



**Academy** CustomLife

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**CUSTOMLIFE  
RECONSTRUCTION SYSTEM  
SCANNING PROTOCOL**

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CUSTOMLIFE is a highly precise, **immediate-loading** subperiosteal reconstruction system for **edentulous patients** with atrophic jaws, **both partial and full arch**.

**IMMEDIATE LOADING** means that the patient is fully rehabilitated in one procedure only and can start using their new teeth immediately.

For this, the scanning protocol must strictly follow the prosthetically-driven treatment planning, as described below.

**Surgical guide**

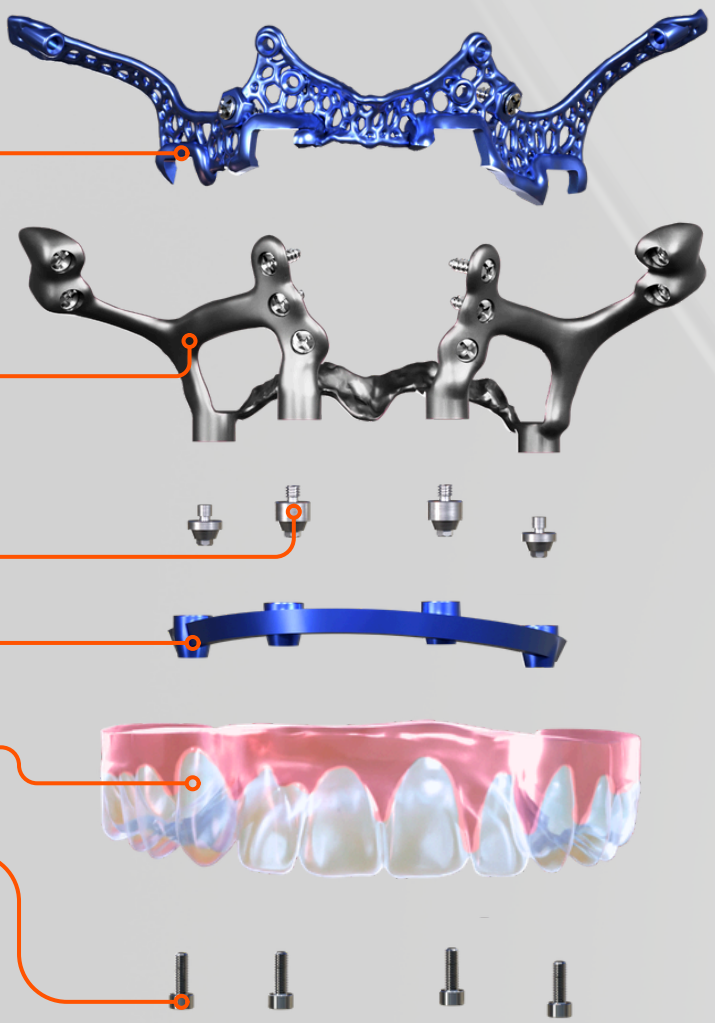
**Framework (plates)**

**Abutments**

**Surgical prosthetic bar**

**Dental prosthesis**

**Screws**



# Clinical Data for Precise Case Planning

To ensure the successful engineering of a custom subperiosteal reconstruction system, the following three components must be submitted:

## 1. Radiographic Data (DICOM)

- **Requirement:** A high-resolution MSCT or CBCT scan of both jaws.
- **Protocol:** The scan must be taken with the tomography guide correctly seated in the patient's mouth. This provides the necessary radiopaque markers to align the bone anatomy with the planned prosthetic position.

## 2. Optical Scan (STL/PLY)

- **Requirement:** A high-precision digital scan of the prosthetic guide (derived from a wax-up, wax rim, or the patient's current prosthesis).
- **Protocol:** This scan must be performed outside of the mouth to capture the full 360° geometry of the teeth and the fitting surface.

## 3. Clinical Photographic Series

Photos must be taken with the prosthetic guide in place to evaluate the "soft tissue envelope" and aesthetic alignment. The series must include:

- **Full-Face Frontal:** Patient smiling naturally (without retractors) to assess the high-smile line and lip support.
- **Intra-oral Frontal:** Captured in occlusion using retractors to visualize the relationship between the guide and the gingival tissues.
- **Profile (Side View):** To evaluate the facial projection and ensure the final prosthesis provides the correct anteroposterior support.



## Tomographic **Guide Preparation**



If the patient already has a prosthesis and it is in good condition:

Apply gutta-percha markers or metallic spheres (radiopaque markers) to the prosthesis.

## Tomographic **Guide** Preparation



If the patient has no prosthesis or it is in poor conditions:

Fabricate a wax rim or a trial tooth setup (wax-up) and apply radiopaque markers to it as shown on the picture.



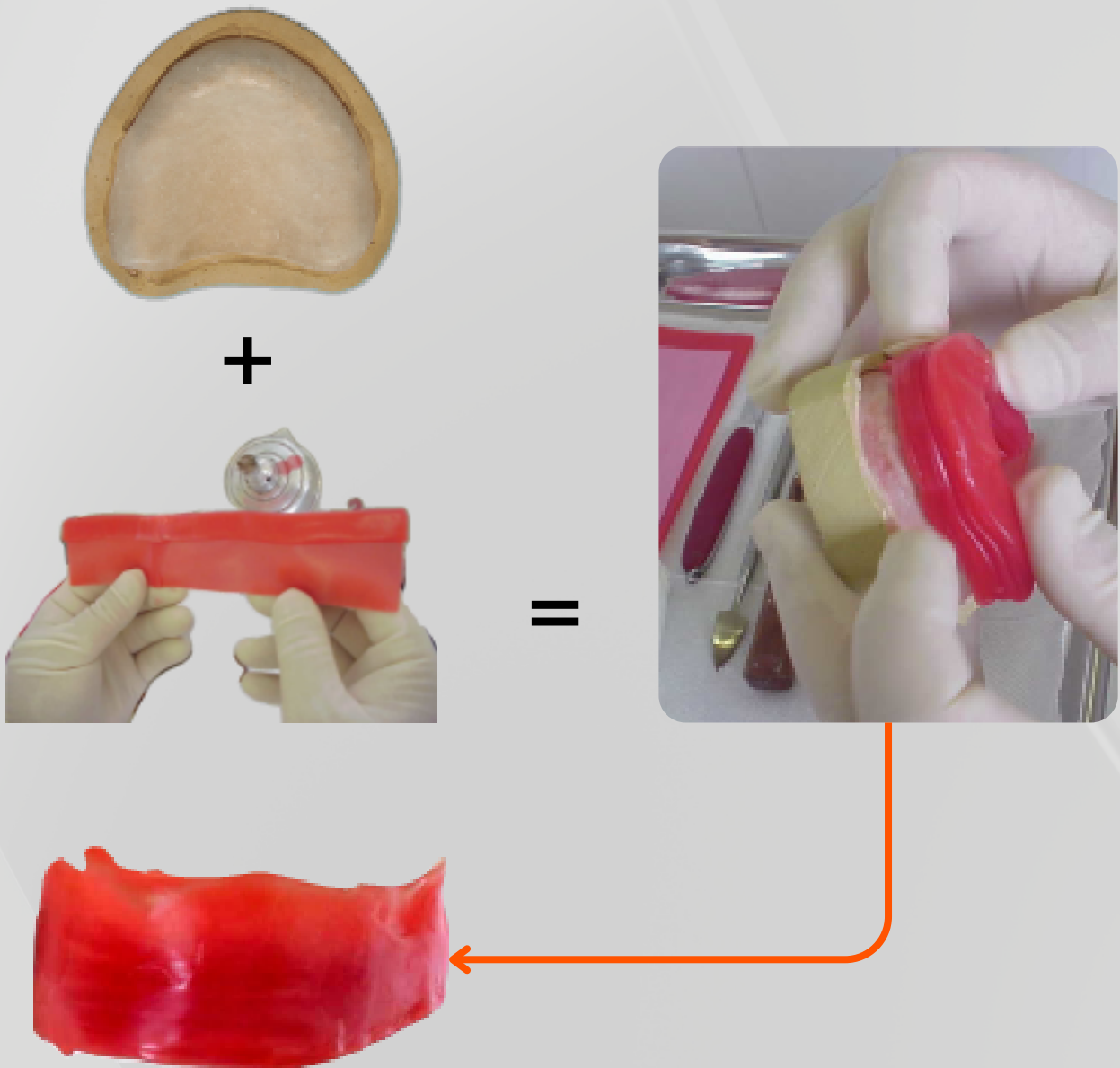
## Trial Baseplate



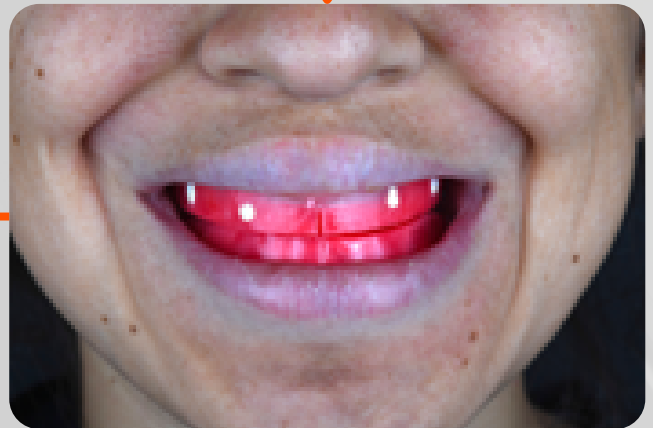
Fabricate a trial baseplate using autopolymerizing acrylic resin over the model



## Wax Rim



Construct a wax rim over the acrylic resin baseplate.



- **Occlusal Plane Adjustment:** Adjust the occlusal rim intraorally and record the clinical reference lines.
- **Tooth Setup (Optional):** Perform a trial tooth setup (wax-up) if necessary for aesthetic validation.
- **Radiopaque Markers (Mandatory):** Apply gutta-percha or auriculotherapy seeds/rings as fiducial markers.



## MSCT / CBCT

The patient **MUST** wear the guide, be it a current prosthesis, wax-up or wax rim, during the examination.

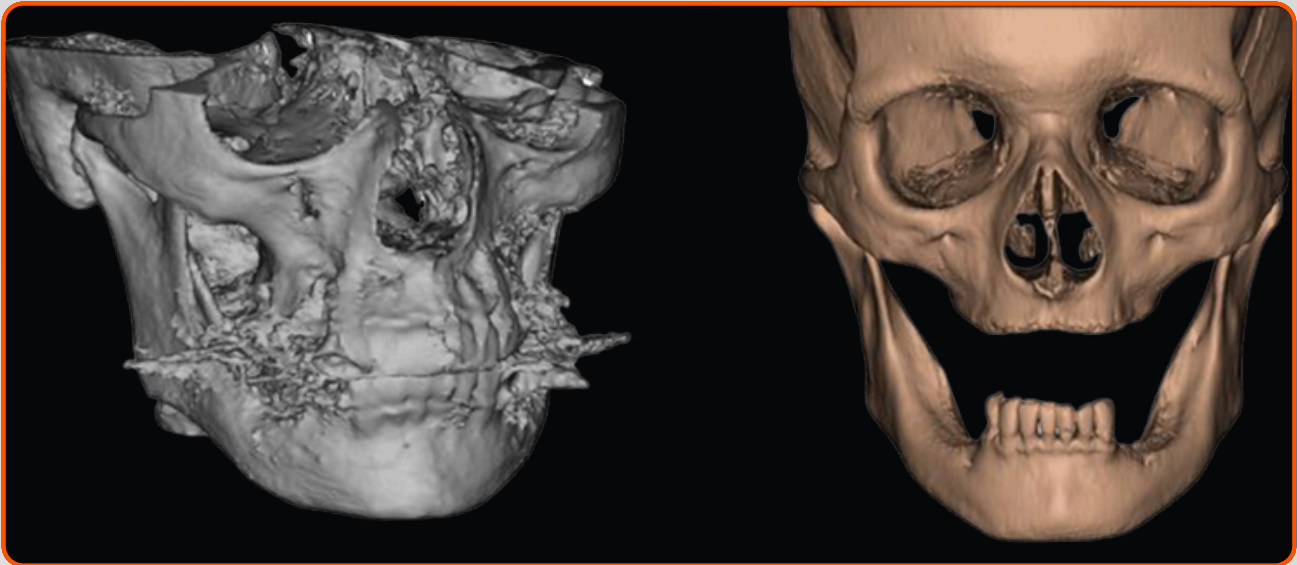


## MSCT / CBCT parameters

If possible, prefer Multi-Slice CT (MSCT) to CBCT, as it provides superior bone density (Hounsfield Unit) calibration and better visualization of the cortical bone boundaries.

**CBCT**

**MSCT**



## Standardized Imaging Protocol

To ensure the highest precision for CAD/CAM framework design, please provide the DICOM data according to the following technical requirements.

### General Requirements

- **Date:** the MSCT/CBCT cannot be older than 6 months.
- **Patient Positioning:** Head must be stabilized to prevent motion artifacts.
- **Prosthetic Guide:** Make sure the prosthetic guide is worn by the patient as per the instructions above.
- **Metal Artifact Reduction (MAR):** If the patient has existing metal implants, crowns, or bridges, please enable the MAR algorithm during reconstruction.



# CLINICAL NOTE FOR THE RADIOLOGIST

The accuracy of the bone-borne framework depends on the clear visualization of the cortical bone surface. Please ensure there is no "burnout" of thin alveolar ridges or distortion due to patient movement.

## MULTI-SLICE CT (MSCT) PARAMETERS

- **Slice Thickness:** No more than 1.0 mm. Thicker slices lose critical anatomical detail for a snug fit.
- **Reconstruction Increment:** 50% overlap (e.g. 0.3 mm increment for a 0.6 mm slice).
- **Matrix Size:** 512 x 512 pixels.
- **Gantry Tilt:** Must be 0° (No tilt). Tilted gantry data often causes dimensional distortion in 3D reconstruction software.
- **Field of View (FOV):** Must include the entire maxilla or mandible, including the orbital floors (for maxilla) or the inferior border and rami (for mandible).
- **Algorithm:** "Bone" or "Hard Tissue".

## CONE BEAM CT (CBCT) PARAMETERS

- **Voxel Size:** No more than 0.6 mm (ideally 0.2 mm to 0.4 mm to ensure high precision).
- **Field of View (FOV):** Must include the entire maxilla or mandible, including the orbital floors (for maxilla) or the inferior border and rami (for mandible).
- **Patient Positioning:** The patient must be in a stable, stationary position. Any micro-movement during the 10–20 second scan causes "motion blur," which makes the subperiosteal fit inaccurate.
- **Contrast:** High-contrast settings to distinguish between cortical bone and thin alveolar ridges.
- **Scan Mode:** High Resolution / 360° Rotation

## DATA EXPORT INSTRUCTIONS

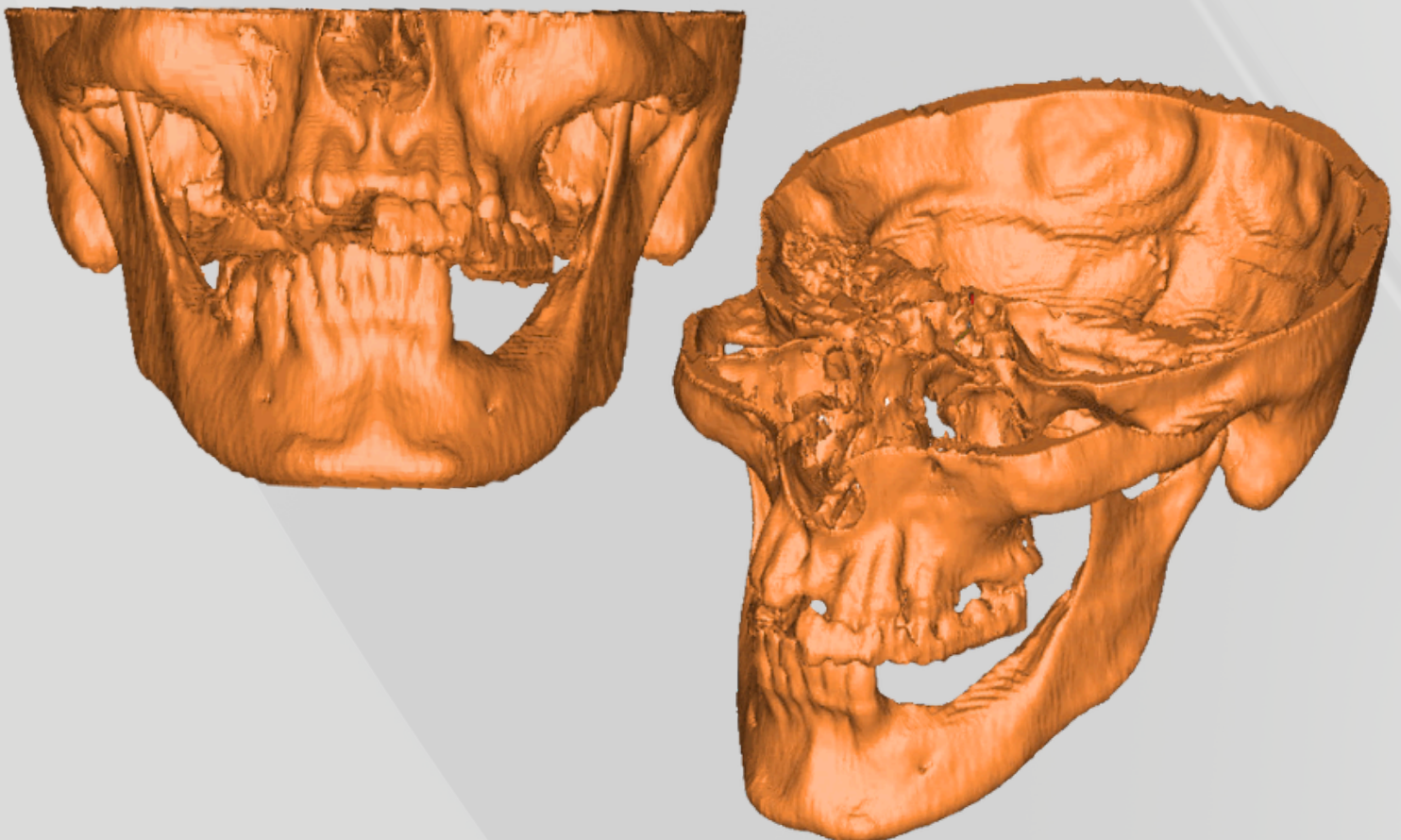
- **Format:** Uncompressed DICOM (3.0 compliant).
- **Structure:** Single-frame files (one file per slice).
- **Media:** Please do not export as a "3D Viewer" executable or compressed JPEG/TIFF.



## Minimum MSCT/CBCT Field of View (FOV)

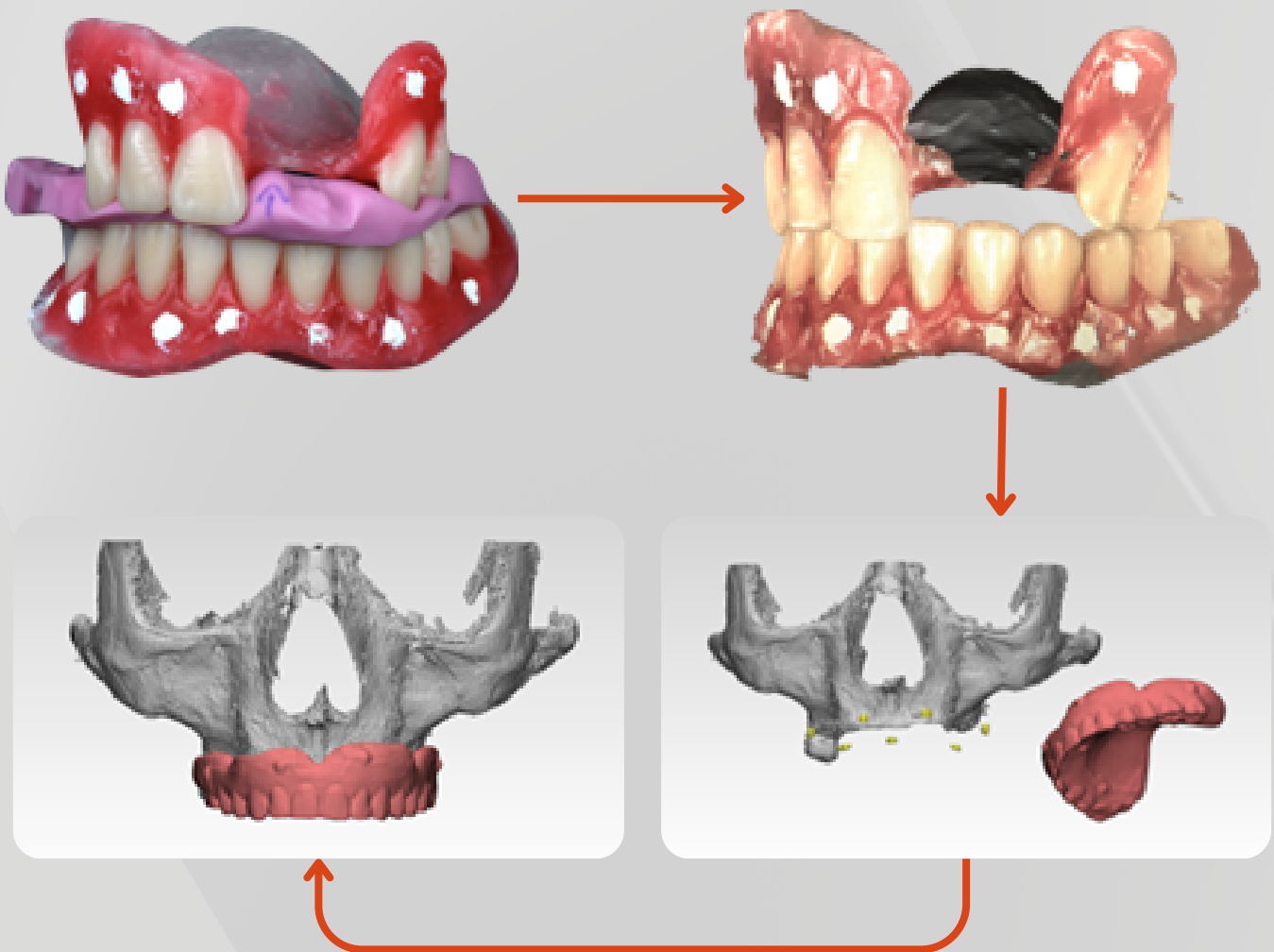
To ensure accurate engineering of the subperiosteal framework, all scans must meet the following criteria:

- 1. Dual Arch Requirement:** Regardless of which jaw is being reconstructed, a **bimaxillary scan** (both arches) is mandatory. We require the antagonist (opposing arch) as a reference for proper occlusal alignment and prosthetic design.
- 2. Anatomic Coverage:** The scan must capture all structures inferior to the **infraorbital rims** (orbital floors). This ensures the nasal floor and zygomatic buttresses are fully visualized for stable framework seating.
- 3. Comprehensive Scouting:** If the patient's anatomy or resorption is severe, a **full cranium (Large FOV)** scan is highly recommended to avoid "cut-off" artifacts and ensure all anchor points are captured.



## Scanning of the Tomographic Guide

Scan the **EXTERNAL** surface of the tomographic guide and submit the file in **STL/PLY** together with the DICOM data.



The files containing the bone and dental references will be aligned for the design process.

# PHOTOS

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**Full-Face Frontal:**  
Patient smiling naturally  
(without retractors).

**Same Full-Face Frontal,**  
but with a wax rim instead  
of a wax-up/prosthesis.

# PHOTOS

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**Intra-Oral Frontal:**  
Captured in occlusion using  
**retractors.**

**Profile**  
(Side View).

# FREQUENTLY ASKED QUESTIONS (FAQ)

## 1. What if my MSCT slice thickness exceeds 1 mm, my CBCT voxel size exceeds 0.6 mm, or the scan is older than 6 months?

Maintaining strict imaging parameters is critical for the micro-precision fit of a patient-specific subperiosteal framework.

- **Standard Protocol:** Scans within **1 mm** (MSCT) or **0.6 mm** (CBCT) taken within the last 6 months ensure the highest accuracy.
- **Conditional Acceptance:** We may consider scans with a slice thickness of up to **1.5 mm**, or voxel size up to **1.0 mm**, or scans up to **12 months old**. However, because these parameters increase the risk of dimensional inaccuracies, the surgeon must sign an **Acknowledgment and Responsibility Statement**. This document confirms the surgeon's acceptance of potential fit deviations.
- **Non-Acceptable:** MSCT slices above **1.5 mm**, CBCT voxels above **1.0 mm**, or scans older than **12 months** will be rejected, as they do not provide sufficient data for safe medical device manufacturing.

## 2. Why can't I just send a "plain" MSCT/CBCT without the tomography guide or optical STLs?

A "plain" scan only reveals the underlying bone architecture, not the intended dental outcome. Without a **Tomography Guide (with radiopaque markers)** and its corresponding **Optical Scan (STL)**, the project becomes a "blind design."

- **The Risk:** Engineers cannot align the internal bone-borne framework with the functional tooth position.
- **Our Policy:** We cannot guarantee the prosthetic alignment or assume responsibility for rehabilitation difficulties if the protocol is bypassed. We reserve the right to decline the case or require a formal **Liability Waiver** exempting us from inaccuracies related to the final fit or functional rehabilitation.



### 3. Is it mandatory to send clinical photos of the patient?

**Yes.** Clinical photos are essential for mapping the "soft tissue envelope."

- **Consequences of Omission:** Absence of photos often leads to inadequate lip support, a misaligned smile line (e.g., a "gummy" smile), occlusal plane errors, or painful soft tissue interference with **the framework**.
- **Requirement:** To ensure a predictable aesthetic and functional outcome, we will not proceed with the design of a temporary prosthesis without a complete clinical photographic series.

### 4. For partial arch cases, can't the remaining teeth be used as a reference instead of a tomography guide and photos?

While remaining dentition provides a baseline for the bite, it is insufficient for custom CAD/CAM engineering.

- **The "Bridge" Concept:** Even in partial arch cases, the **Tomography Guide** and **Optical Scans** act as a digital bridge that allows engineers to align the titanium framework with the future prosthetic plan, not just the current anatomy.
- **The Necessity of Photos:** Photos are required to map muscle attachments and the "transition zone" between natural and artificial gums. Without the full data set, you risk a "blind design" where the framework fits the bone but fails to achieve functional or aesthetic harmony with the patient's natural face and smile.



## Final Kit Components (CPMH Shipments)

Once the digital design is approved, the following comprehensive kit will be manufactured and dispatched for the surgical procedure:

### **1. Custom Subperiosteal Framework:**

- The patient-specific implant and all associated fixation accessories (e.g., osteosynthesis screws).

### **2. Surgical Osteotomy Guides:**

- CAD/CAM-generated guides to ensure precise bone contouring as planned in the virtual environment.

### **3. Surgical-Prosthetic Bar:**

- A high-precision bar designed to provide structural support and facilitate the connection between the framework and the restoration.



# Prosthetic Components Checklist

Depending on your preference, the following components can be supplied by CPMH for the definitive rehabilitation:

## 1. Digital Workflow Options:

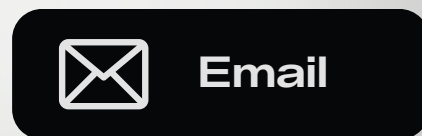
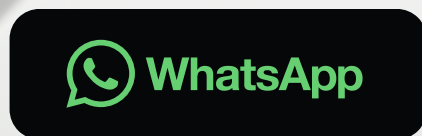
- Scan Bodies compatible with the Custom Life interface for digital impressions.
- Digital Analogs for 3D-printed master casts.
- Titanium Links (Ti-Bases) and corresponding prosthetic screws for zirconia-based restorations.

## 2. Analog Workflow Options:

- Impression Transfers for traditional elastomeric impressions.
- Standard Laboratory Analogs for stone model fabrication.
- Castable Cylinders for the fabrication of custom metal frameworks via the lost-wax technique.


## 3. Temporary (provisional) prosthesis made of PMMA





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