

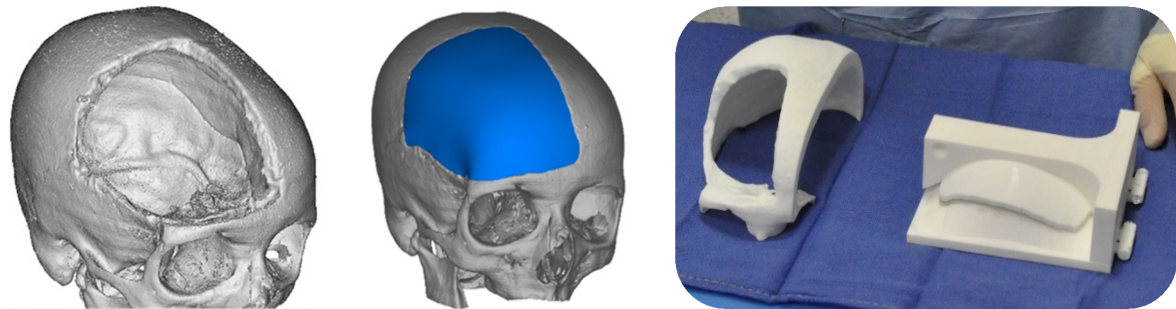
## Frontal skull defect of large surface area

**CHALLENGE** : Frontal reconstruction of a skull defect with a large surface area (102 cm<sup>2</sup>).

### PRE-OPERATIVE PLANNING

The patient presented a large cranial defect with a surface of 102 cm<sup>2</sup> and open sinuses. After receiving the scans via our *Customize* web platform, our engineers designed the implant that would perfectly fit the hole in the patient's skull. The software allowed to reproduce the anatomical model of the patient.

With the *Customize* software platform, the 3D planning and implant design were completed in the shortest possible time, with the highest degree of accuracy. After the surgeon's validation of the design, the manufacturing team produced the implant mold and patient bone model in-house through 3D printing before post-processing and shipping them to the hospital for sterilization. Everything was ready for surgery less than a week after the surgeon uploaded the images on the platform.



### SURGERY

During the operation, the implant was made out of PMMA (bone cement) using the 3D-printed mold, before the surgeon's incision. Once the implant had solidified (approximately 15 minutes), it was placed on the sterilized bone model to test the fit and then fitted on the patient's skull, on which it adapted perfectly, needing no modification by the surgeon. Amongst all possible fixation methods, Dr. Reuter chose to use titanium osteosynthesis mini plates.

This technique allowed the patient's skull to recover and regain its original anatomical shape, so the harmony of the face could be restored.

