THE CHALLENGE

In implantology the need for additively manufactured customized bone substitutes is growing fast. Cost-efficient and precisely fitting medical devices must be available fast. In this special case, a patient suffered a traumatic brain injury which was treated with decompressive craniectomy, a procedure which in turn necessitates cranioplasty. FIT Production had to supply a titanium implant to repair the cranial defect in short time, with process steps ranging from engineering to prototyping, manufacturing and fast delivery.

OUR SOLUTION

Making full use of their additive design and manufacturing know-how, FIT's ADM engineers were able to build lifelike models of the remaining bone, as well as the intended implant from 3D data. In this manner the appropriate fit of the implant could be verified and official approval for the final implant could be given. With the help of a high-end software solution the implant was designed to fit accurately into the surrounding bone material, embodying organic structures like an asymmetric shape and varying wall thickness. Titanium, a qualified material for artificial bone implants, is highly biocompatible and is best manufactured additively.

YOUR PRODUCT

This example of an ADM solution for cranioplasty includes all steps from data design, design approval, manufacturing and delivery. An excellent product could be created while development time and cost were significantly reduced. Production at FIT has been certified according to EN ISO 13485 and is fully compliant with FDA requirements. In conjunction with the innovative design, legal clearance for the procedure was given. Due to the precise fit of the device, the operation took only two hours instead of the usual four hours. The patient was released to rehab only one week after the operation, compared to the usual months spent in hospital after such an accident. There has been no infection, and the patient has regained most of his mobility.

EXTREMELY SHORT TIME-TO-MARKET

EXCELLENT FIT

GOOD BIOCOMPATIBILITY OF MATERIAL (TITANIUM)

COSMETIC ISSUE: NATURAL SHAPE OF THE HEAD RESTORED

FUNCTIONAL ISSUE: PROTECTION OF THE BRAIN FROM INJURY

SHORT OPERATING TIME

FAST RECOVERY OF PATIENT

RE-ESTABLISHED NATURAL LOOK