



3D Printing helps in Cranioplasty reconstruction

Case Study | Healthcare

Case Background

Dr. Amit thotakura, a neurosurgeon based out of Vijayawada, operates on many patients daily and always on the lookout for better ways to improve accuracy and efficiency. In this pursuit, he opted for using 3D Printing for a case which involved reconstructing bone flap on either side of the skull. Dr. Amit decided to get an accurate surgical template based on the profile of the patient skull, on which he wants to create the flap with bone cement.

Challenges

In Cranioplasty, the skull needs to be repaired after trauma, and involves tumor removal and/or correcting congenital irregularities.

Surgical Molds plays an important role in reconstruction surgeries. The accurate the mould is the better is the fit.

The surgeon needs to adjust the shape in the operation theatre to fit to the patient. Achieving right shape and size in the limited time available with minimal number of iterations is always a big constraint to work with.



“3D Printing helps in accuracy and better matching with profile of the bone”

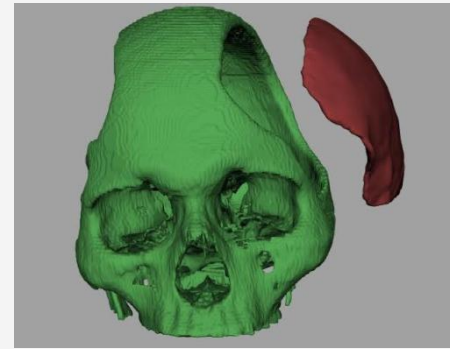


Solution & Execution

- think3D team created the accurate 3D virtual model of the affected area was created from the Dicom images.
- The part for which the mold needs to be manufactured was generated using modeling software.
- The virtual model was signed off by the doctor through email.
- A 3D printed template (mold) was created using additive manufacturing technique and sent to the hospital

Results

Dr. Amit's team prepared the bone flaps for either side of the skull, with the help of the 3d printed template. On top of the teamplate, bone cement structure was created that matched with the remaining skull profile perfectly. The patient recovered well from the surgery. 3D printing helped the surgeons in arriving at an accurate mold with yields good fit and aesthetics, as the solution is patient specific.



“Accurate molds can be developed with 3D Printing as they are based on the patient’s MRI/ CT scan images.”



Contact Us



If you are looking for any help in using 3D printing healthcare, or for patient specific molds/ templates/ guides, feel free to get in touch with our team



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