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RAPID MANUFACTURING OF INDIVIDUALIZED SUPPLIES FOR EYE SOCKET RECONSTRUCTIVE SURGERY

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The progressive development of medical technology and medicine allows to increase the level of personalization of medical procedures and implement an individual approach to each case and patient. Adjusting the treatment to a specific patient translates into improved convalescence, shortening the time of surgery and increasing the confidence of doctors. As a result, general level of safety of the treatment procedure is higher. The implementation of solutions in the field of 3D printing and rapid prototyping enables the doctor to support the process of pre- and intraoperative preparation, especially in the area of reconstructive procedures. The case presented in the article concerns a middle-aged man who suffered severe injury of his right eye socket, as a result of which his eyeball was lowered. Rapid prototyping methods were used to improve the quality of the surgical procedure consisting in eyeball lifting and reconstruction of the craniofacial fragment. Using digital reconstruction techniques based on medical imaging, as well as SLA technology, models of eye sockets were produced, representing the actual state with the damage and the target state after reconstruction, based on a mirror image of an undamaged left eye socket. The mirror model allowed for the correct bending of the titanium plate before the actual procedure, so it was not necessary to interfere with the shape of the implant in the patient's eye cavity. The prepared models were sterilized and used during the procedure. The results were positively assessed by the surgeons performing the reconstruction.