IPS Implants®

Scan protocol

Cranium | Midface | Midface Orbita |
Mandible | Mandible Reconstruction

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Basic information

This scan protocol describes how patient data must be prepared for virtual planning of primary and secondary reconstructions of the skull so that a product of the "Individual Patient Solutions" product family can be made.

Deviations from these instructions may mean that the clinical results will not match the planned results.

KLS Martin can process data from all standard CT scanners and use almost all storage media.

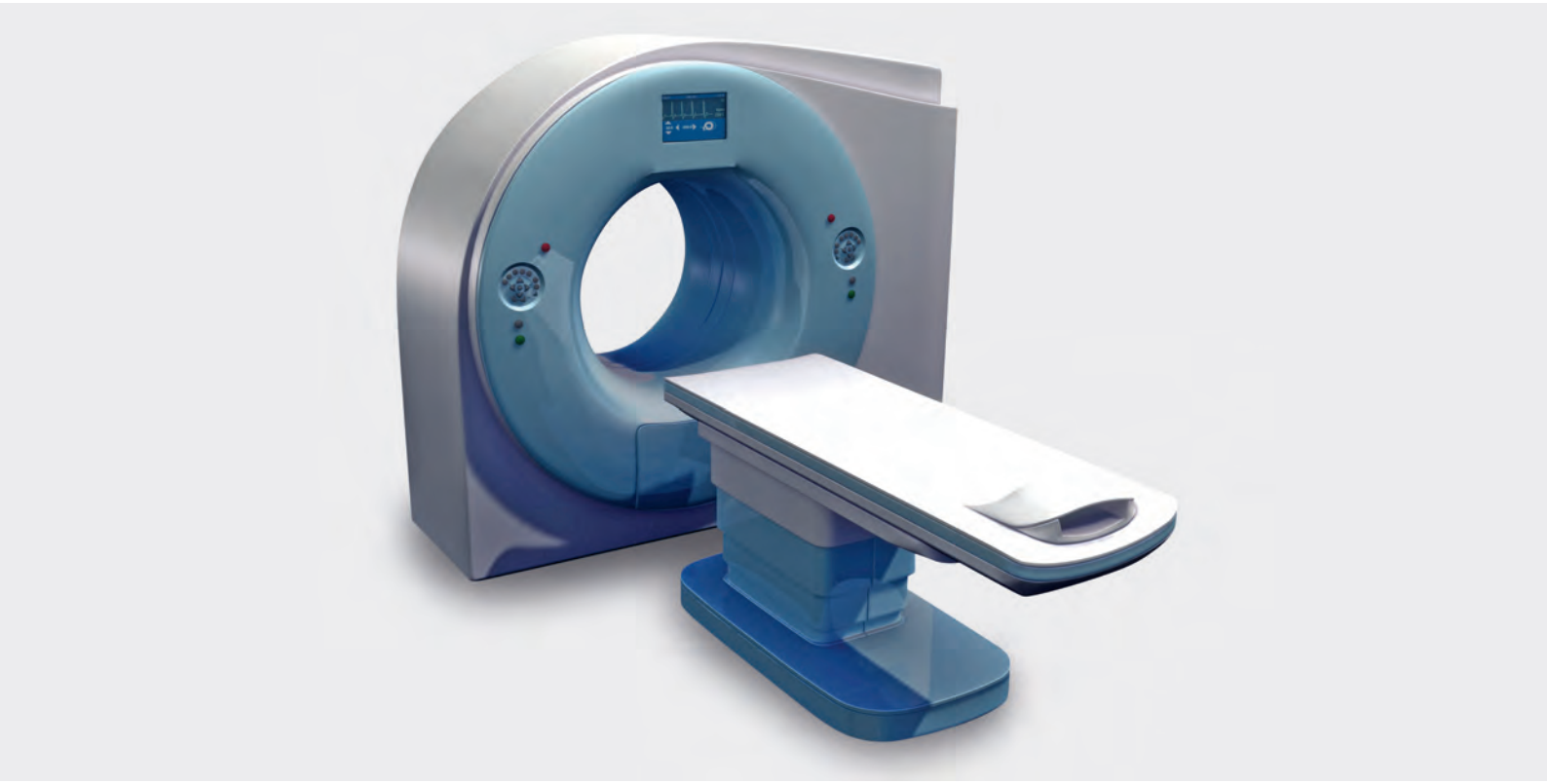
Should you have any queries, please do not hesitate to contact our **hotline +49 7463 838-222**.

Important:

Planning results are only ever as up to date as the clinical data records! If the anatomical situation should change after scanning, the precision fit of the products can no longer be guaranteed.

Note:

See our specially designed scan protocol for detailed information on how to prepare patient data for virtual orthognathic procedures.



Scan of the patient skull

- Patient scans must be current and precise (< 4 months).
- The spatial resolution of the scan should be between **0.5 - 1.25 mm**.
- The **axial sections** are required.
- Movements of the patient during the actual scanning have to be avoided coercively.
- **Medical computed tomography (CT scans) is preferred** for virtual case planning of primary and secondary reconstructions**.**
- In the case of medical CT scans **no gantry tilt is allowed (gantry tilt 0°)**.
- In order to prevent artifacts make sure that there is no (foreign) radiopaque material in the scanned region during the exposure.
- The image section must be selected as small as possible while including the regions 2 cm above and below the defect region.
- Save the entire scan (incl. all sub-files) as a DICOM file.

Important:

If **cone beam computed tomography (CBCT scans)** is used, planning is much more difficult due to the low contrast between soft tissue and bone. Case planning is not possible in all cases.

For CBCT scans the spatial resolution (size of voxels) should be between 0.35 and 0.40 mm. The scan must be performed in the upright position. The exposure plane will be perpendicular to the occlusion plane to minimize artifacts. The outside contour of the patient should also be included.

Cranium and midface

Craniocerebral trauma, loss of bone integrity or reconstructions as a result of tumors, ulcers or cysts require restoration of the original shape and functions to restore the patient's quality of life.

IPS Implants® can be used for "tailored" reconstructions of all types and in all parts of the maxillofacial region.

Material options in the cranium:

- Additively manufactured titanium implant (AMTi)
- PEEK implant
- Standard titanium mesh
- Standard solid titanium

In some cases the products are available perforated or unperforated.

Material options in the midface:

- Additively manufactured titanium implant (AMTi)
- PEEK implant

In some cases the products are available perforated or unperforated.

Esthetic requests by the patient can be implemented in the cranium region and also the midface region with onlay implants of PEEK and/or additively manufactured titanium.

Orbita

Fractures of the orbital floor and of the medial and lateral orbital walls can be treated with IPS Implants® for the orbita.

Mirroring of the intact bones allows adaptation to the prevailing anatomical environment. The application of insertion vectors or navigation markers gives the user a high degree of security with planning and an optimal fit.

Features in the orbita

- IPS Implants® in the orbital region require a thin-layer CT scan of **max. 1.00 mm**.

Material options in the orbita:

- Additively manufactured titanium implant (AMTi)
- PEEK implant

The products are available in various sizes:

- one wall
- two walls
- three walls

Mandible

KLS Martin makes it possible to perform reconstructions of the mandible with and without integrated transplant planning.

Potential donor regions include the fibula, scapula and iliac crest.

Features in the mandible

- The spatial resolution of the axial sections should also be between **0.5 - 1.25 mm** for scanning the transplant donor regions.
- We recommend using the same scanner used for scanning the patient's skull.

Material options in the mandible:

- Additively manufactured titanium implant (AMTi)
- Curved titanium implant

Drill and marking templates can be planned and manufactured for a mandibular reconstruction.

They enable a precise resection of the defect region of the mandible, because essential information such as the number of screws, position etc. of the customized plate is integrated in the templates.

They also enable for transplant planning the correct harvesting of the transplant from the donor region and its correct placement in the resection region.

The IPS® product range

IPS CaseDesigner®

The IPS CaseDesigner® makes virtual 3D surgical planning easier and faster than ever before.
With this flexible software tool, orthognathic procedures can be efficiently and reliably planned and simulated, and then applied to treatment in the operation in a customized manner.

IPS Gate®

The web-based platform and app guides surgeons and users reliably and efficiently through the process of inquiring about, planning, and completing patient-specific products. With the HTTPS standard IPS Gate® guarantees encrypted data transmission, which is additionally certified by the TÜV Süd seal.

IPS Implants®

Patient-specific implants, planning aids, and anatomical models are made from various materials using state-of-the-art fabrication technologies. Thanks to computer-based planning and functionalized patient-specific implants, preoperative planning can be implemented in surgery with unprecedented precision.

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