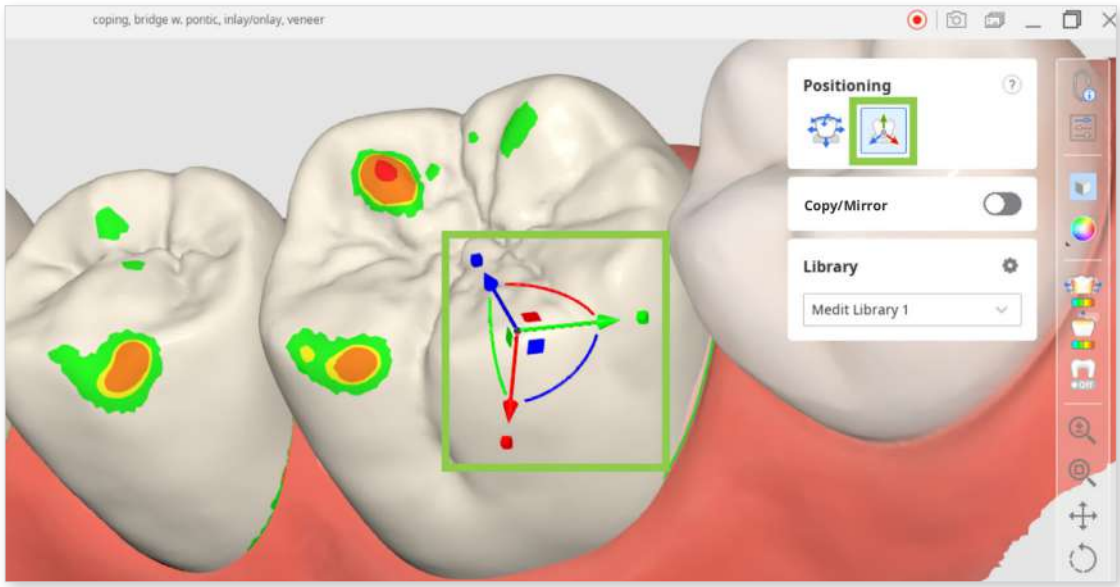


- If you want to return to using the library data, click the “Reset” button next to “Apply.”

5. When you have tooth data arranged for all your target teeth, adjust their placement using Positioning tools. You can move, scale, or rotate the tooth data.
    - Choose “Move” to make major modifications with no restrictions. Click the question mark in the toolbox to see the shortcuts for available actions.

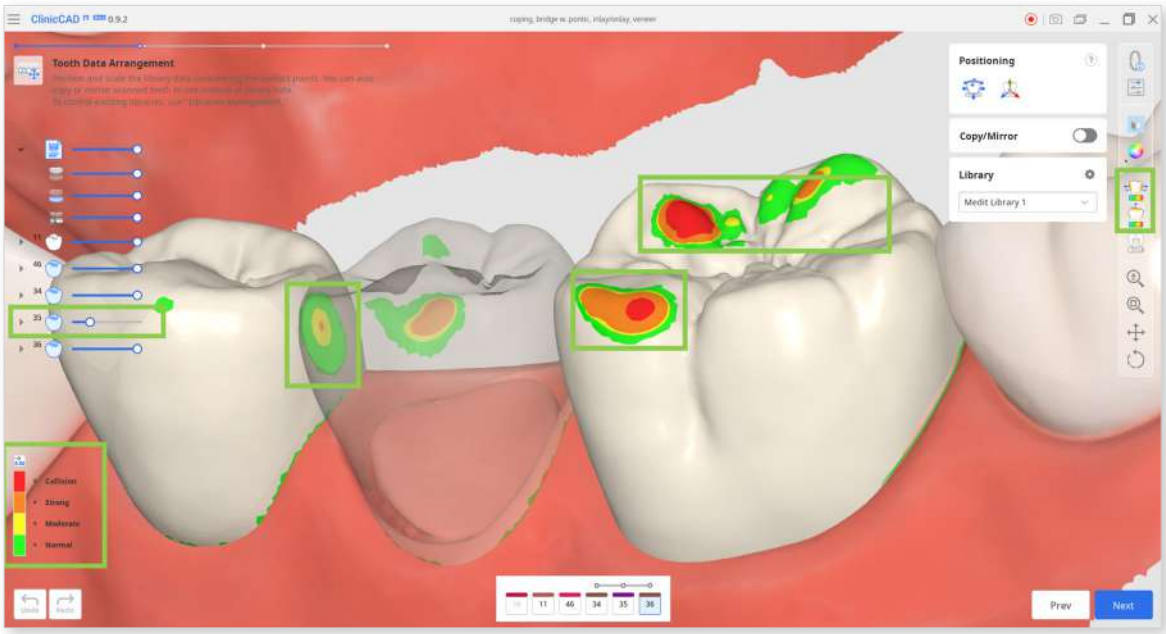


    - Choose “3D Manipulator” when more precise changes are needed, as this tool performs modifications along a specific axis only.

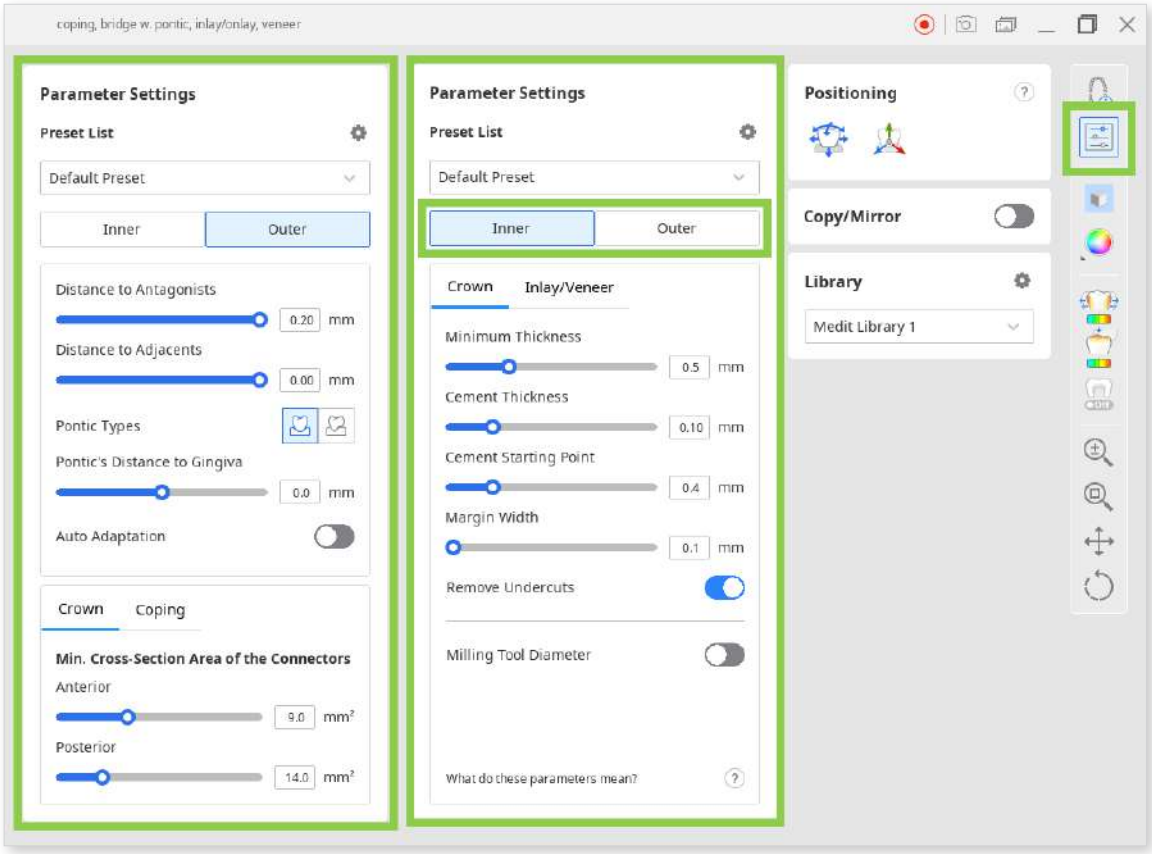


6. You should consider the contact points when moving the tooth data. To assess the contact of the restoration with its antagonists and adjacents, refer to the color bar in the bottom left corner.

> You can control the tooth data visibility in Data Tree for more comfort.



7. In this step, you can also review the parameters for the restoration’s inner and outer surfaces before they are applied in the next step. By default, your most recently used parameters will be applied. Click “Parameter Settings” in the Side Toolbar to see the details.



- You can manually configure the parameter values or use the recommended preset for your particular printer.

> Read more on receiving recommended presets and managing the preset list in the **Data Management > Presets Management** chapter of this guide.

8. When done, click “Next.”

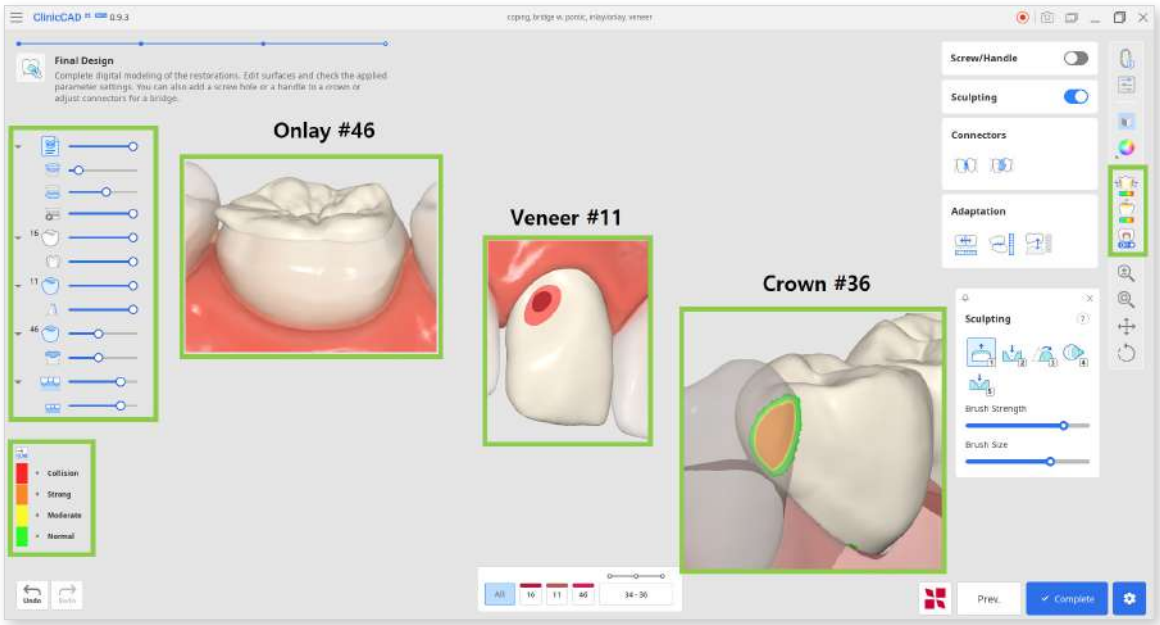
Final Design

This is the final step of designing your restorations. In this step, you must review and if needed edit the design of the created restorations and check applied parametersbefore printing.

> There are two additional tasks that can be performed in this step: editing the bridge connectors and adding optional design elements to a crown.

1. Start by reviewing the created restorations. Turn on the analysis tools in the Side Toolbar to see where sculpting of the outer surfaces might be needed.
   ”Contact Areas with Adjacents” and “Contact Areas with Antagonists” will show the contact points with neighboring teeth through colors.
   ”Minimum Thickness” will point out areas of the crowns that are too thin in red. Add more material in these areas using sculpting tools.

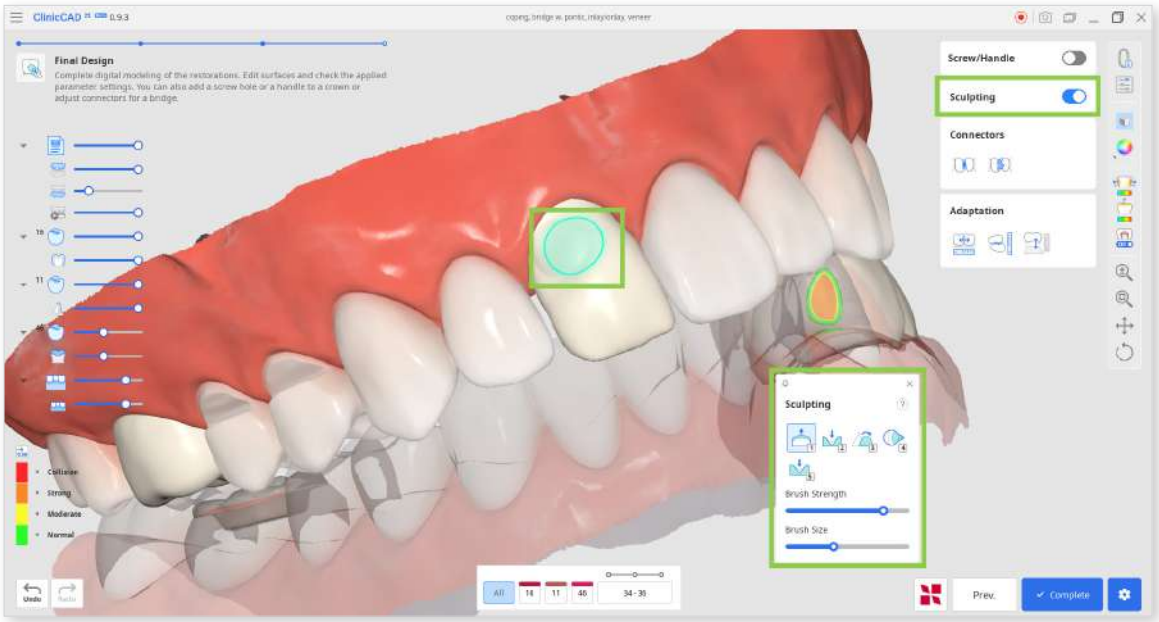
   > Control data visibility in Data Tree for easy review of contact points and restoration fit.



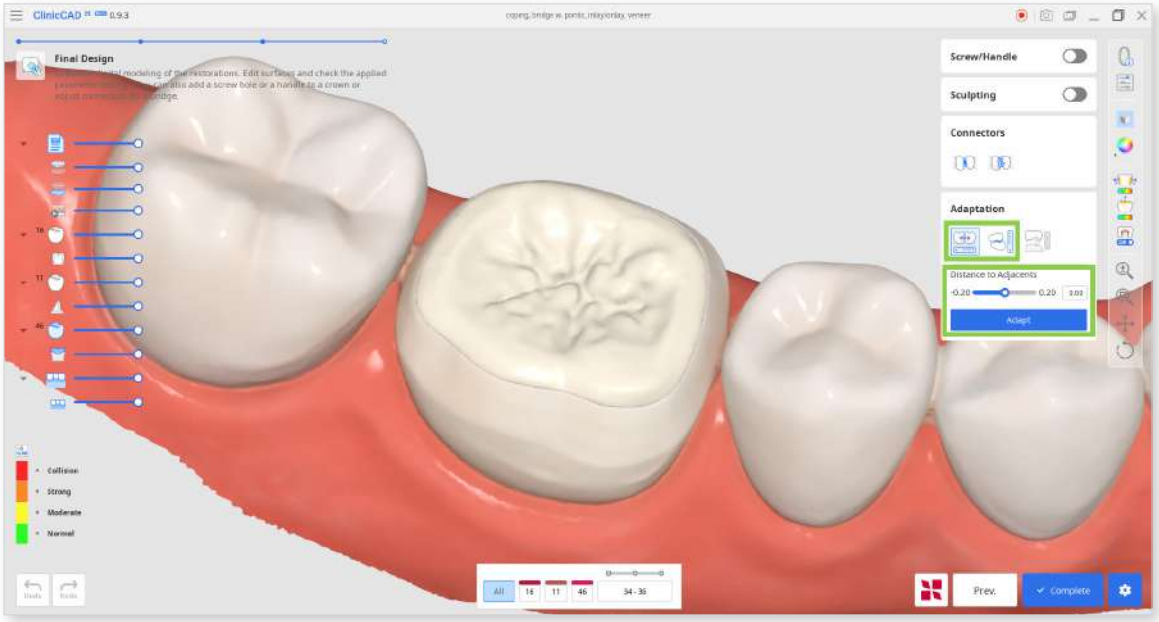
2. Correct any design flaws using “Sculpting.” You can add, remove, smoothen, morph, and carve out material on the restoration’s outer surface.

   Choose a sculpting tool, adjust the brush strength and size, and then modify the required areas. Use the “Groove” option to create grooves easily.

> Click the question mark in the “Sculpting” widget to see the shortcuts.

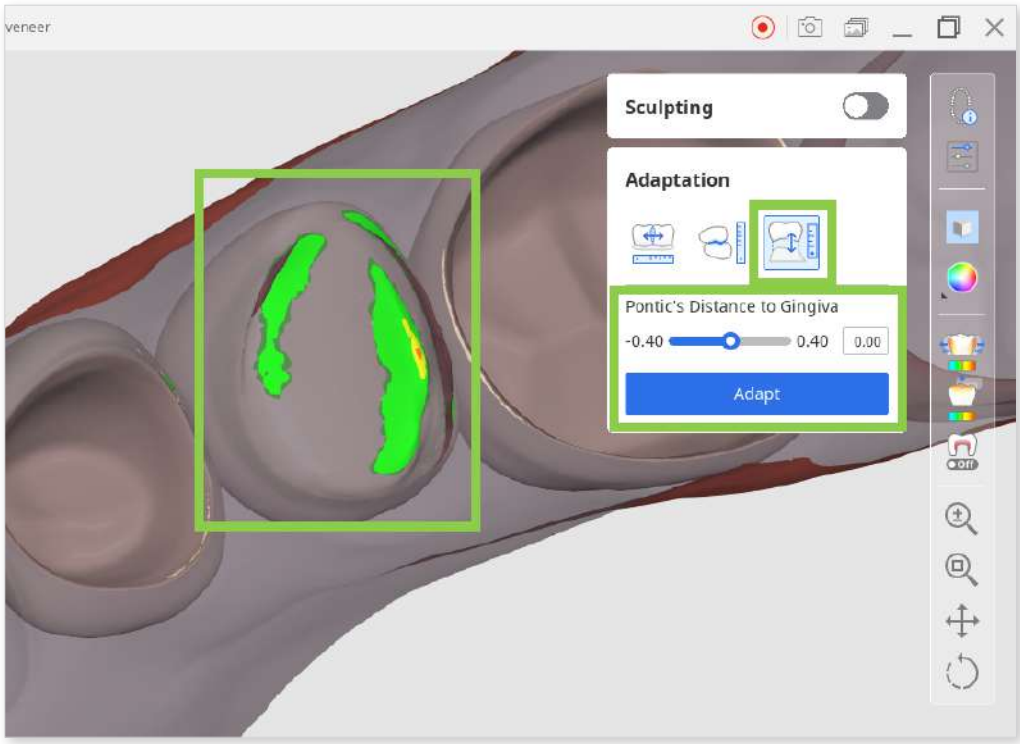


3. Any substantial sculpting might require additional review of the restoration fit and previously set parameters. Use “Adaptation” to make quick adjustments; you can adapt the restoration to adjacents and antagonists by a set distance.

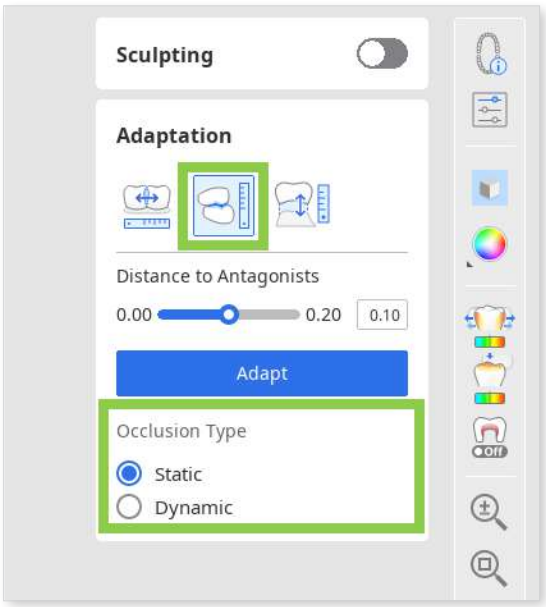


- If your bridge has a pontic, you can adjust its distance to gingiva using the Adaptation Tools in this step.

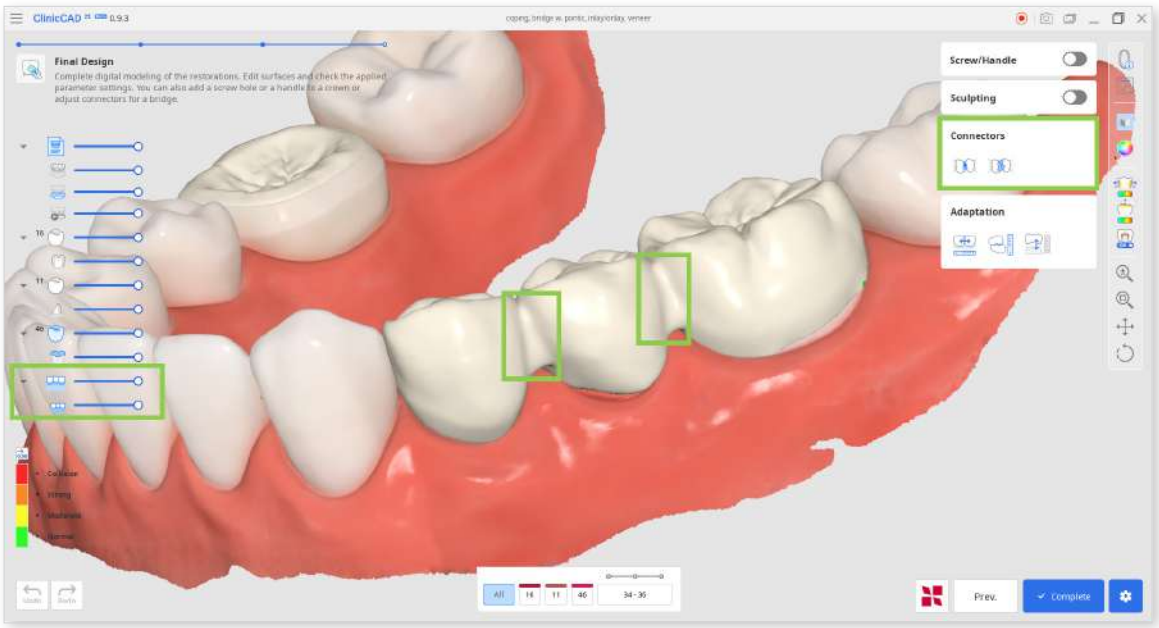
  Choose the “Adapt to Gingiva” feature, set the desired distance, and click “Adapt.”



- If dynamic occlusion data was imported, you can choose whether to adapt to antagonists based on ‘static’ or ‘dynamic’ occlusion.

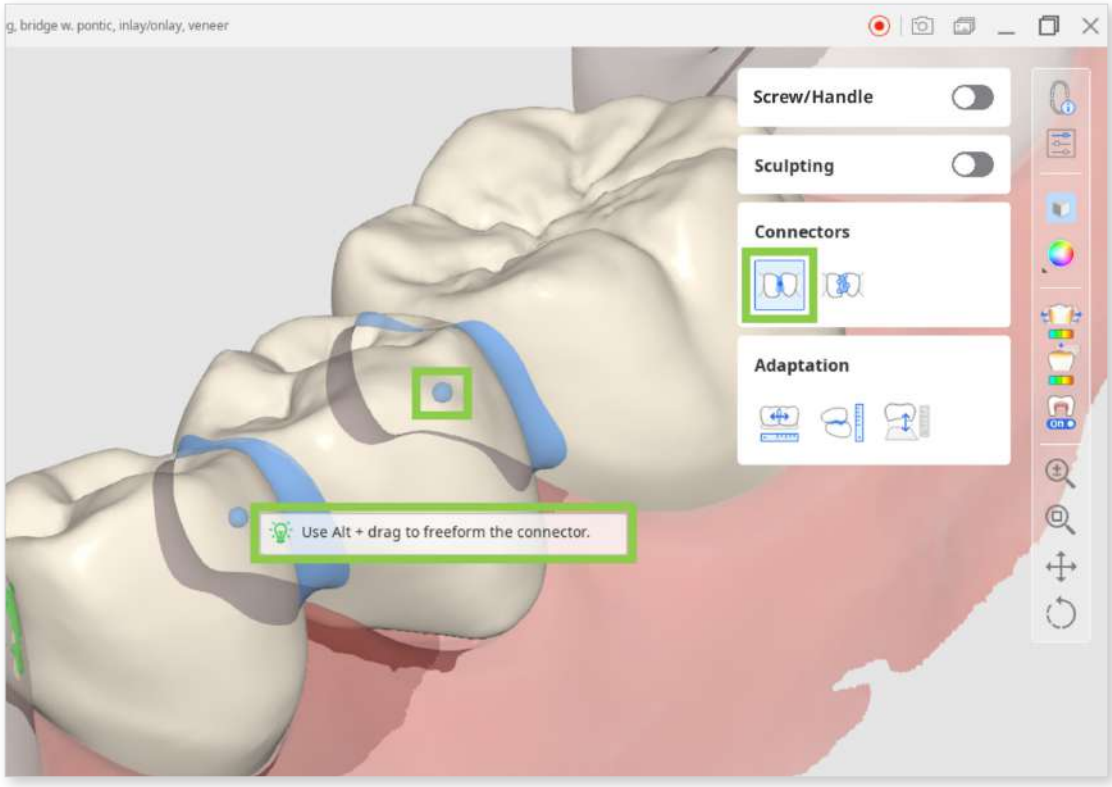


4. If you are working on a bridge, the data of each individual element will be combined into one by adding connectors. Edit the connectors using the “Move” or “Edit” tools.



- When using ”Move,” drag the center point of a connector to readjust the connector’s position and cross-section area automatically.

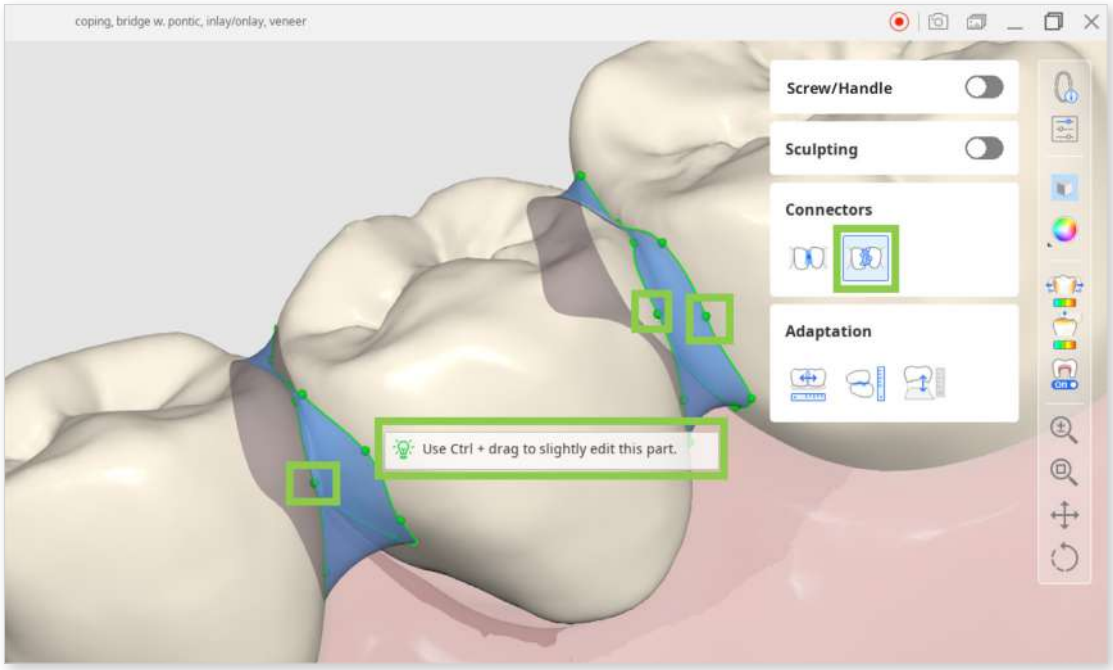
> Hold down Alt/Option to quickly freeform the connector with a mouse.



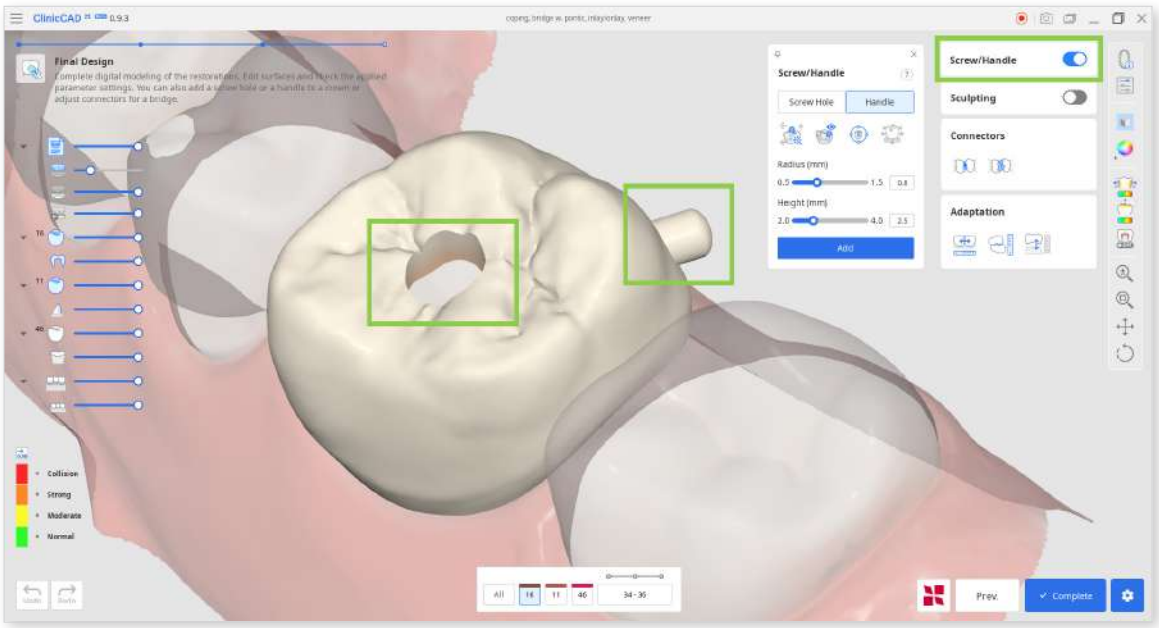
- When using ”Edit,” margins of the connector on both teeth will appear. You can reshare the connectors by editing those margins.

  Similar to editing the tooth’s margin line, click to add a point, right-click it to delete, and drag the points to move.

  > Hold down Ctrl to quickly make minor changes in the margins.



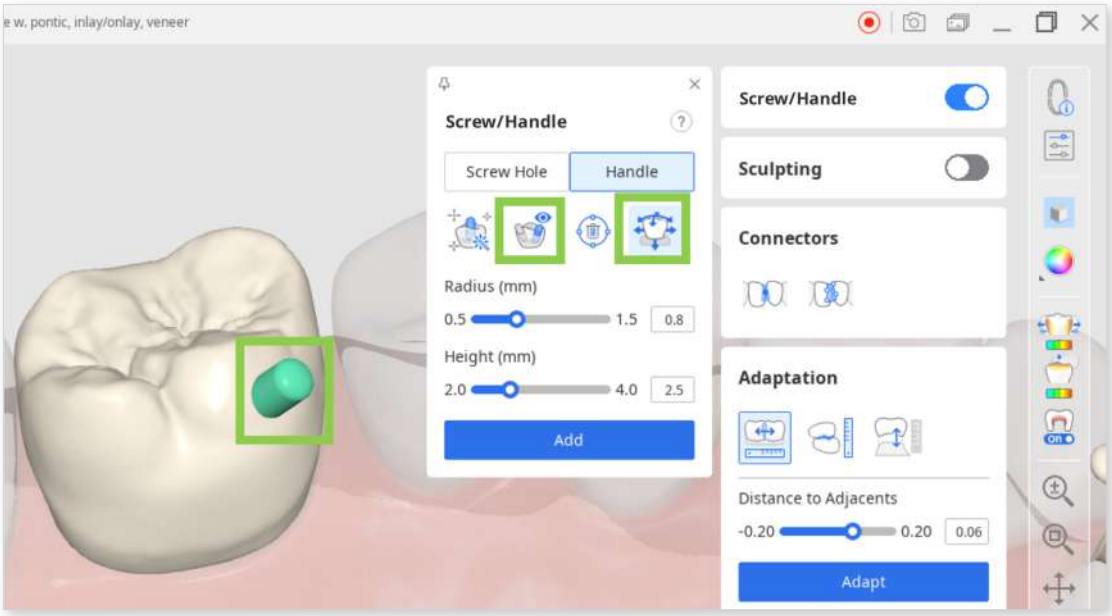
5. If you are working on a crown design, you can add screw access holes or handles with “Screw/Handle.”



- Start by choosing what element you want to add and click “Auto Set.” This will automatically place the cylinder for creating an element in the most optimal place - handle on a lingual side and hole in the center. Then, adjust the radius and height of the cylinder below and click “Add.”

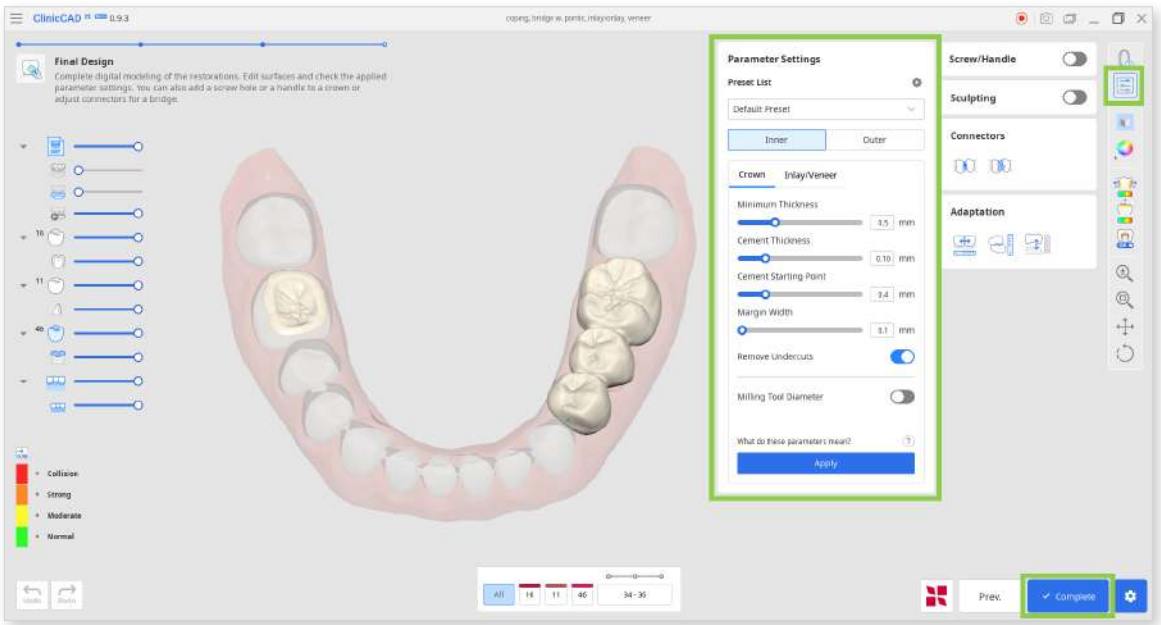
> The cylinder for creating an element can also be placed manually in your chosen spot with a double-click.

- You can also quickly move the cylinder around with a “Move” tool and change its direction by rotating the data and then setting it to your view with “Set Toward You.”



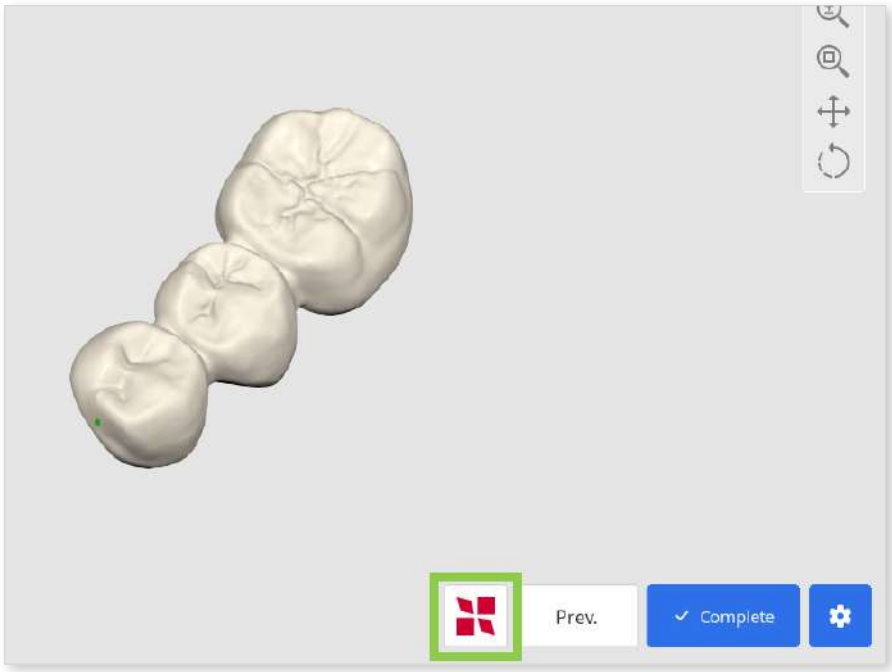
6. Lastly, review the inner and outer parameters in “Parameter Settings” before saving your design and sending it to printing.

   To save your restoration designs, click “Complete” at the bottom right corner.



7. If you have a SprintRay 3D printer, you can transfer your restoration design from this step right into the RayWare Cloud. For this, use the “Print with SprintRay” at the bottom and follow the guidance on the screen.

You must have a RayWare Cloud account to use this feature.



If you encounter difficulties connecting to RayWare Cloud, please refer to the following troubleshooting guidelines:

- check your internet connection
- verify your login credentials (username and password)
- review your restoration design

If the issues persist, please reach out to SprintRay support.

Pre-Op Data Module

The general workflow of creating ‘eggshell’ crowns and bridges consists of three steps: Tooth Selection > Margin & Insertion Path > Final Design. The Tooth Data Arrangement step will be provided if you choose to substitute pre-op scan data with the library (more about this step read in the Prepared Data Module chapter).

Tooth Selection

This is the first step in designing eggshell-type crowns and restorations. The goal of this step is to select preoperational data corresponding to each tooth registered in the Medit Link form.

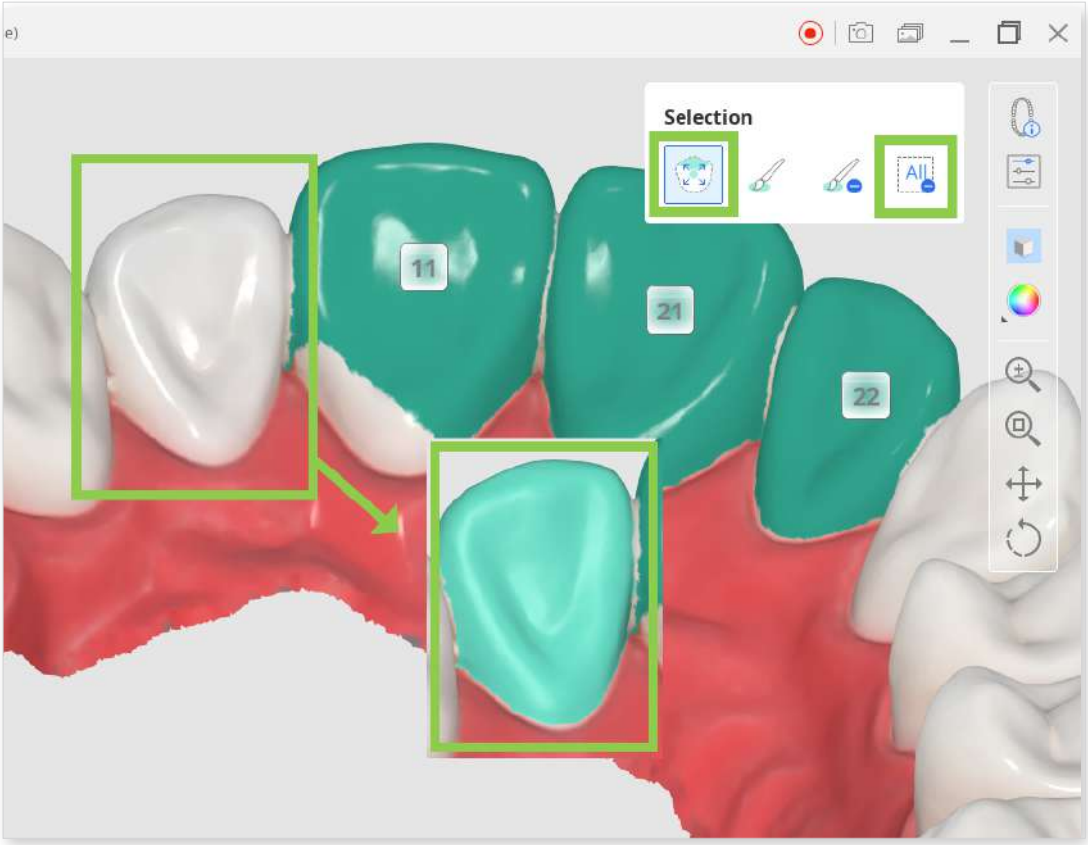
1. Upon entering the step, the data for the teeth numbers indicated in the form at the bottom will be automatically selected.

> Automatic selection is not supported for scan data of the stone model.

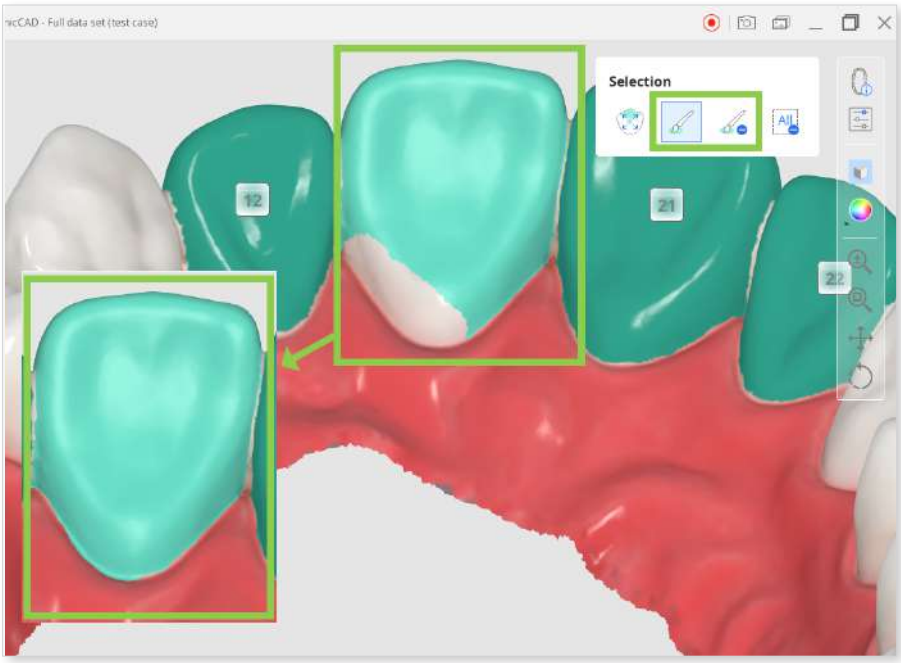
2. Review the accuracy of the automatic selection to ensure the correct generation of the restorations' outer surfaces in the subsequent steps.

   If editing is required, select a target tooth number in the form and make changes using the selection tools.

- You can clear all selection on a specific tooth using “Clear All Selection” and then accurately reselect data with “Smart Single Tooth Selection” by clicking and dragging the mouse over that tooth data.



- Or you can make minor corrections to the selection with “Brush Selection” or “Brush Deselection.”

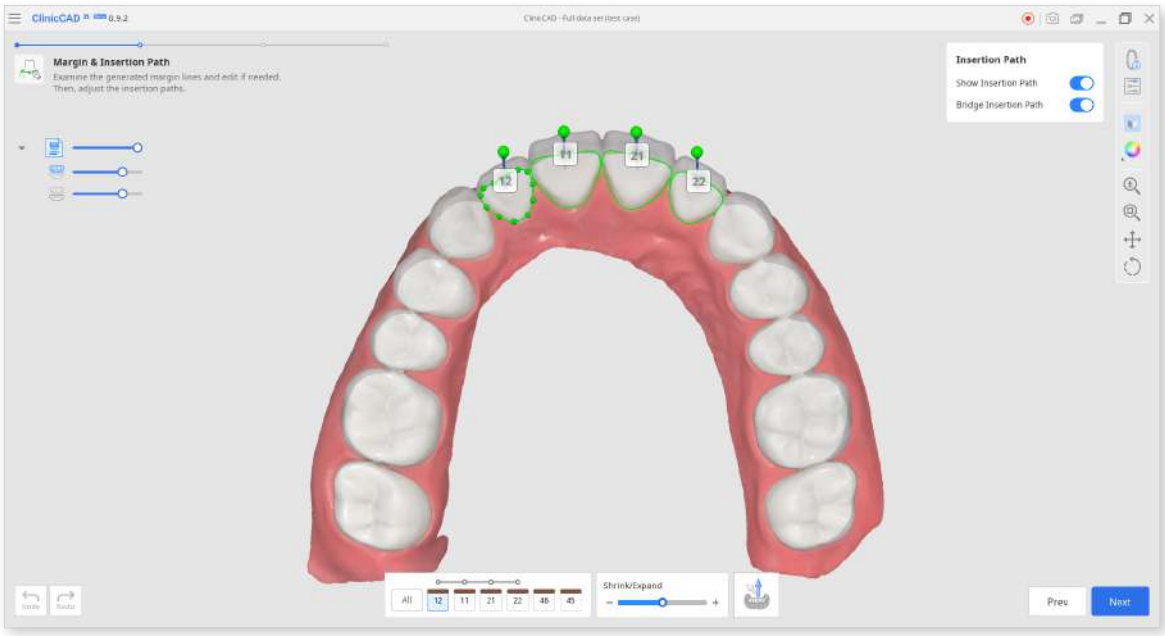


3. When done, click “Next” or press the space bar to move to the next step.

Margin & Insertion Path

The purpose of the second step is to establish the margin lines and set the insertion path for future restorations.

1. The margin lines will be created automatically upon entering this step. You must review the generated margin lines and edit them if needed.



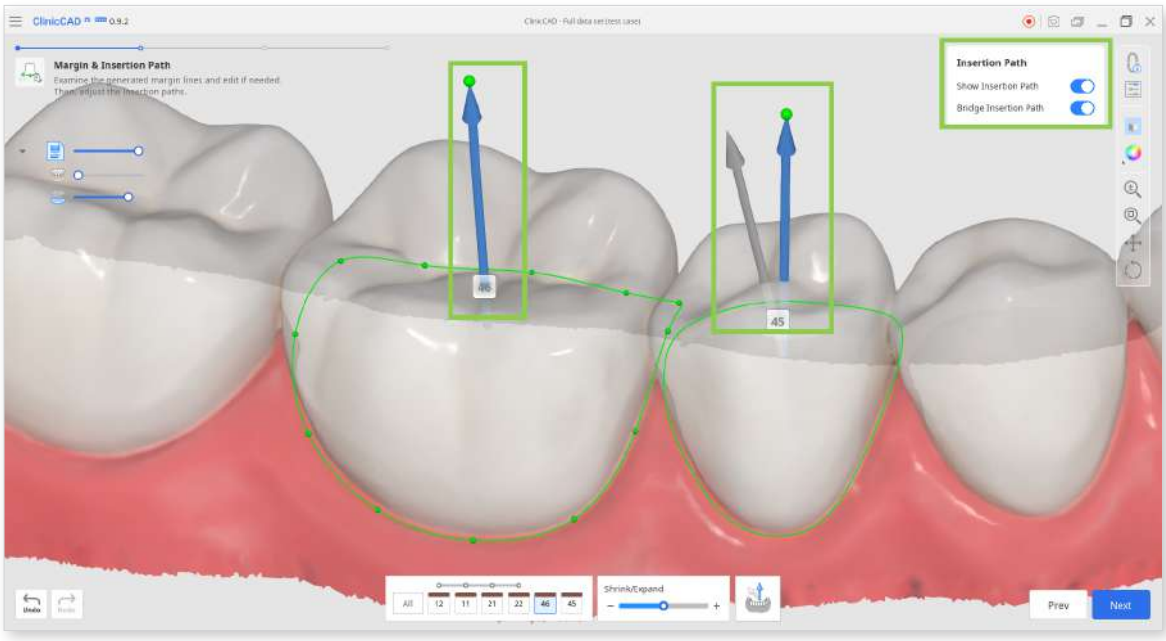
- To edit the margin lines, use the “Shrink/Expand” slider at the bottom. You can shrink or expand the margin for all teeth at once or for a specific tooth number by selecting it in the form at the bottom.

- You can also edit the margin line by adding, moving, or deleting the control points. Click to add a point, right-click it to delete, and drag it to move.

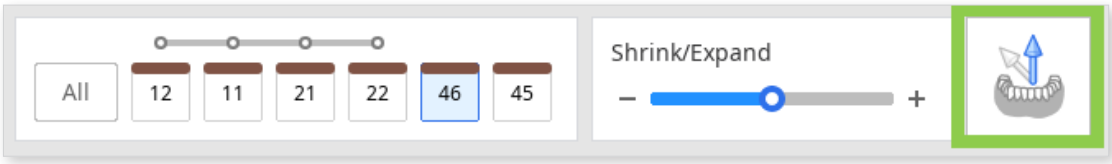
2. The insertion path will also be automatically detected. Examine the detected insertion path.

   If editing is needed, drag the insertion path arrow to adjust its direction. The grey arrow will indicate the originally detected direction.

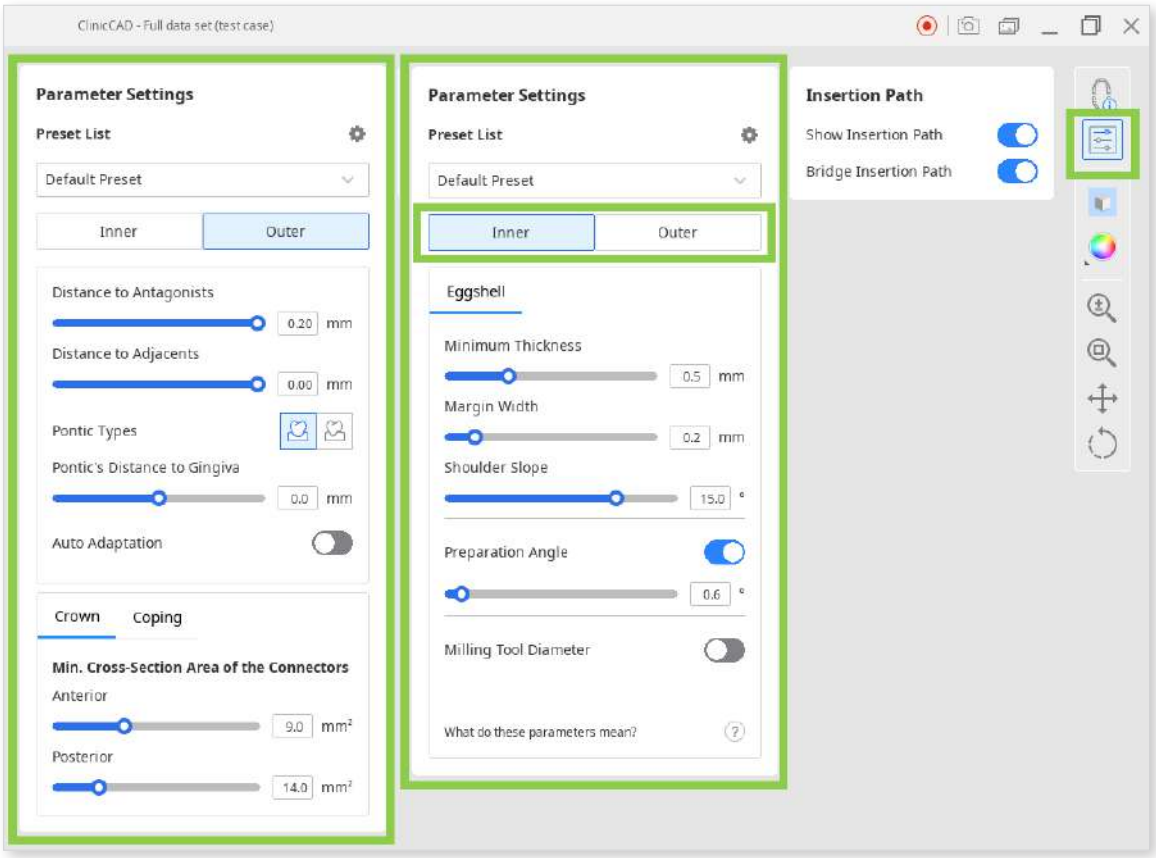
> You can turn off “Bridge Insertion Path” to individually set the path for each crown in a bridge.



- Alternatively, you can rotate the 3D data and click “Set Arrow to Your Viewpoint” at the bottom.



3. In this step, you can also review the parameters for the restoration’s inner and outer surfaces before they are applied in the next step. By default, your most recently used parameters will be applied. Click “Parameter Settings” in the Side Toolbar to see the details.



You can manually configure the parameter values or use the recommended preset for your particular printer.

> Read more on receiving recommended presets and managing the preset list in the **Data Management > Presets Management** chapter of this guide.

4. When done, click “Next.”

Final Design

This is the final step of designing your restorations. In this step, you must review and, if needed, edit the design of the created restorations and check applied parameters before printing.

There are two additional tasks that can be performed in this step: editing the bridge connectors and adding optional design elements to a crown.

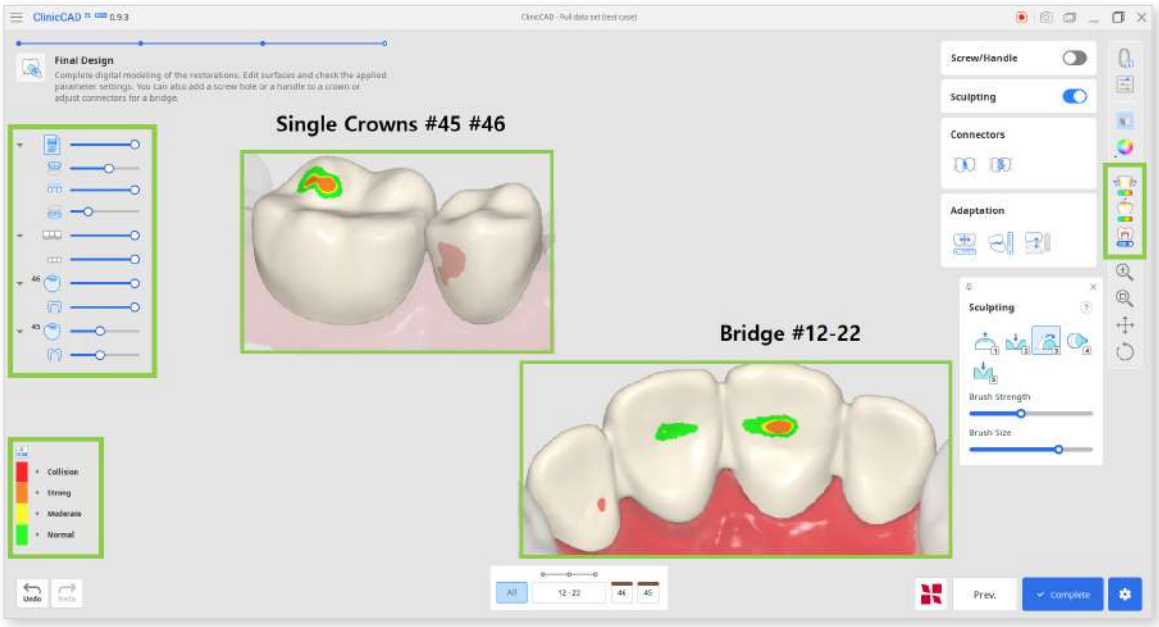
1. Start by reviewing the created restorations. Turn on the analysis tools in the Side Toolbar to see where sculpting of the outer surfaces might be needed.

   ”Contact Areas with Adjacents” and “Contact Areas with Antagonists” will show the contact points with neighboring teeth through colors.

   ”Minimum Thickness” will point out areas of the crowns that are too thin in red.

   Add more material in these areas using sculpting tools.

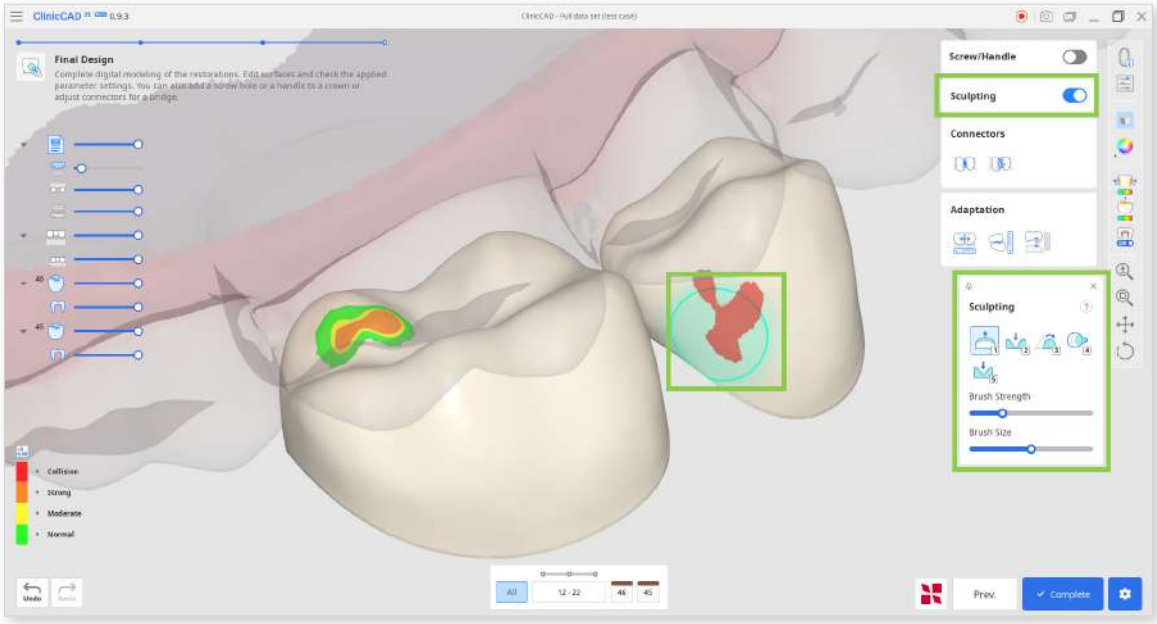
   For easy review of contact points and restoration fit.



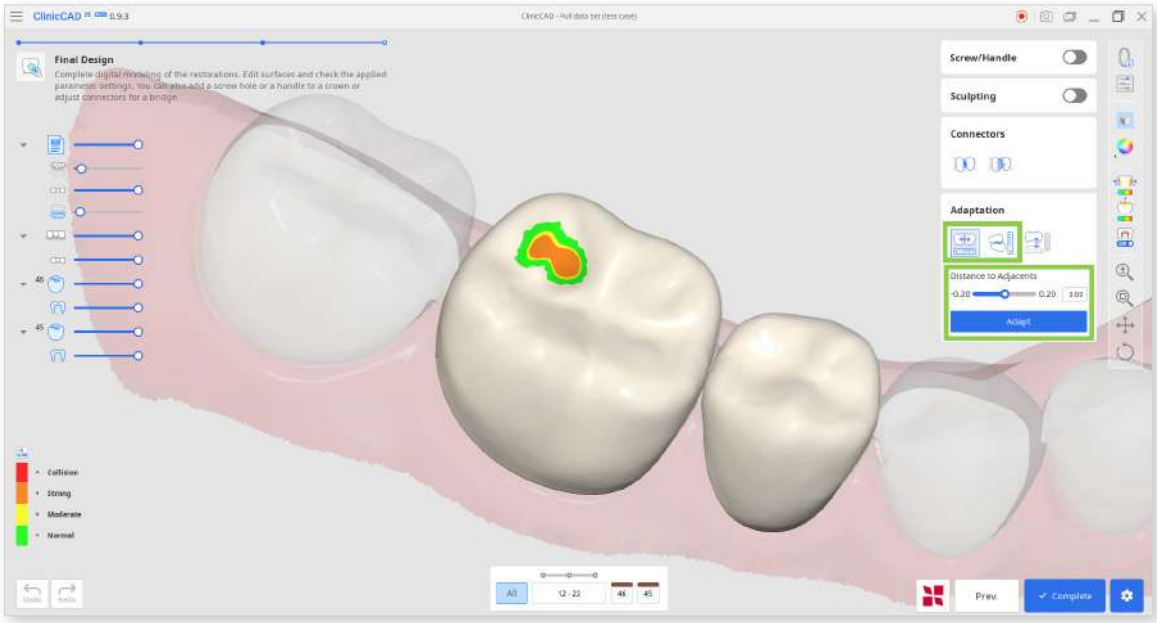
2. Correct any design flaws using “Sculpting.” You can add, remove, smoothen, morph, and carve out material on the restoration’s outer surface.

   Choose a sculpting tool, adjust the brush strength and size, and then modify the required areas. Use the “Groove” option to create grooves easily.

> Click the question mark in the “Sculpting” widget to see the shortcuts.

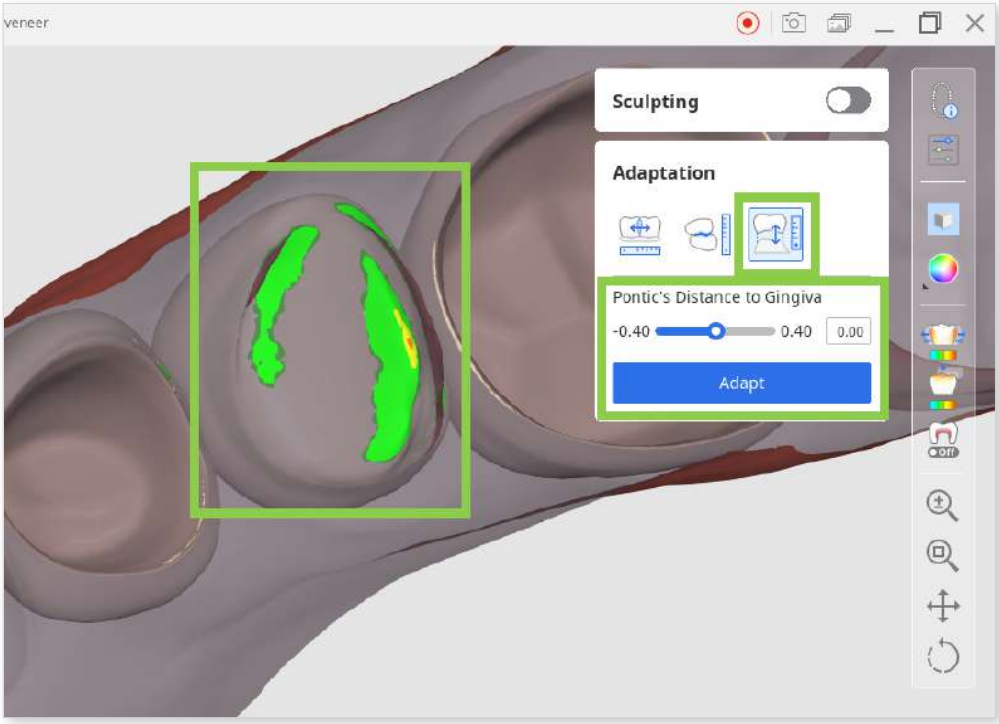


3. Any substantial sculpting might require additional review of the restoration fit and previously set parameters. Use “Adaptation” to make quick adjustments; you can adapt the restoration to adjacents and antagonists by a set distance.

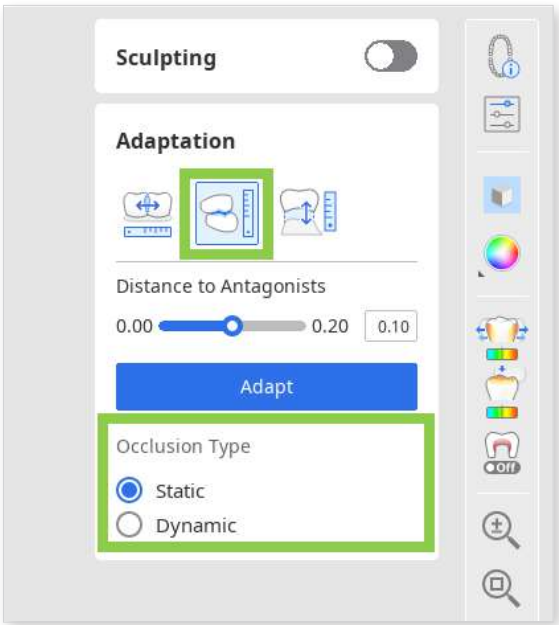


- If your bridge has a pontic, you can adjust its distance to gingiva using the Adaptation Tools in this step.

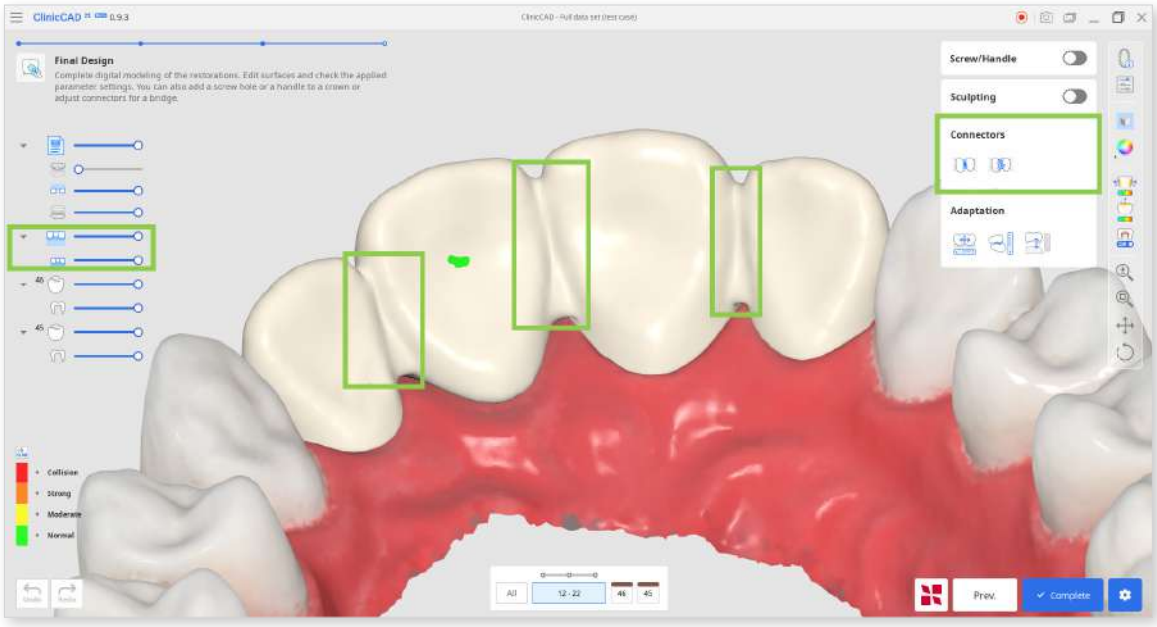
  Choose the “Adapt to Gingiva” feature, set the desired distance, and click “Adapt.”



- If dynamic occlusion data was imported, you can choose whether to adapt to antagonists based on ‘static’ or ‘dynamic’ occlusion.

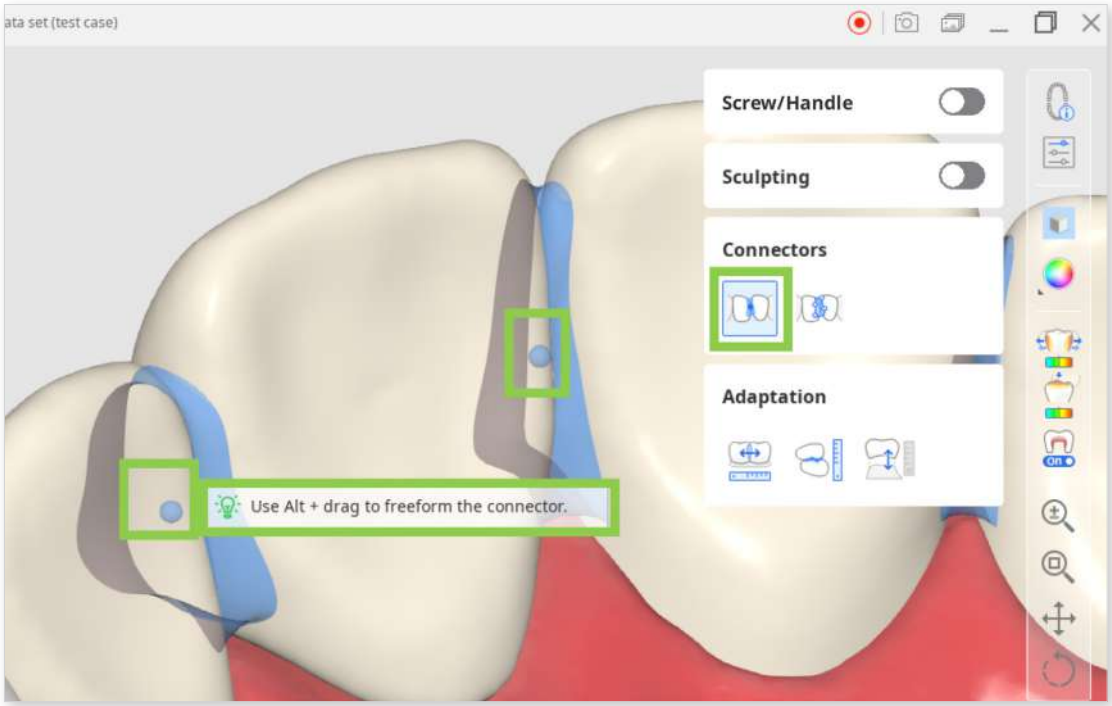


4. If you are working on a bridge, the data of each individual element will be combined into one by adding connectors. Edit the connectors using the “Move” or “Edit” tools.



- When using ”Move,” drag the center point of a connector to readjust the connector’s position and cross-section area automatically.

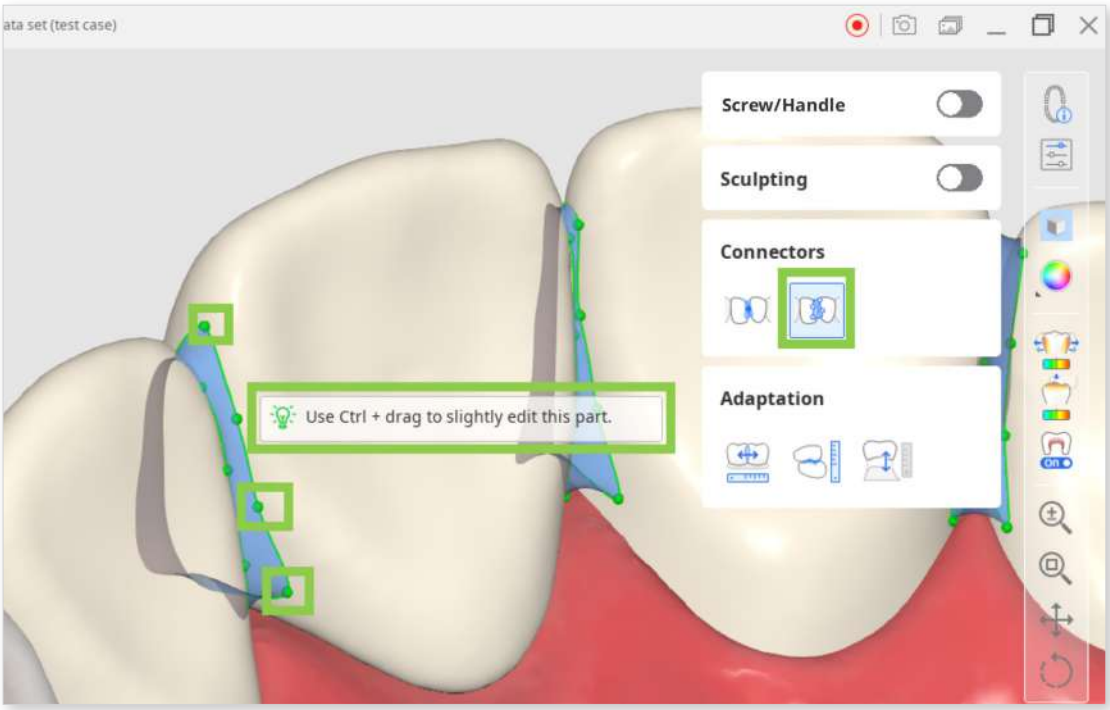
> Hold down Alt/Option to quickly freeform the connector with a mouse.



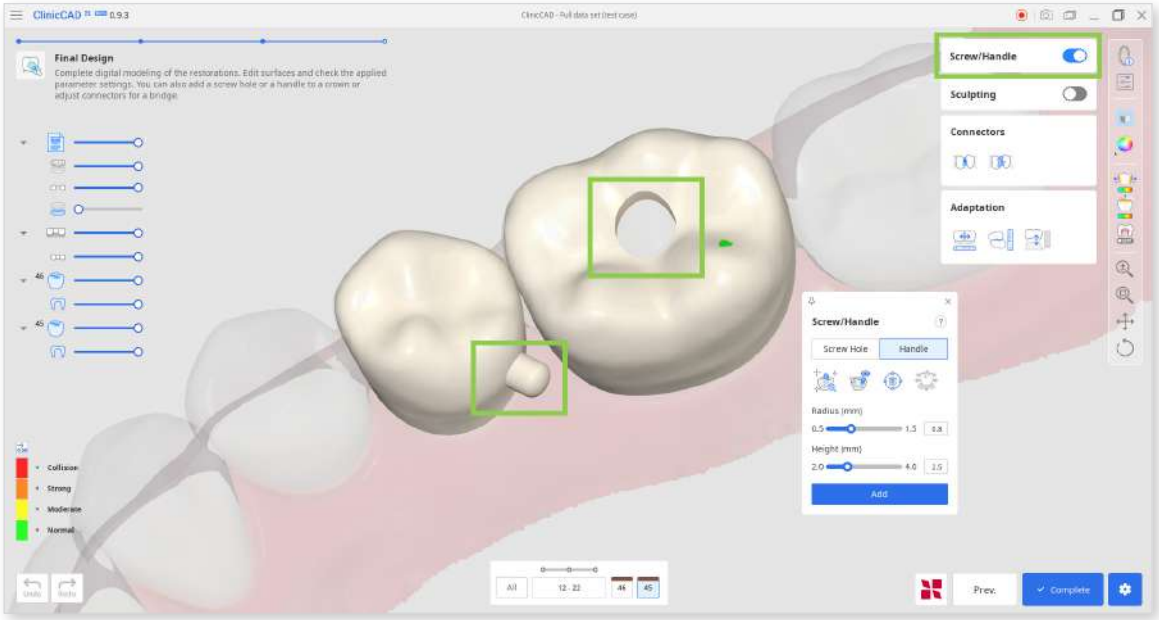
- When using ”Edit,” margins of the connector on both teeth will appear. You can reshare the connectors by editing those margins.

  Similar to editing the tooth’s margin line, click to add a point, right-click it to delete, and drag the points to move.

  > Hold down Ctrl to quickly make minor changes in the margins.

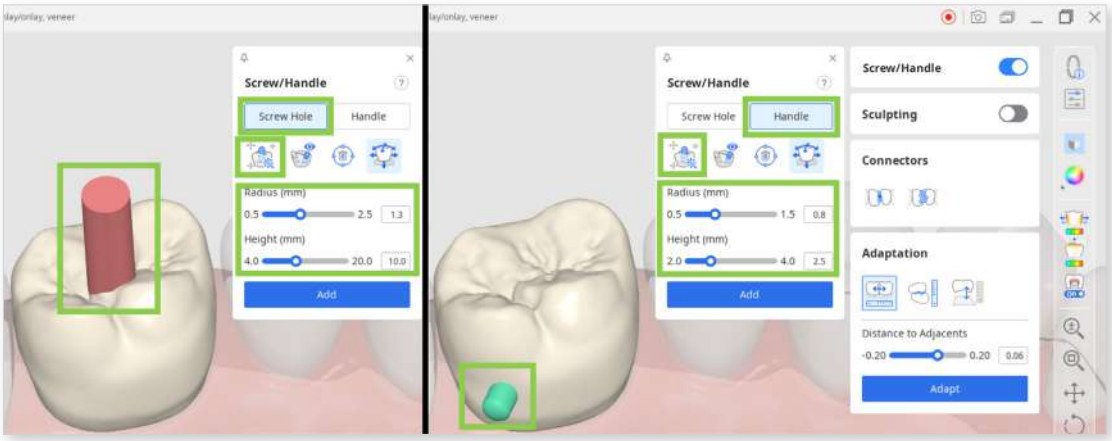


5. If you are working on a crown design, you can add screw access holes or handles with “Screw/Handle.”



- Start by choosing what element you want to add and click “Auto Set.” This will automatically place the cylinder for creating an element in the most optimal place - handle on a lingual side and hole in the center. Then, adjust the radius and height of the cylinder below and click “Add.”

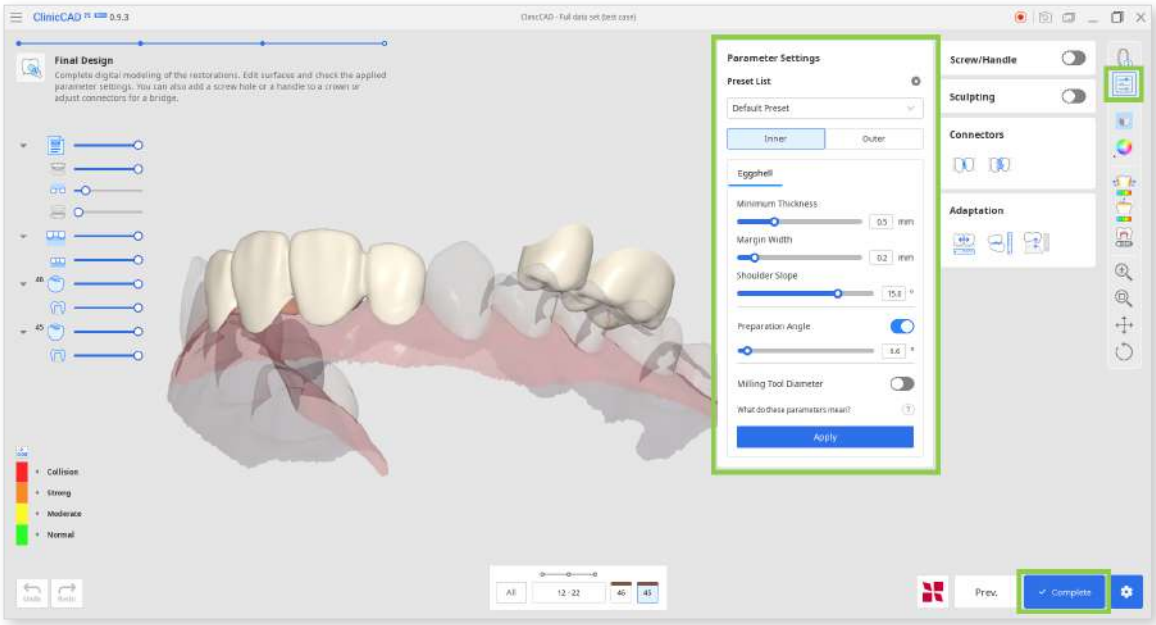
> The cylinder for creating an element can also be placed manually in your chosen spot with a double-click.



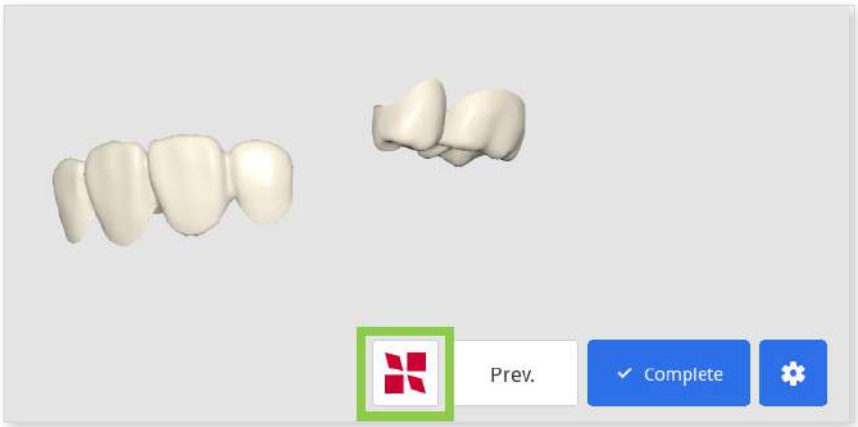
- You can also quickly move the cylinder around with a “Move” tool and change its direction by rotating the data and then setting it to your view with “Set Toward You.”

6. Lastly, review the inner and outer parameters in “Parameter Settings” before saving your design and sending it to printing.

   To save your restoration designs, click “Complete” at the bottom right corner.



7. If you have a SprintRay 3D printer, you can transfer your restoration design from this step right into the RayWare Cloud. For this, use the “Print with SprintRay” at the bottom and follow the guidance on the screen. You must already have a RayWare Cloud account to use this feature.



⚠ If you encounter difficulties connecting to RayWare Cloud, please refer to the following troubleshooting guidelines:

- check your internet connection
- verify your login credentials (username and password)
- review your restoration design

If the issues persist, please reach out to SprintRay support.

Appendix

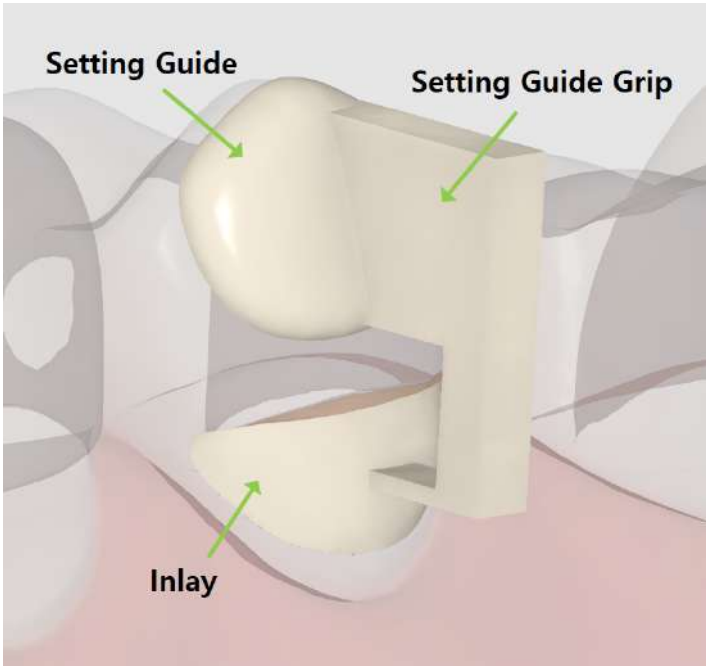
Designing Cervical Inlay

In Medit ClinicCAD, you can create inlays for treating cervical abrasions; we refer to them as 'cervical inlays.'

There are several reasons why inlays may be more advantageous than resin fillings:

- more secure bond in areas of extensive cervical loss
- less discoloration over time
- more durable than traditional fillings
- eases and shortens the treatment process

The final design of a cervical inlay includes three components: an inlay, a setting guide, and a setting guide grip.



The setting guide and the grip are designed to assist restoration placement and can be easily removed afterward. The setting guide is an obligatory element that is created automatically about 1 or 2 mm from the abrasion area. If needed, you can modify it by editing its margin. The setting guide grip is optional and can be added atthe final step.

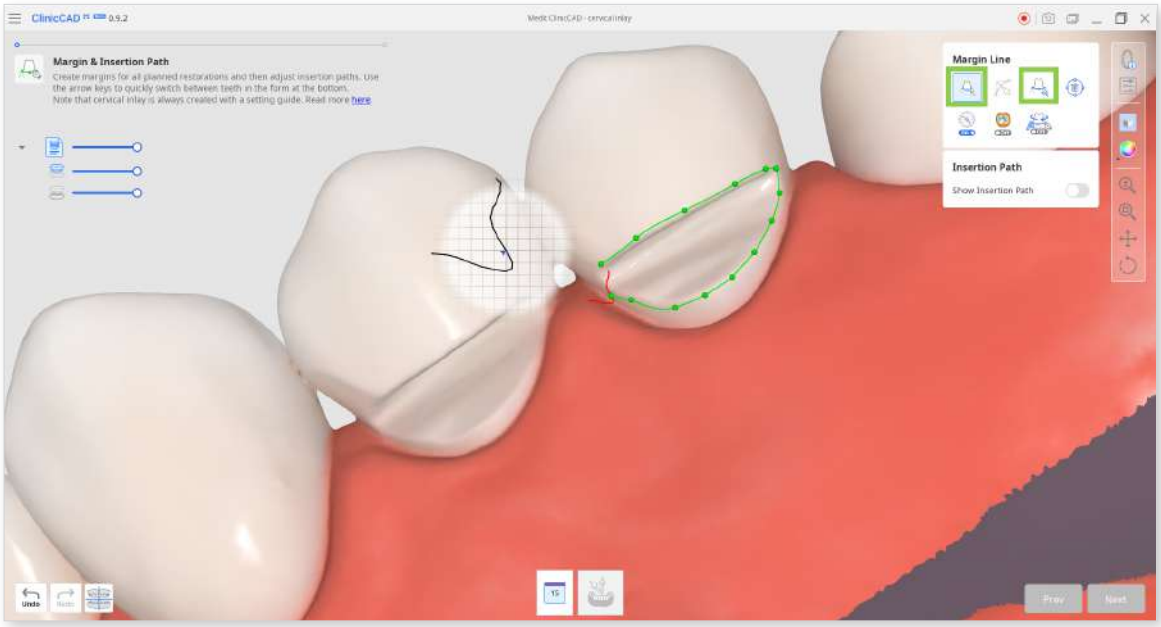
The cervical inlay workflow includes only 2 steps: **Margin & Insertion Path** → **Final Design**.

1. To begin, register your inlay as "Offset Substructure" in the Medit Link form*. Then, run the app and select the Prepared Data module.

This is a temporary solution until the official app release.

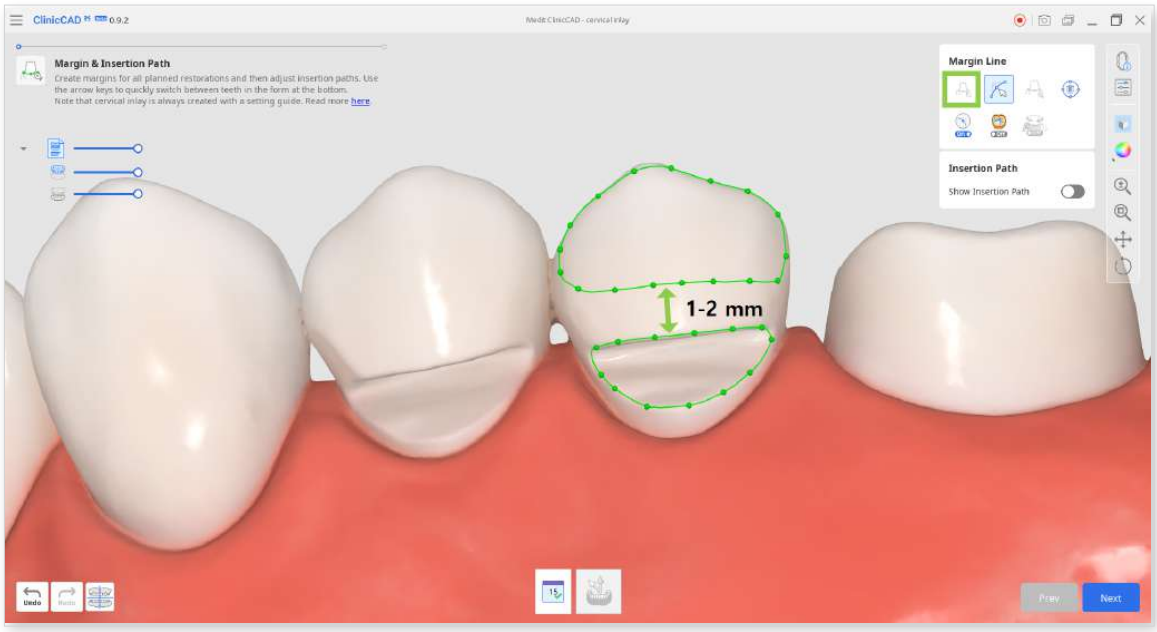
2. In the first step, draw a margin for the inlay using the “Auto Creation” or “Manual Creation” tool.

   ”Auto Creation” draws a margin based on one clicked point; “Manual Creation”draws a margin based on multiple points.

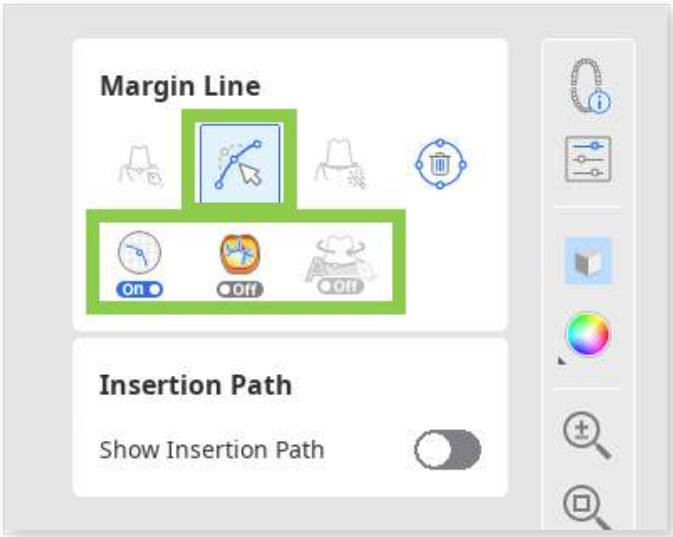


3. The setting guide margin will be created automatically.

   If automatic creation fails, manually draw the setting guide margin, leaving about 1 or 2 mm between the two.

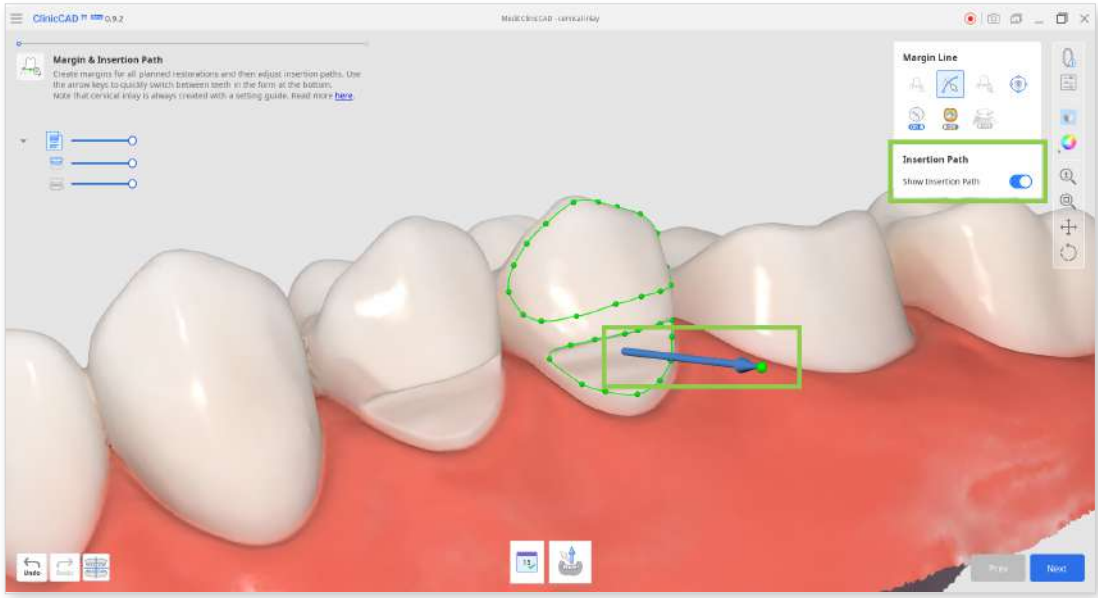


- If needed, edit the created margins with the “Edit” tool. Utilize the other provided margin line tools to assist you in creating a more precise margin.

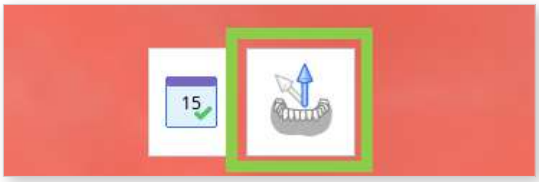


When editing, hold down the Ctrl/Command key and drag the mouse to make minor freehand corrections quickly.

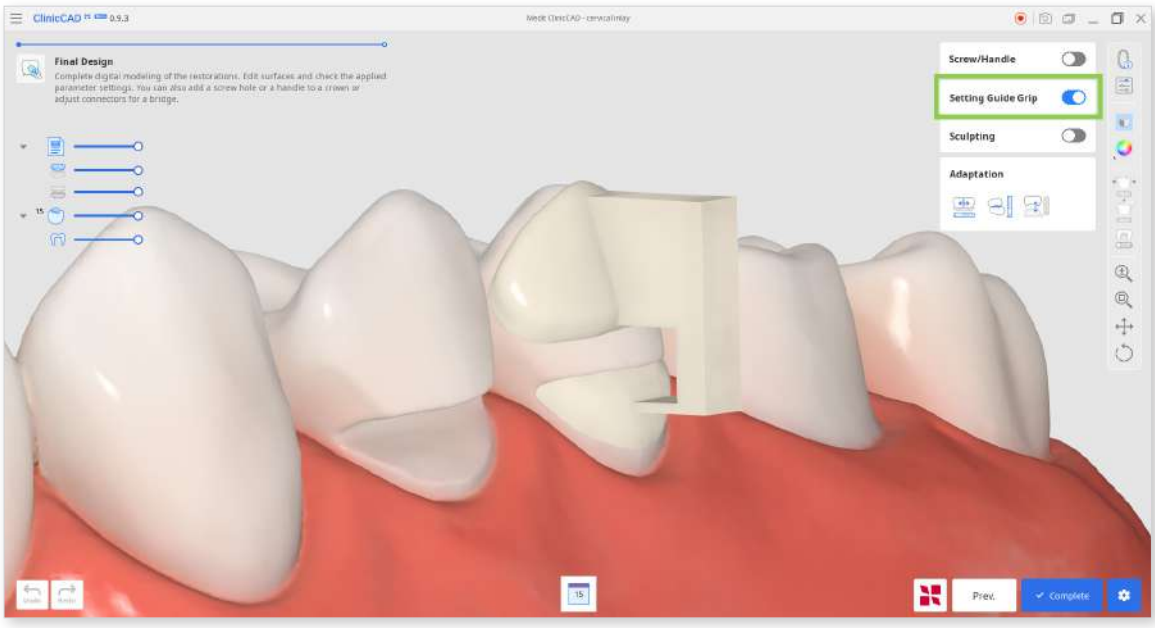
4. After the margins are created, the insertion path arrow will appear. Adjust it to face toward you by dragging it with a mouse and click "Next."



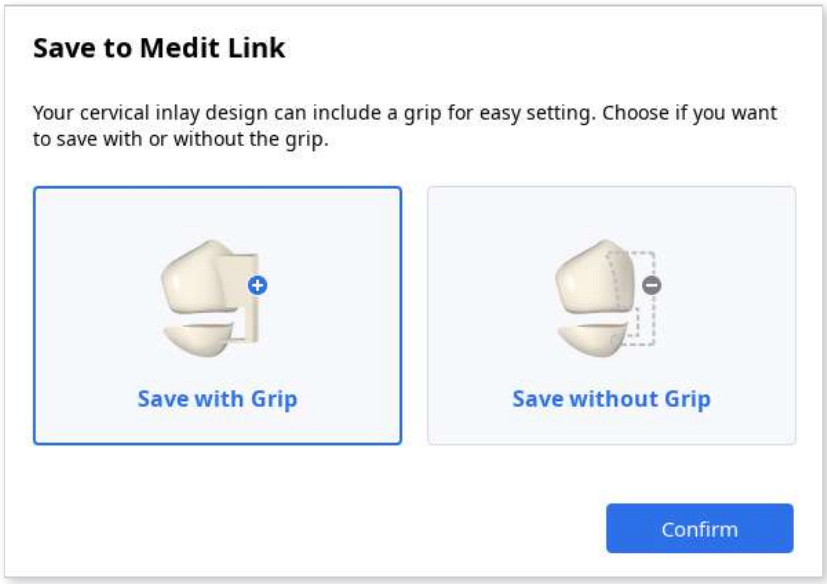
- Alternatively, you can rotate the 3D data and click “Set Arrow to Your Viewpoint” at the bottom.



5. In the next step, you can add the grip that will assist holding the inlay design when setting. For this, turn on "Setting Guide Grip" on the right. Or you can substitute the grip for supports later in your printer software.



6. Click "Complete" to save the inlay design. The app will double-check with you on the grip.



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