

MEDICINE 🖓

3D print of the anatomical model of the skull

Company

PrintMed 3D is a company that designs and prepares 3D models that are used for medical purposes.

Project

Design and print of the anatomical model of child's skull with the hydrocephalus – preparation to the implant placement surgery.

Project data

3D print	Part of a skull
Use	Preoperative planning
Material	ABS + ESM-10
3D printer	3DGence INDUSTRY F340

	3D printing	Medical 3D imaging, design, injection molding
Time	30h	200h
Cost	710 £	5 900 £

3D printing is increasingly used in medicine and allows for detailed planning of operations. This makes it possible to select the appropriate operating technique, discuss it in the team and shorten the time of the procedure itself.



Model of the skull was 3D printed with ABS and soluble support material ESM-10.

Detailed surgery planning

Goals:

Pre-operative anatomical models allow to shorten the time of the operation and give the possibility of precise planning of the implantation. Lack of the model would increase of the complications risk or other unexpected situations. The use of the 3D printer enabled the doctors to prepare for the operation very well. They could plan the various stages of the surgery before it was performed.

2 Accurate reproduction of the skull in a 1:1 scale

The model preparation would be hardly achievable in any other technology than 3D printing. Medical 3D imaging, design, injection molding could take up to two weeks and cost would be out of the reach of the clinic. The cost of the design and 3D printing of highly complex model of skull was only 710 £ and the process took 30 hours.



The uncertainty of the child's parents regarding the surgery course could've negatively influence their decision of surgery attempt. Postponing the operation may have had a negative impact on the child's health. Thanks to the 3D partial model of the skull the doctors have explained in detail the scope of the surgery, and easily received the parents' consent for the surgery.

Pre-operative model verification.



It took 30 hours to print the skull model on a 1:1 scale.



77 Only the FDM technology gives the possibility to produce the anatomical models with limited budget and in short timeframe.

Andrzej Zdrojewski, PrintMed 3D





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