

data acquisition protocol with Toltac® system

Please read these notes for correct and safe use of the diagnostic template.

HCS Italia, PMP Multitask and the inventor of the Toltac® system decline all liability for problems or damage resulting from the use of the diagnostic template incongruously or not in accordance with the recommendations and suggestions given here.

1. Characteristics of the diagnostic template.

The diagnostic template creates radiographic references during CBCT to make easier the correct 3D orientation of the optical scanning of the patient's models in a virtual planning. It must separate the dental arches to one another as much as needed to prevent that the scattering effects (graphic disturbances due to X-ray rebound on dental artefact materials) could interfere with the X-ray image of the radioopaque references fixed on the diagnostic template. Those references must be realized with materials with a radioopacity level suitable for this goal and fixed around the template, preferably positioned far to one another and not in contact with the patient's teeth, for the reason explained above. They must be in relief from the template's surface, so that the following optical scanning of the template could make visible their limits, making easier the following matching during virtual planning.

Before use, check that the template does not have any sharp edges or corners and, if it does, blunt them before applying it in the patient's mouth to prevent injury or abrasion.

2. Template's disinfection

The diagnostic templates must be sterilized or at least disinfected before use, using in general cold systems of disinfection/sterilization.

3. Template's preparation and stabilizing relining

Before taking CBCT both sides of the diagnostic templates must necessarily relined with a layer of elastomere, e.g. vinylpolyxilossane, possibly fast setting. This will allow the patient to comfortably hold the dental arches during the CBCT scan and subsequently the technicians to correctly reposition the template on the model during the 3D scan.

Apply a little amount of elastomer impression material on both surfaces of the diagnostic template, carefully preventing contacts of the elastomer with the radioopaque elements of the template. An adhesive for elastomers on the template's surfaces may increase the grip of the relining material.

If, when applying the elastomer, excess material should nevertheless come into contact with the references, remove this excess before the 3D scanning of the template on the model is carried out, taking care not to remove the rest of the relining from the template.

4. applying the diagnostic template

Place the template between the patient's two arches while the elastomer is still fresh. While the material is hardening, ask the patient to keep the jaws clamped on the template without over-tightening. Carefully remove any elastomer trace from the radioopaque references of the template before taking CBCT and scans

5. taking CBCT

If in the Dental Office is available a CBCT machine it is preferable to take the CBCT scan to the patient asking him to keep in the mouth the just relined diagnostic template, and remove it only after the CBCT. Care should be taken to position the patient's head in the craniostat of the Cone Beam so that the template is in a horizontal position, or in any case never tilted enough to project any scattering from artefacts on the patient's arches onto the references.

If the patient is sent to a radiologist, he must carry the relined diagnostic template. The radiologist must be carefully check the correct positioning of the template during the exam. Please remind the patient to bring back the template for

the scannings. The CBCT can be done in standard resolution, with a FOV wide enough to include all the bone structures of the studied arch and all the radioopaque parts of the diagnostic template. The radiologist will provide a set of axial DICOM images with 512x512 matrix for the data upload to the virtual planning software.

6. Preparation for optical scanning

NEVER remove the elastomers from the template for the duration of the virtual planning, so that any suspected malpositioning of the template can be checked during the 3D optical scan.

7. Impressions and creation of plaster models

Best if taken with precision elastomer impression materials, but also good alginate impression are OK. The plaster models are obtained from the impressions with the normal procedure. Preferably make models with an abundant base, better if with the incision of a few niches in order to make easier the matching when uploading the scans to the planning softwares.

8. Diagnostic wax up

The missing elements of the arch to treat must be replaced with a normal diagnostic wax up, unless it is available a software able to provide a virtual diagnostic wax up from the model scan.

9. Scan of the models

For a correct planning according the Toltac® protocol, the following scans are needed:

- edentulous arch
- edentulous arch with diagnostic template
- antagonist arch
- model with diagnostic wax up, if available

Axial DICOM images from CBCT with 512 x 512 matrix and the scans above mentioned are the informations that must be obtained; unless these informations may be impossible to proceed to the planning according the Toltac® protocol.

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