

# data acquisition protocol for total edentulism

## 1. diagnostic template

Always use a diagnostic template. The template must necessarily include a structure that allows it to be held between the two arches and radiographic findings that are preferably far apart, preferably arranged in different planes; it is essential that they are arranged in such a way that during the CBCT scan they remain isolated from the projection of the patient's dental arches, to avoid any scattering from prosthetic or conservative artefacts on the dental arches. The time taken to set up and relining the diagnostic template will be more than compensated for by the increased ease of matching during planning (essential for safe planning).

## 2. Total arch denture

a) As support for the diagnostic template during CBCT use the patient's prosthesis, or a resin duplicate of it. If a significant change in the patient's occlusion is planned in the treatment plan, use a provisional prosthesis with the new occlusion during the CBCT scan. If the prosthesis has a metal internal structure, necessarily perform the CBCT with a resin-only duplicate otherwise the examination will be damaged by scattering.

b) Always reline the denture with an elastomer impression material (e.g. polyvinylsiloxane), possibly applying elastomer adhesive to the denture base to ensure maximum adhesion. It is preferable to edge the denture with wax in order to extend the impression as far as possible into the fornix (this will be used for the placement of fixation pins during planning). NOTE. This relining must always be carried out because, in addition to stabilisation during the examination, it is also of fundamental importance for the creation of the model to be scanned (it will be cast directly from this relined surface) and for the elaboration of the virtual treatment plan (elastomers are weakly radio-opaque, and therefore distinguishable in CBCT from the patient's soft tissue, and therefore useful in verifying matching).

## 3. relining the diagnostic template

Once the prosthesis has been relined as indicated above, apply a small amount of elastomer impression material to both surfaces of the diagnostic template, taking care not to soil the radiographic references with the elastomer.

If the practice has a CBCT unit, it is preferable to take the CBCT by leaving the newly relined diagnostic template in the patient's mouth, removing it only after the examination. If the patient is sent to an external radiology centre, the relined diagnostic template must be handed over to the patient. The radiologist must be duly instructed to take great care to ensure that the prosthesis and the template are correctly positioned during the examination. Remind the patient to return the template for the next scan (see below).

## 4. taking CBCT

The diagnostic template must be retained between the prosthesis of the arch being examined and the antagonist arch (in the case of total or partial edentulism, the mobile antagonist prosthesis must also be left in the mouth).

The CBCT can be performed in standard resolution, in a FOV sufficient to frame all the bone structures of the investigated arch and all radio-opaque references of the diagnostic template. The radiologist must deliver a sequence of axial DICOM images in a 512x512 matrix for data input into the virtual planning software.

## 5. taking impressions, making models and diagnostic wax

After taking CBCT, cast the base of the complete prosthesis used for the CBCT. Make the model with an abundant base, preferably with notches around the perimeter.

## 6. Scan of the models

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

- edentulous model
- edentulous model with diagnostic template
- model with diagnostic wax up.

**IMPORTANT.** Scans must compulsorily be made on plaster models with laboratory precision scanners, **NEVER with intraoral optical scanners.** Scans must include also the model's base and its niches, if present (see above).

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

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