



Digitally Designed Surgical Guide. Step-by-Step Protocol

OVERVIEW

A surgical guide can be fully digitally designed in the Blue Sky Plan software. The surgical guide can be designed to work with all implant systems and all guided surgical templates. The completed surgical template can be exported as an STL file ready for printing in a 3D printer.

Guides can be digitally designed and fabricated based on an optical / stl / ct scan of a stone model, or based on a CT scan of scan appliance.

PROCESS

1) Create Production Version.

After the treatment plan is finalized, the BSP case should be duplicated and renamed to create a "production" version of the treatment plan. This leaves the actual treatment plan files unchanged.

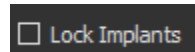
2) Select Input Model

Select the relevant model or scan appliance to be used as the base of the surgical guide fabrication from the "Input Model" drop down list.



If a guide is being designed based on a CT scanned model see note at the end of this document.

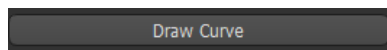
Select the "Lock Implants" check box so that the implants do not move during guide design.



3) Drawing Curve (skip this step for scan appliance based surgical guides).

It is useful to enlarge the 3D view to fit the screen as well as to hide all other surfaces / elements besides the guide tube.

- Select the relevant jaw type button Maxilla / Mandible.
- Press the "Draw Curve" button. Hold down the shift key and use your left mouse button to draw a curve around the area which should be covered by the surgical guide. Releasing the shift key during the drawing will allow the model to be rotated using standard mouse control. Close the curve by drawing the curve until it returns to the starting point.





- Press the "edit curve" button and use your left mouse button to fine tune the curve placement, remove any sharp points, zig-zags, or cross overs which may have been created.
- Select "Remove Undercuts" if you would like the undercuts removed from the surgical template.

4) Fabricate Guide

Select "Use automatic Brush" if you would like the software to automatically make sure there are no parts of the surgical guide which are higher than the top of the surgical guide tube with X mm diameter (can be set using the "Diameter" slider) of the guide tube hole.

Press "Fabricate on Model" to fabricate a surgical guide based on a model scan

OR

Press "Fabricate on Scan" to fabricate a surgical guide based on a scan appliance.

5) Edit and Label Guide

The brush tool can be used to shave or reduce parts of the surgical template.

The label tool can be used to emboss text into the surgical template. Text should be typed into the box, and "Show Label" will make the text appear on the screen. The size and positioning of the embossed text can be controlled by moving and enlarging / shrinking the surgical template.

During the use of both tools, confirm that the proper surface (i.e. the new surgical guide) is selected from the relevant drop down lists.

6) Export Data

Export the imported stone model together with the implant, abutment and guide tube to an STL file and print it on a 3D printer, or mill it in a milling machine.

7) Insert Metal Guide Tubes

Slide the relevant metal guide tubes onto the pins such that the top of the guide tube is flush with the top of the post.

In some situations the guide fabrication functionality will not work properly based on a ct scanned model. In such a situation, export the model from the software as an STL file, re-import it and continue with guide design based on the newly imported stl model.