

ADDITIVE MANUFACTURING 3D PRINTING METAL

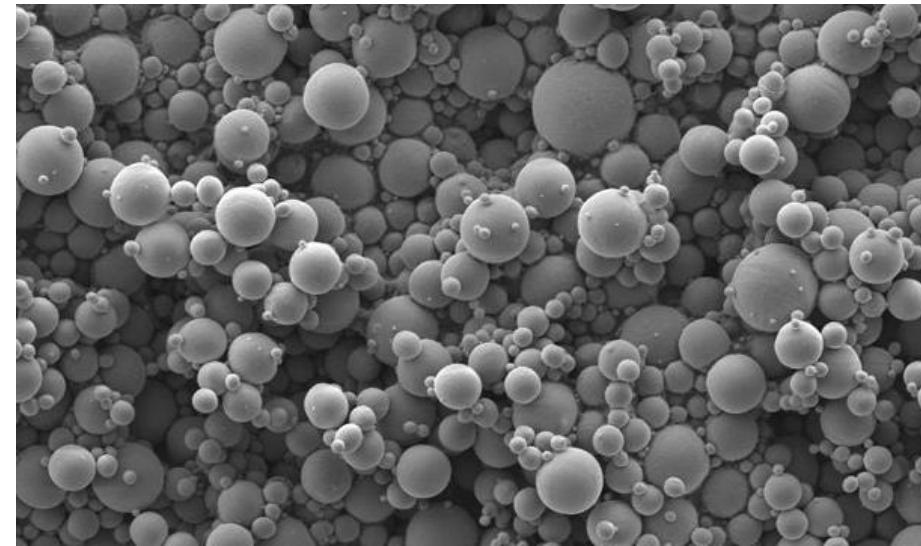
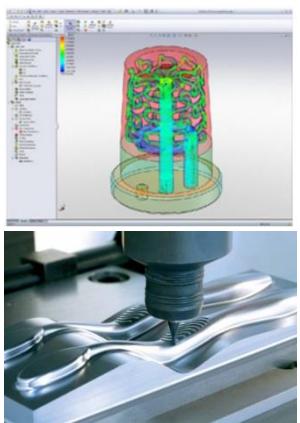
3D PRECISION SA

Fabrication d'implants sur mesure: cas pratique
Manufacturing of custom implants : practical case

Dominique Beuchat
CEO et fondateur/founder

Competencies

- Additive manufacturing – from design up to finishing with our own facilities
- Experienced team – located in Delémont - Switzerland
- Well-known customers - multiple sectors (machines and measuring systems, medical, watches, ...)
- Quality management system ISO9001 and ISO13485



Main alloys

- Titanium
- Aluminum
- Stainless steel
- Maraging steel
- Cobalt-chromium
- Copper and tungsten





Dominique Beuchat, CEO
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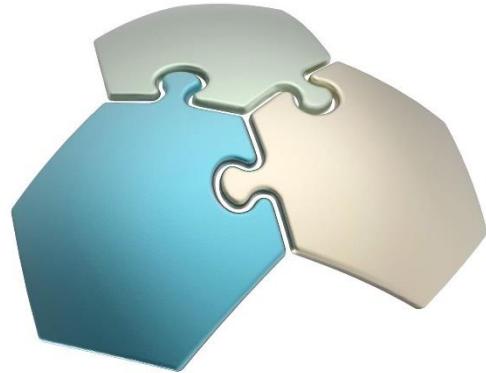
Production equipment

- CAD
- 3D scanner
- „Selective Laser Melting“ machines
- CNC milling machine
- 3D measuring system
- heat treatment furnace, microblasting and sandblasting, tribofinition, ultrasonic washing, ...



CUSTOM IMPLANTS : THE PARTNERS

Ad Mirabiles
mesmerizing implants



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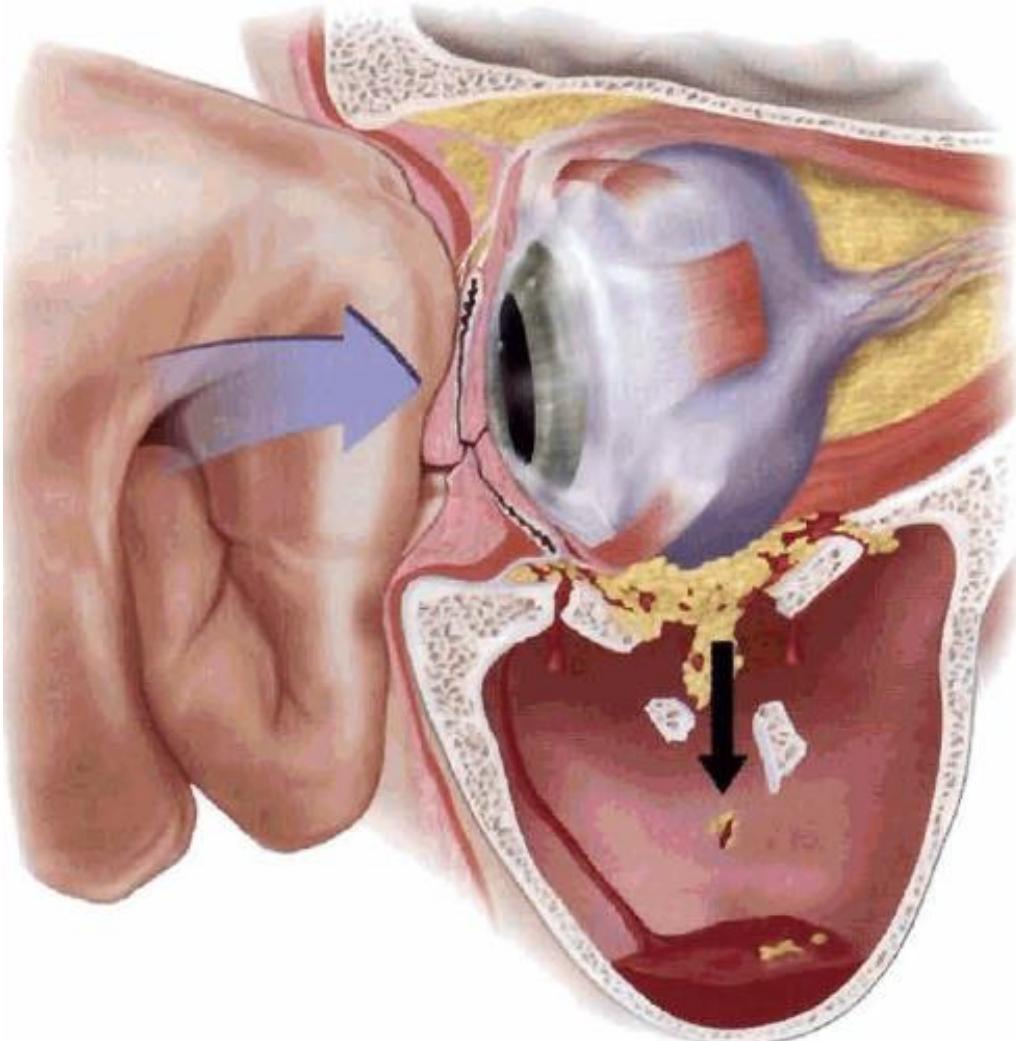


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CUSTOM IMPLANTS : THE TRAUMA CASE



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Source : The Journal of cranio-maxillofacial trauma – February 1999

Mains causes :

- Accidents (vehicles, bicycles, tennis..)
- Fist punch
- Fall
- Assault
- Other...

CUSTOM IMPLANTS :

THE GOAL – STEPS AND TIMING

Day 1
**Accident
CT Scan**

Day 2
**Design of
Implant**

Day 3-5
**Manufa-
cturing**

Day 6
**Cleaning
Sterilization**

Day 7
Operation

CUSTOM IMPLANTS : ENVIRONMENT



**ISO13485
CERTIFIED
ENVIRONMENT**

**SKILLED
PEOPLE**

RISK ANALYSIS AND MANAGEMENT OF THE RISKS

**QUALITY
CONTROL**

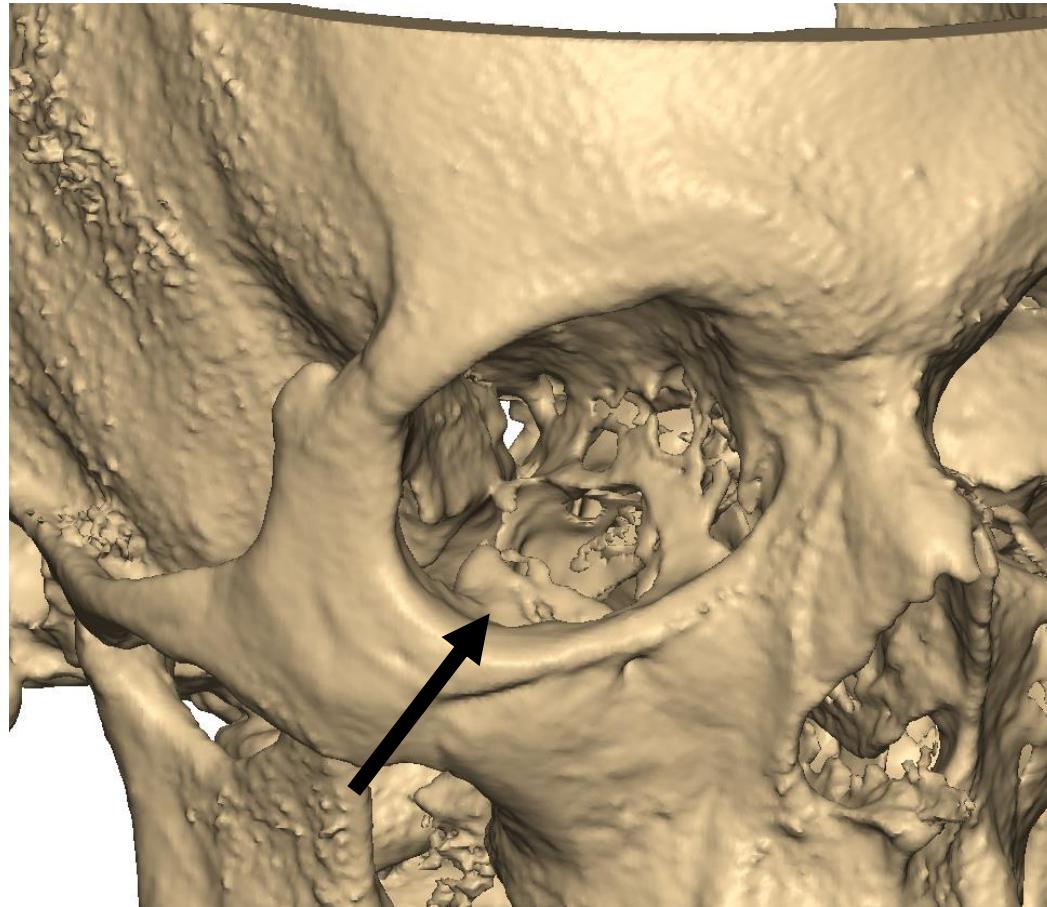


IQ/OQ/PQ

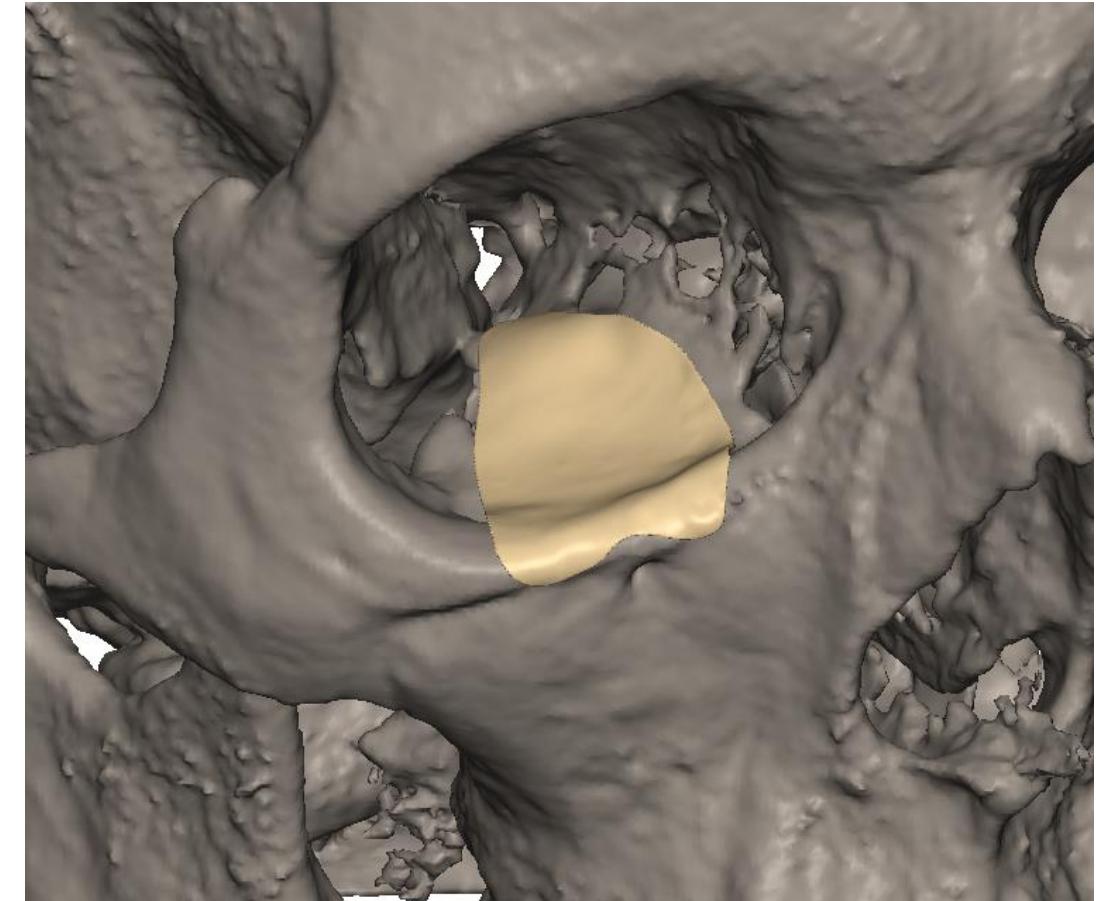
**SECURED
PROCESS**

CUSTOM IMPLANTS : CT SCAN AND DESIGN

**CT Scan – is situation
(hospital)**



**Design of the implant
(hospital or AdMirabiles)**



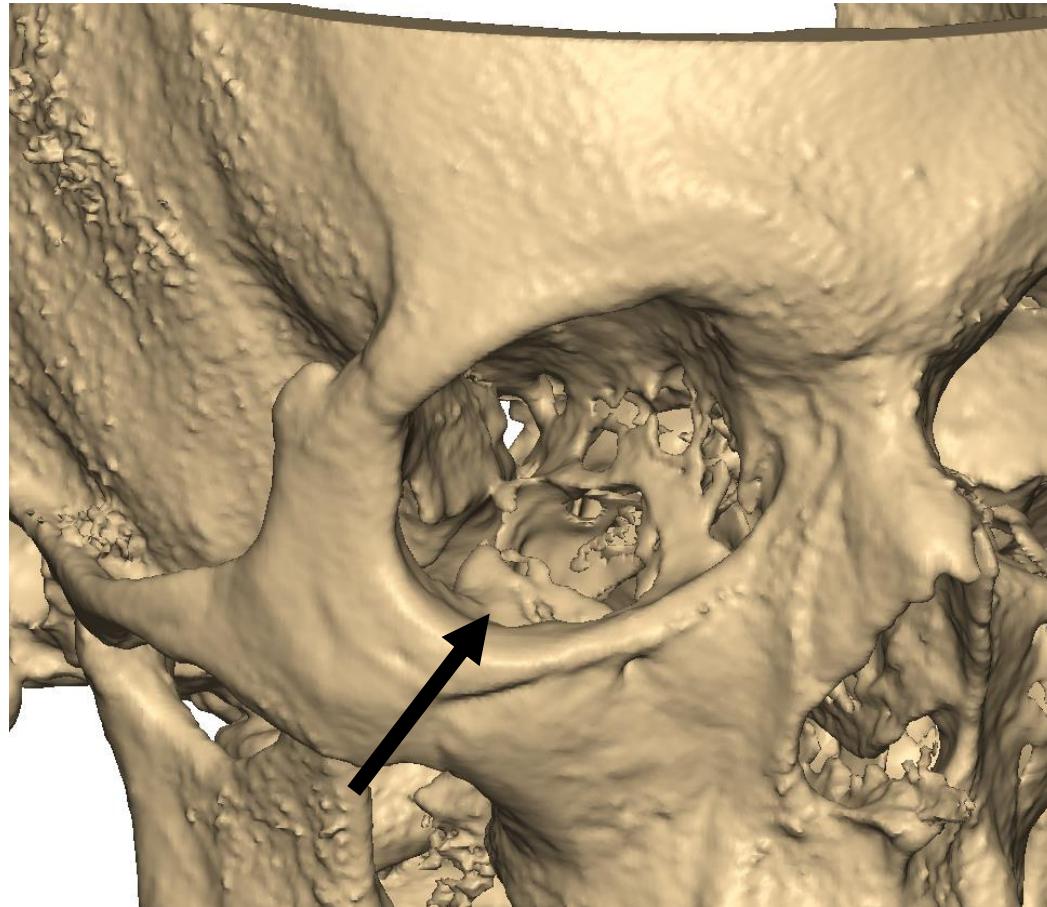


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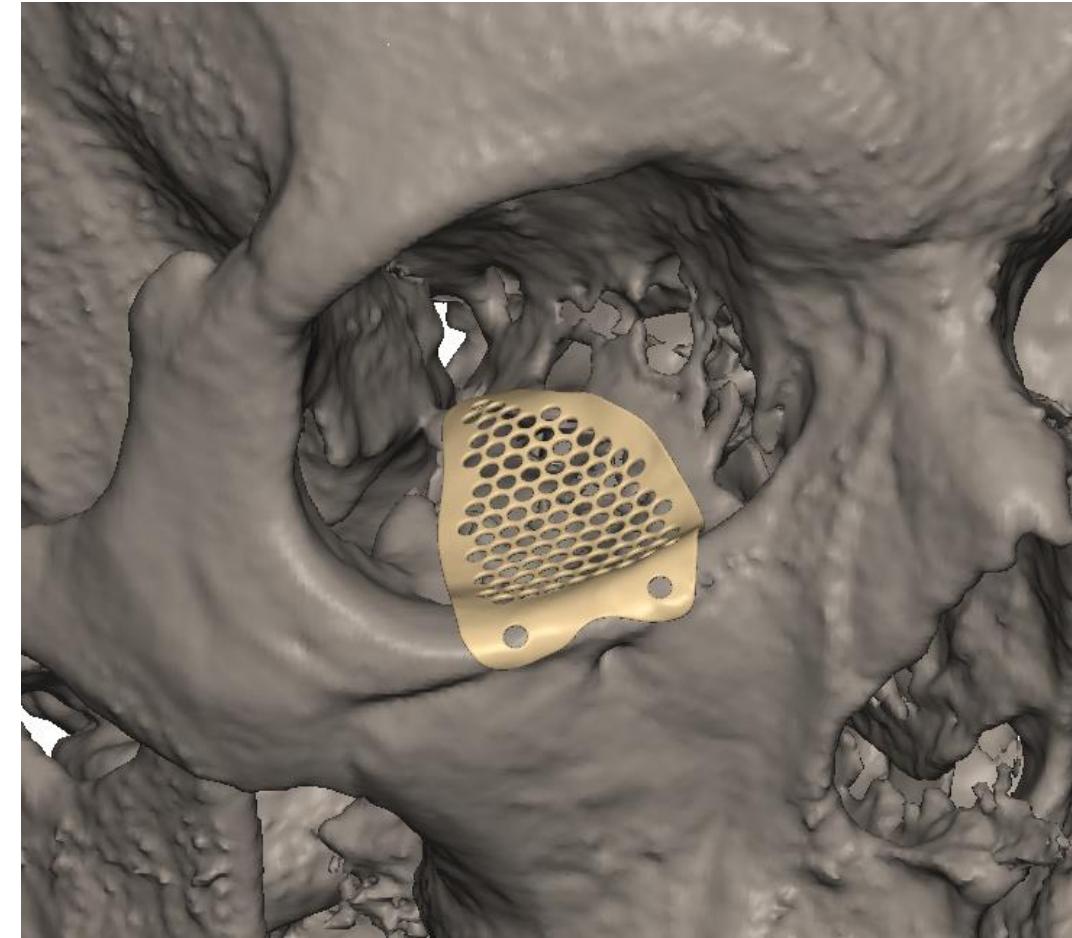
CUSTOM IMPLANTS : CT SCAN AND DESIGN



**CT Scan – is situation
(hospital)**

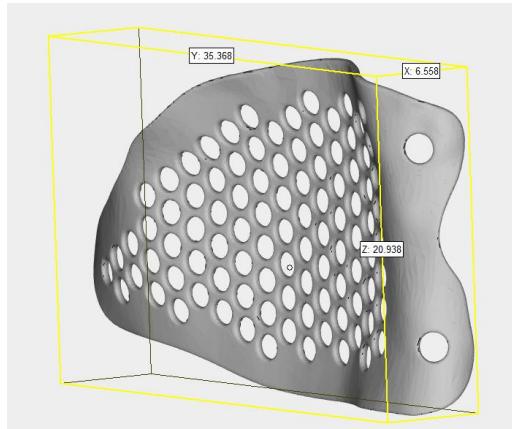


**Design of the implant
(hospital or AdMirabiles)**

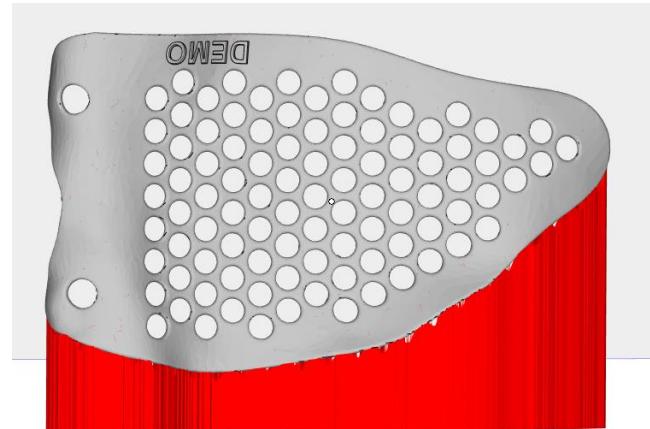


CUSTOM IMPLANTS : PREPARATION AND MANUFACTURING

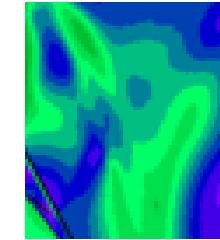
Designed implant



Preparation for the
additive manufacturing



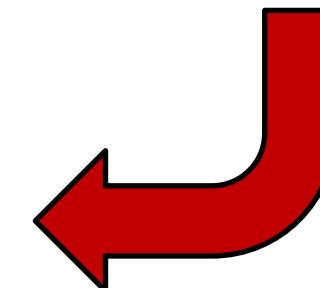
Deformation : simulation
and pre-deformation



  Amphyon



Manufacturing
- powder bed
fusion
- Pure titanium

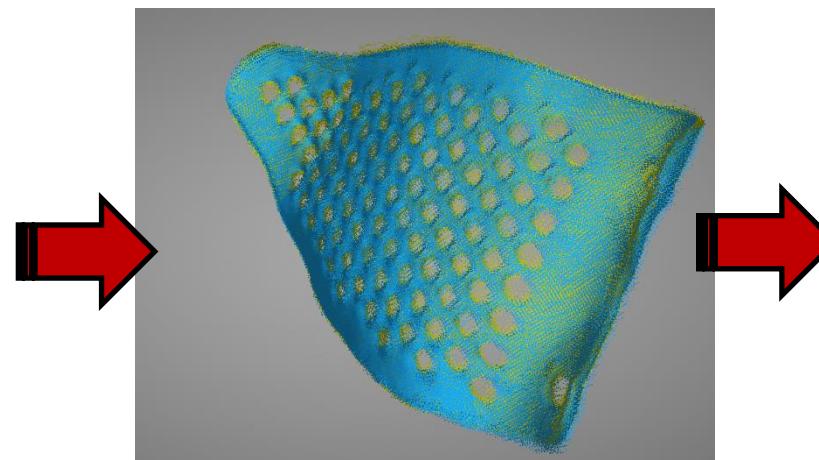


CUSTOM IMPLANTS : FINISHING - TESTS – CONTROLS – POST-TREATMENT

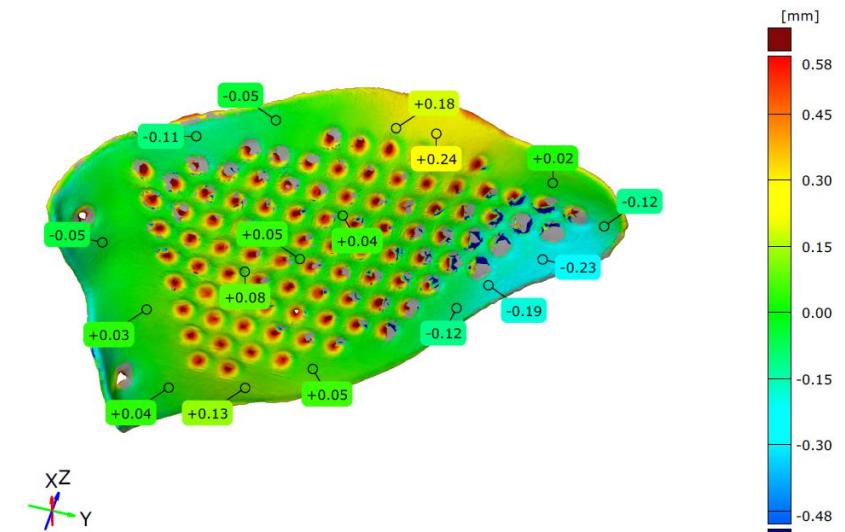
Raw implant



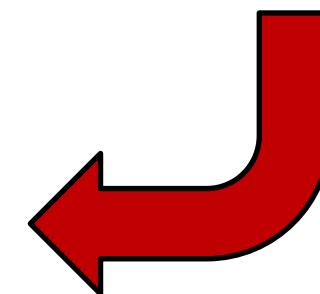
Scanning



Tests and dimensional control



Washing, surface treatment, sterilization and packaging



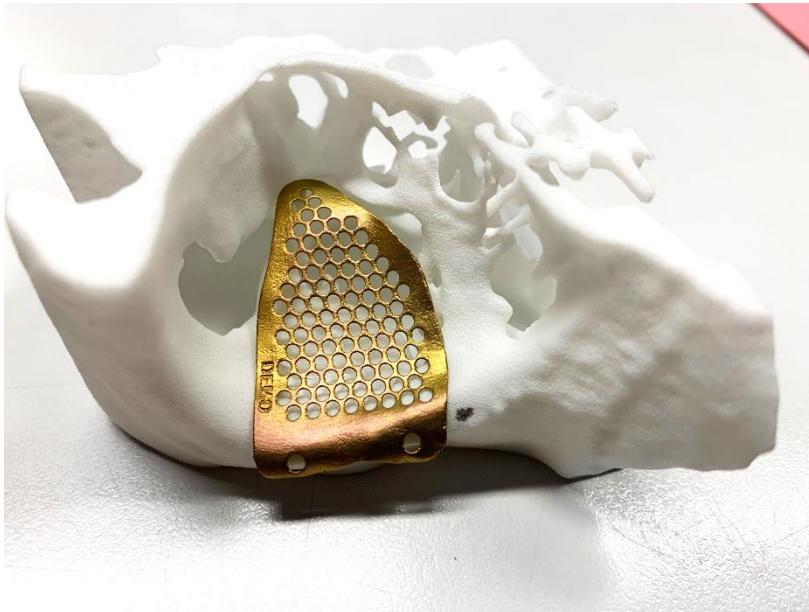


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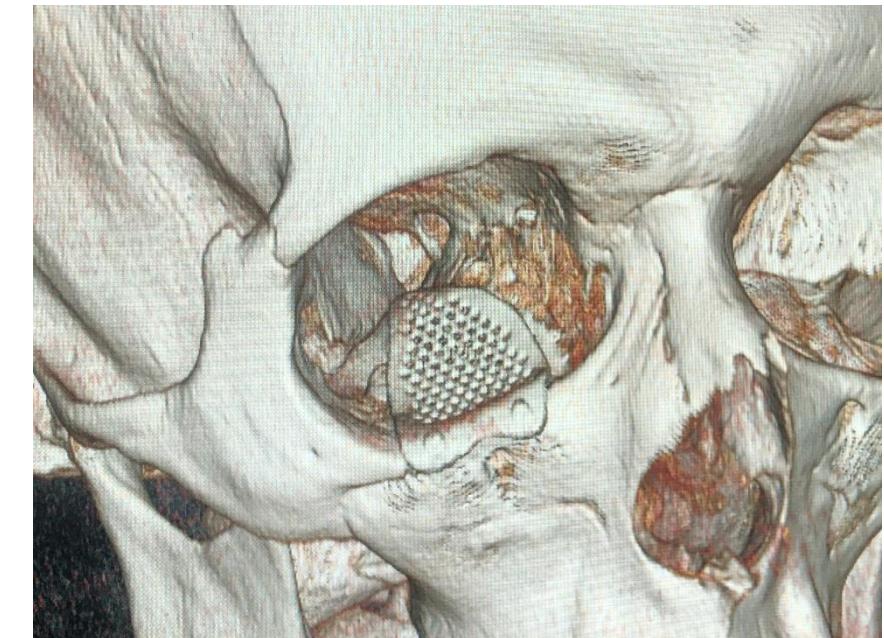
CUSTOM IMPLANTS : OPERATION



**Implant before
operation**



Operation





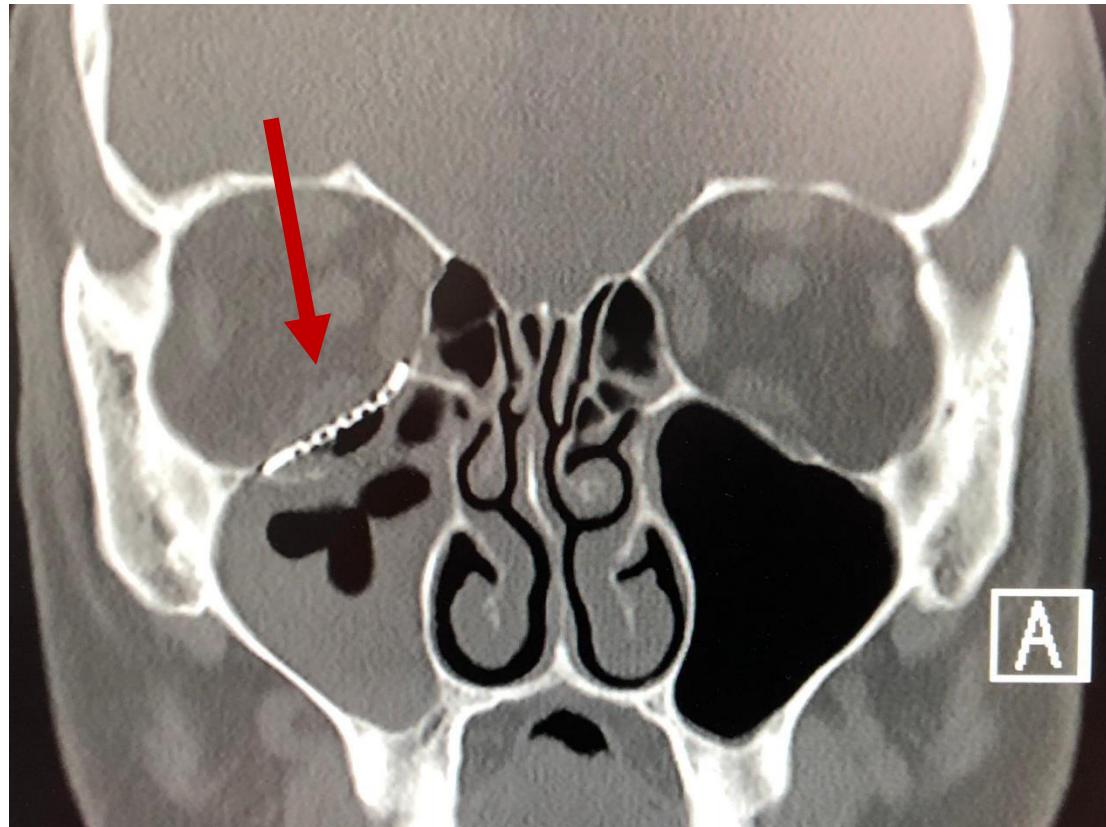
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CUSTOM IMPLANTS : PREPARATION AND MANUFACTURING



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Control post-operation





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CUSTOM IMPLANTS :

BENEFITS



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CUSTOM IMPLANTS

THANK YOU FOR YOUR ATTENTION



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