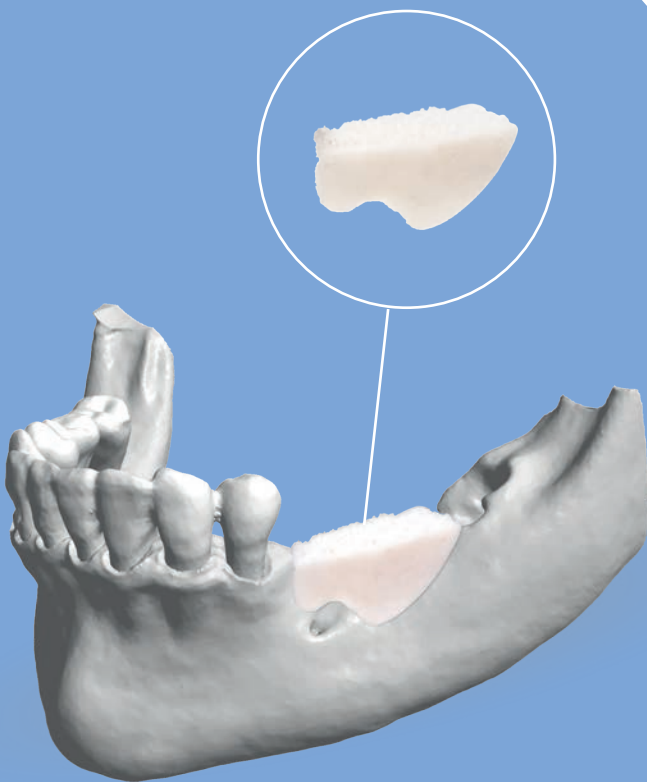




BIOBANK INNOVATION
THE CUSTOMIZED BONE GRAFT



THE CONCEPT

A CUSTOMIZED BONE GRAFT FOR BONE APPOSITION !

BENEFITS FOR THE SURGEON

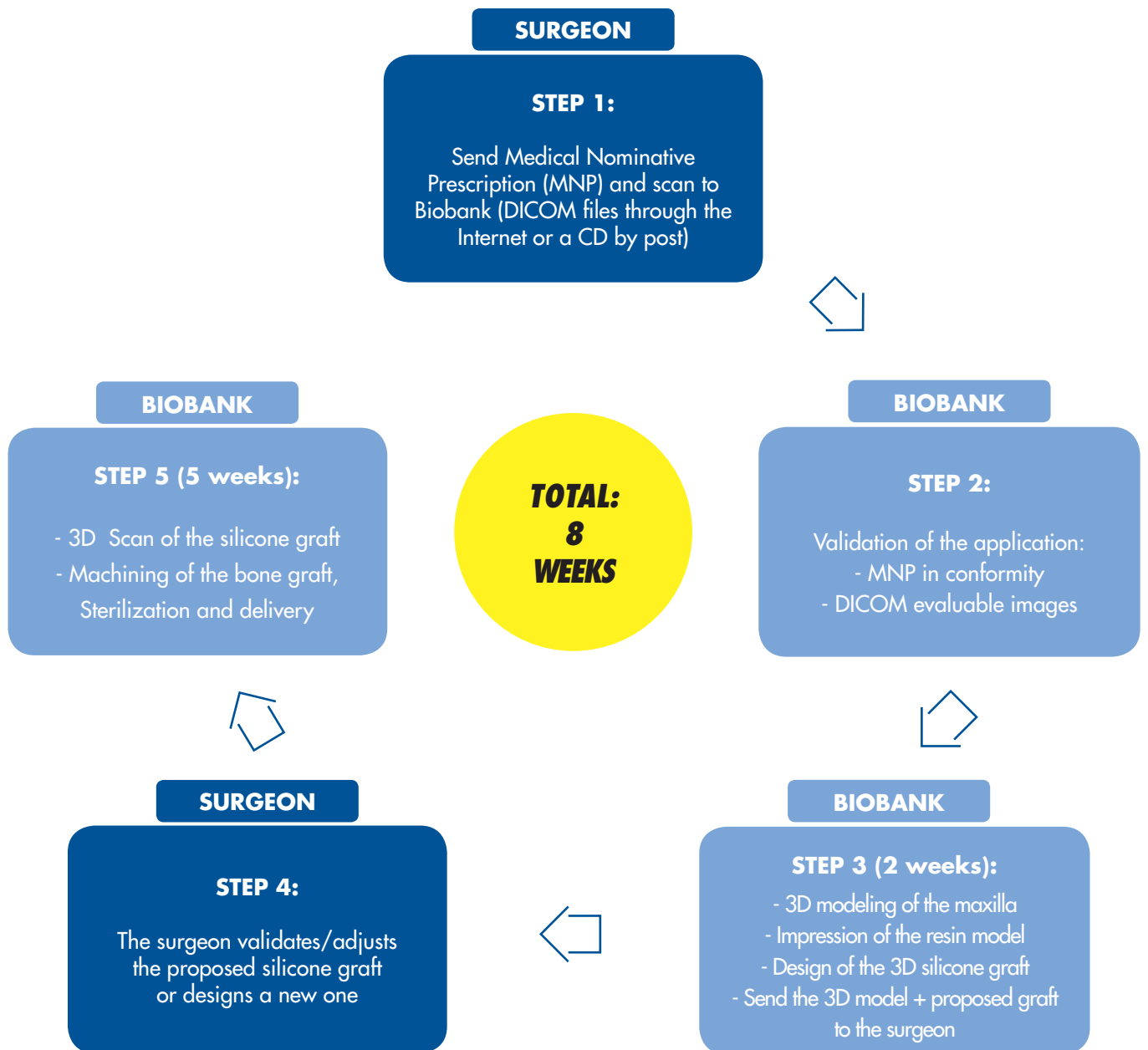
- ◆ **Better surgery planning:** Predefine on the 3D model, the characteristics of the graft and its positioning.
- ◆ **Reduction of the operative time:** Avoid the cutting/shaping phase of the standard cortico-cancellous platelet
- ◆ **Improvement of the congruence** of the graft surface towards the anatomy of the graft recipient site
- ◆ **Eased graft osteosynthesis** and **risk minimisation of micro-movements**
- ◆ **Improved surface contact graft/receiving bone** for better osteoconduction

BENEFITS FOR THE PATIENT

- ◆ **Reduction of the surgical opening time** of the graft site
- ◆ **Reduction of postoperative complications** (inflammation, infection, pains)
- ◆ **Improvement of the quality and efficiency** by increasing the bone volume for implants delivery

THE PROTOCOL STEPS

THE 5 STEPS OF CUSTOMIZED BONE GRAFT



SCAN: AN IMPORTANT PREREQUISITE!

1. X Ray Scanner with ideally a resolution of 400µm

2. If Cone-Beam:

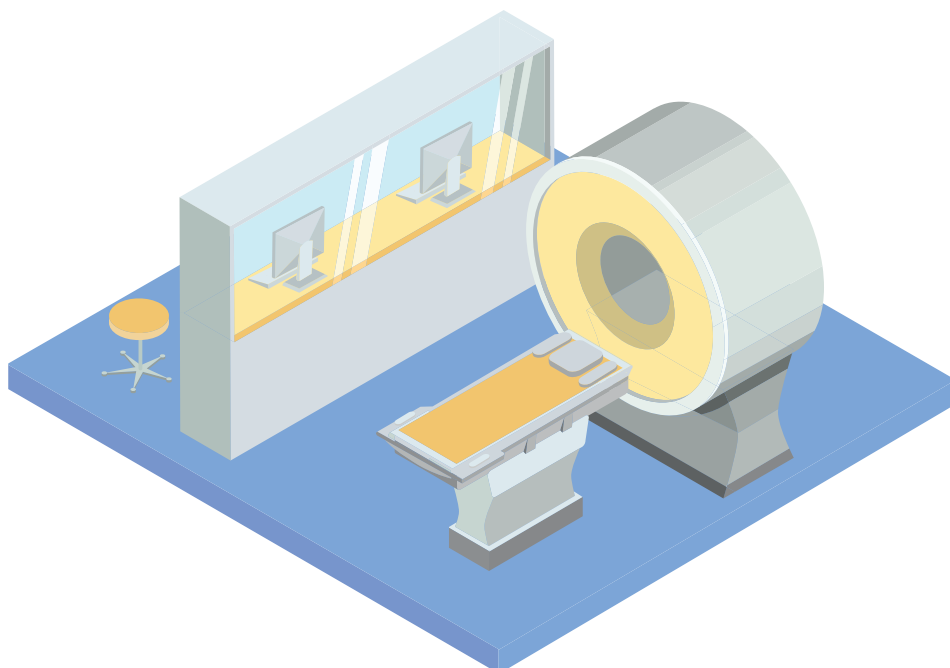
- ◆ Voltage: **≥ 90 kV**
- ◆ Field: **100x100 mm**
- ◆ Images: **512x512 points**
- ◆ Voxel size: **200 µm**

3. In every case:

- ◆ Interposition of a gauze compress between the incisors in order to avoid any occlusion
- ◆ Exporting images to **DICOM universal single frame (a .dcm file per slice) uncompressed**



**Any scanner not meeting those requirements will not be processed !
(an information email will be then sent to the surgeon)**



THE **5** STEPS CUSTOMIZED BONE GRAFT

1ST STEP

THE PRESCRIPTION

SURGEON

- ◆ Identify the nature of the graft: **cancellous or cortico-cancellous**
- ◆ Assess the number of graft(s) according to the maximum possible dimensions :
 - **cortico-cancellous graft: 25x15x9 mm**
 - **cancellous graft: 32x15x9 mm**
- ◆ Stipulate the characteristics of the desired graft

Send to BIOBank the **Medical Nominative Prescription** and the **DICOM files via Internet (or by CD-Rom)**

2ND STEP

VALIDATION OF THE APPLICATION

BIOBANK

- ◆ **MNP in conformity**
- ◆ **Evaluable DICOM images**

BIOBank notifies you by email confirming if the DICOM images are evaluable or not



Allow 8 weeks prior to the surgery date, subject to DICOM evaluable images

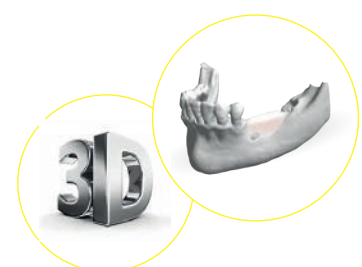
3RD STEP

MODELLING THE GRAFT AREA

BIOBANK

- ◆ **Modelling** of the patient's bone based on the DICOM images
- ◆ **Resin printing** of the bone model
- ◆ **Design** of the silicone graft
- ◆ **Dispatch** of the 3D resin model and the proposed silicone graft

Modelling and 3D printing from DICOM images

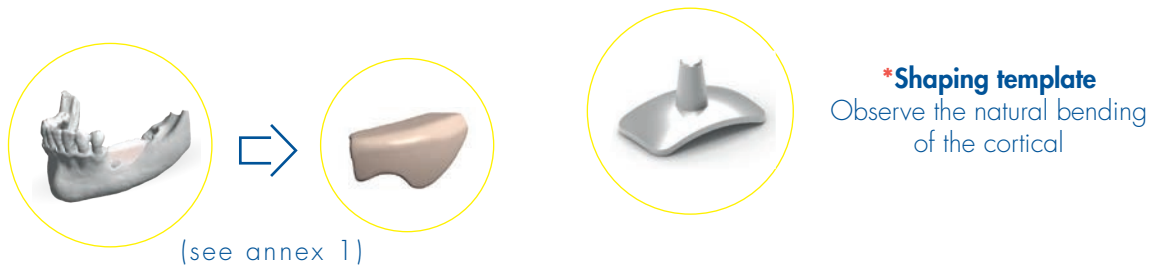


4TH STEP

VALIDATION OF THE PROPOSED GRAFT

SURGEON

1. Reception of the resin printed bone model as well as the silicone graft proposed by BIOBank for validation or correction.
 - If the proposed graft is too thick or does not seem to be suitable, it is required to redo it over again by using the **shaping templates*** to observe the natural bending of the femoral head cortical.
 - If you wish to carry out modifications to the proposed graft, **it is essential not to re-touch up the cortical surface.**
2. You return the whole file (proposed validated graft, corrected or redone + resin model) by post to BIOBank in order to validate the graft project.



5TH STEP

MECHANICAL PROCESSING AND SHIPPING

BIOBANK

- ◆ **3D Scan** silicone graft
- ◆ **Mechanical processing**, of the bone graft issued from a femoral head treated by the supercrit[®] process through a digital centre (all operations are performed in a cleanroom)
- ◆ **Packing** in a double packaging stating the patient's name and the surgery date
- ◆ **Gamma radiation sterilization**



Mechanical processing of the bone graft in a mechanical processing centre according to the stereolithographic master file



Supercrit[®] process



Ready to use mechanically processed graft (cancellous type)

COMPLETION OF THE PROCESS:

- ◆ **Final Packaging** of the custom made graft (Biobank box)
- ◆ **Delivery** of the custom made graft and the sterile resin bone model is guaranteed at least 48H prior to surgery

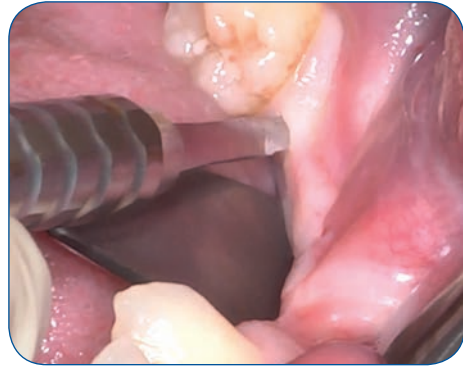
NON COMPULSORY SERVICES:

- ◆ A sterile resin version of the graft can be supplied to manage soft tissues

THE TRANSPLANTATION



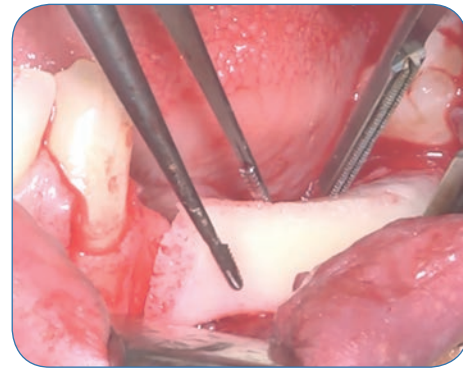
1 - ANAESTHETIC



2 - OPENING



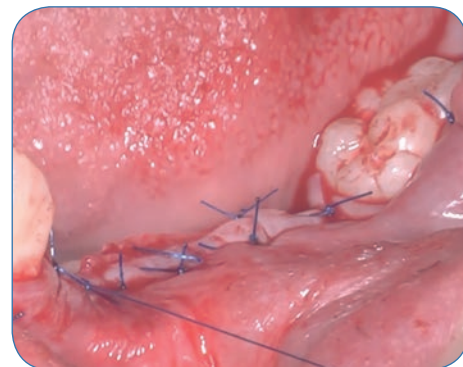
3 - REHYDRATION



4 - POSITIONING



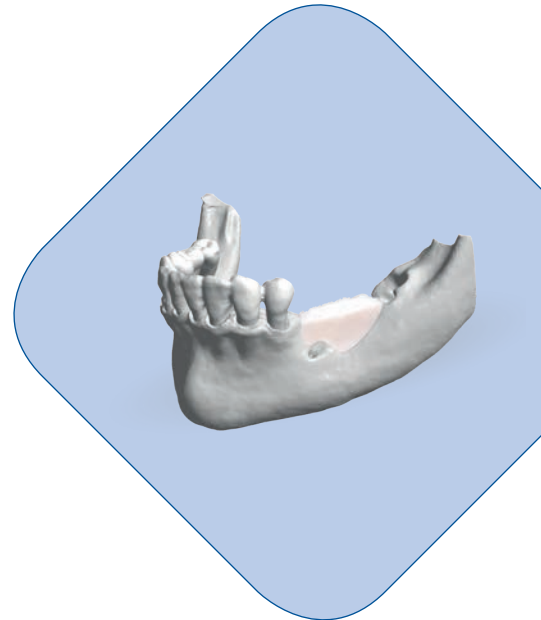
5 - OSTEOSYNTHESIS



6 - CLOSURE

IN SUMMARY

- ◆ **Surgery time reduction**
- ◆ **Postoperative complications decrease**
- ◆ **Patient comfort improvement**
- ◆ **Optimal adjustment to host site**
- ◆ **Easy synthesis**
- ◆ **Easier surgery planning**

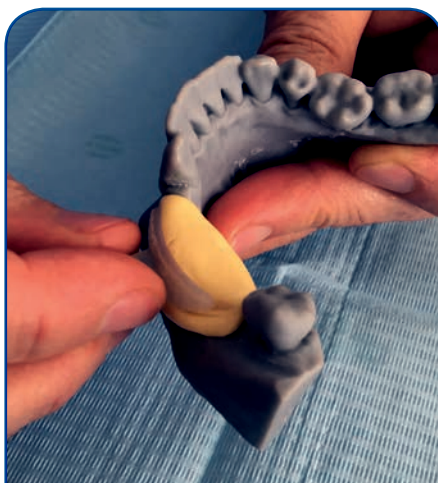


PROCEDURE FOR CORRECTION OR MODELING OF THE SILICONE GRAFT BY THE SURGEON

IMPERATIVE USE OF TEMPLATES



PREPARE THE SILICONE PUTTY



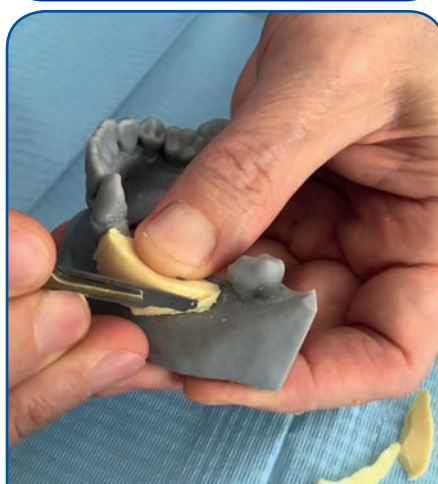
APPLY THE TEMPLATE



ADJUST THE THICKNESS



LEVEL OFF THE EXCESS ON OCCLUSAL FACE



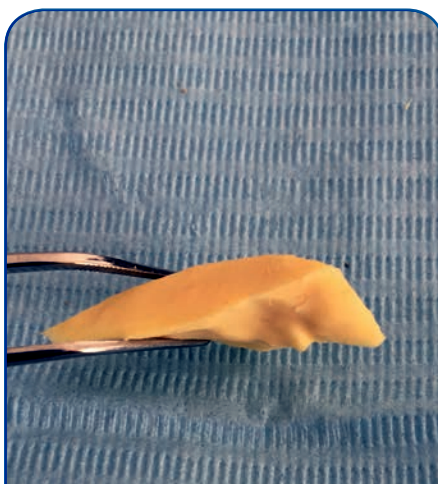
ADJUST THE EDGES



CHAMFER THE SILICONE PUTTY

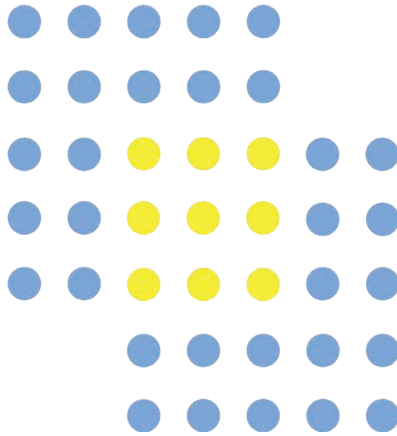


MODELING RESULT



FINAL SILICONE GRAFT





3 rue Georges Charpak
77127 Lieusaint
FRANCE

Phone +33 (0)1 64 42 59 65
Fax +33 (0)1 64 42 59 60

commercial@biobank.fr
www.biobank.fr