

TMJ Concepts CT scanning protocol

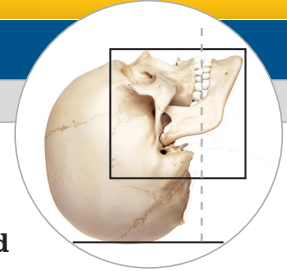
This protocol is to ensure that accurate 3D bone models can be created and used for the design and manufacture of patient-fitted temporomandibular joint prostheses based on medical grade CT or CBCT scanner data.

Please review the following information before proceeding with the scanning process. **If you have any questions, contact Stryker at CMFCustomizedImplants@stryker.com (855 479 5224) prior to scanning the patient. For outside US and Canada, please contact CCI_Intl@stryker.com.**

TMJ Medical Grade CT scanning protocol

Patient positioning

Head alignment	Align occlusal plane parallel to gantry Position patient to avoid as much artifact as possible For TMJ surgery only: Have the jaws in full occlusion For TMJ with orthognathics: Keep jaws slightly separated (use a bite block if available)
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Gantry tilt	0° gantry tilt	No oblique angle of locator/survey lines
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Scan length/FOV

Scan length	Encompass the entire mandible (including chin) Include both sella and nasion
Field of view	Select field of view to include all surrounding anatomy. Use smallest FOV while encompassing required anatomy. ≤ 20cm recommended. Ensure the scan includes: • Minimum: Inferior orbital borders, external auditory canals and chin • Posteriorly: Mastoid processes bilaterally • Orthognathic planning: Include nasion and sella if possible

Scanning process

Patient movement	Avoid patient motion. If the scan shows motion artifacts, the scan cannot be used.
Jewelry	Remove any jewelry in the scan area
Avoid motion	Prevent patient movement or swallowing during the scan to avoid motion artifacts Ask the patient to hold their breath during the scan if possible

Acquisition

Slice thickness	Maximum = 1mm
Beam collimation	Width and detector configuration necessary to achieve actual slice thickness
Scan mode	Helical/Spiral
Table increment/Slice increment	Constant table increment, no gaps. Smaller than or equal to slice thickness.
Single-slice helical scanners	Beam pitch = 1
Multi-slice helical scanners	Beam pitch < 1 (GE: High quality; Toshiba: Detail)
Pixel type	Square

Reconstruction

Slice orientation	DICOM files in Original/Axial slice orientation
Algorithm (Kernel)	Process image with both standard and bone algorithm. Do not process with Metal Artifact Reduction (MAR)

Warning: Do not post process to alter slice orientation or thickness

Data

Series	Original/Primary/Axial
Series ID	All images of a scan should be stored in one series
File format	DICOM format. No raw data. Do not compress. Do not format for viewer programs
Data archiving	Archive only the relevant examination in uncompressed DICOM
Data storage	Recommendation: Save raw data for at least 14 days after scan Upload DICOM data to the iD Portal (https://idportal.stryker.com)

TMJ Cone Beam CT (CBCT) scanning protocol

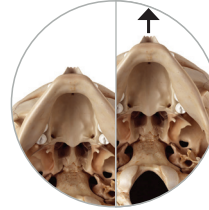
Scan area	TMJ/Mandible/Maxilla (per diagram below)
Field of view (FOV) and Z height	16cm to 20cm diameter x 10cm to 16cm in Z height (may be adjusted to best fit patient anatomy)
Voxel size	.20mm to .40mm
Slice thickness	.20mm to .40mm (matched to voxel size)
Scan quality	Use high definition/high resolution
Archival	Uncompressed DICOM image data



Minimum
FOV area



FOV must include
partial mastoid
processes, complete
EAC's and TMJ fossae



Ensure patient's chin
is brought forward to
capture posterior anatomy,
while including the chin

Scanner settings

Power settings	Use longest rotation time for better penetration
Radiation levels	CBCT scanners use lower radiation than medical-grade CT, making metal artifacts more common Use medical-grade CT if significant metallic hardware is present (e.g., TMJ total joints or metal debris) Titanium orthognathic plates, screws and dental braces are rarely problematic
Stitching	Scanners that stitch multiple Z-height scans into one data set may misalign data, leading to an increased risk of scan rejection

Patient prep and positioning

Head position	Position the head in a neutral or natural position Use chin and temple stabilizers to minimize motion
Occlusion	Scan patients in proper occlusion For TMJ surgery only: Have the jaws in full occlusion For TMJ with orthognathics: Keep jaws slightly separated (use a bite block if available)
Field of view (FOV)	CBCT scanners often have smaller FOV compared to medical-grade CT Position the patient forward if FOV cuts off ear anatomy Ensure the scan includes: • Minimum: Inferior orbital borders, external auditory canals and chin • Posteriorly: Mastoid processes bilaterally • Orthognathic planning: Include nasion and sella if possible

Procedure

Patient instructions	Instruct the patient not to swallow during the scan
FOV requirements	Ensure the scan meets minimum FOV requirements as described above Position the patient farther forward to capture posterior structures if needed
Data requirements	Save data in uncompressed DICOM format Only axial image data is required
Upload data	Upload DICOM data to the iD Portal (https://idportal.stryker.com)

Craniomaxillofacial

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