

Use of Cone Beam Computerized Tomography to check for defective teeth horizontal overlap

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AIM

To check for defective horizontal overlap in implant supported crowns using Cone Beam Computerized Tomography (CBCT), in order to avoid cheek and tongue biting¹⁻³.

Materials and Methods

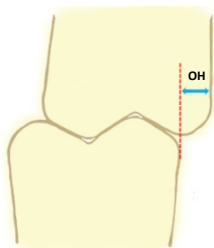


Fig. 1. Horizontal overlap (HO) is the projection of teeth beyond their antagonists in the horizontal plane.



Fig. 2. Lack of respect for this measure in implant supported crowns can generate cheek and tongue biting.

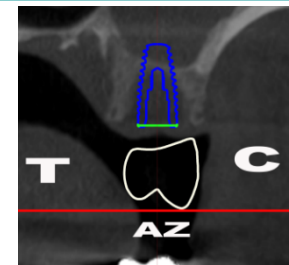


Fig. 3. Uploading DICOM files on an Implant Planning Software (IPS) is possible to identify an air zone (AZ) between the cheek (C) and tongue (T) where placing prosthetic teeth.

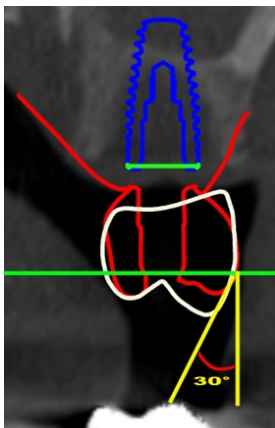


Fig. 4. Merging an STL wax-up file (red outline) with the DICOM file allows verifying if it fits in the AZ. If not, in IPS is possible to modify the wax-up until it fits passively.

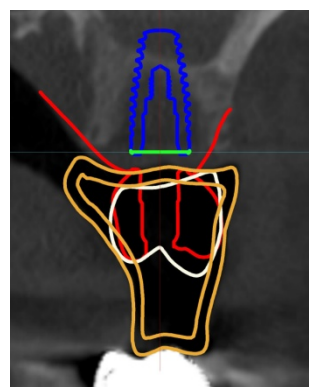


Fig. 5. If beam hardening artefacts burden the DICOM data, it is possible to hand-outline the AZ (yellow outline) and merge the resulting STL file with the data. Using Artificial Intelligence will lead in the future improve this time-consuming procedure⁴.

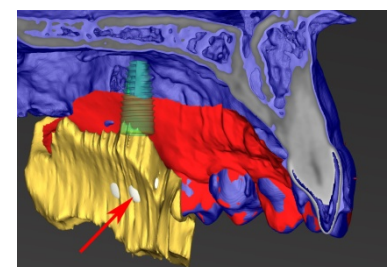


Fig. 6. Using an IPS tool is possible to cut off the protruding parts of the prosthetic crown.

Conclusions

This method allowed us to reduce CTB by digitally identifying the horizontal overlap in ISC. The main limitations are that hypertrophic cheek and tongue can make it difficult to identify the AZ. Therefore, it may be necessary to clinically check the horizontal overlap and then digitize the resulting file for using in the IPS. Moreover, this method may be time-consuming when applied to large cases but enough precise for one or two ISC.

Bibliography

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