



USING 3D IMAGING IN THE TREATMENT PLANNING OF ORTHOGNATHIC PATIENTS

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Purpose: Integrate 3D imaging to the protocol study and treatment planning for orthognathic patients.

INTRODUCCION

The excellent imaging studies provided by a Cone Beam Computer Tomography (CBCT) has made that this type of scanner become the standard of care in today's diagnosis and treatment planning on OMFS ¹. The problem in using this technology is that it requires the patients be totally still during the acquisition time (20 sec) in order to obtain a good enough quality of image, son the software could use up to 0.2 mm cuts. To achieve this requirement most of the equipments tie the patients face using struts and chin supports. This is what facial soft tissues are deformed and preclude this studies for being used comprehensively in orthognathic surgery.



KODAK 9500

MATERIALS AND METHODS

- CBCT KODAK 9500 equipment was used, which allows a FOV of 18,4 x 20,6 mm and 0,2 mm of voxel. To obtain images without soft tissue distortion during the CBCT acquisition, the patient are standing and without support devices in the soft tissues of the maxillofacial region. The images obtained with the equipment with no adaptation can be seen in Fig 1, This is because of brings a support device at the temporal fosse level and another which relies on the chin. The support that gives us problems in the surgical planning is the chin support, because this precludes the use of the soft tissues image of the chin (Fig 2 y 3).
- We designed a device of frontal support which allows us to stabilize the head during the test but at the same time doesn't affect the soft tissues (Fig 5)

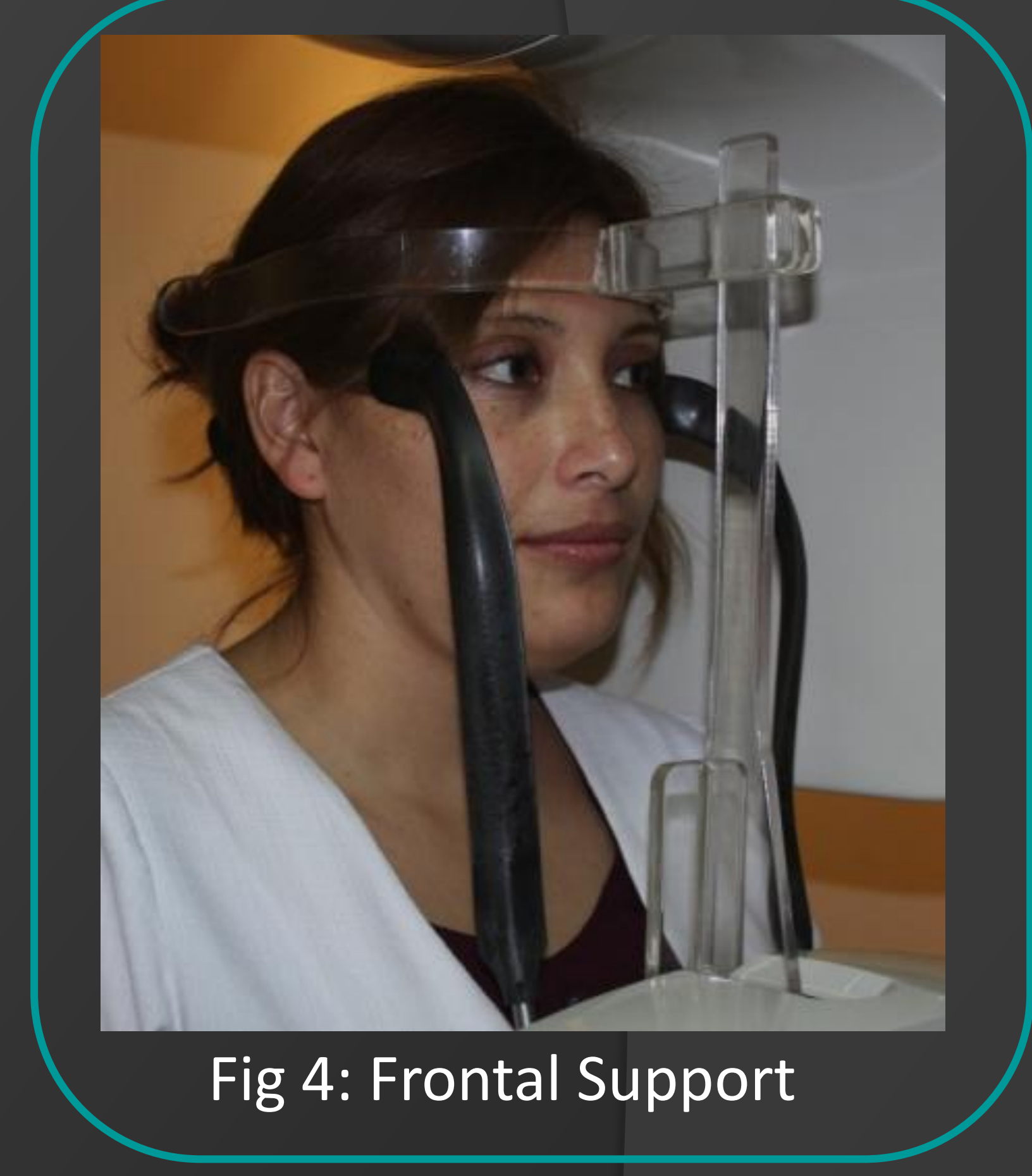


Fig 4: Frontal Support

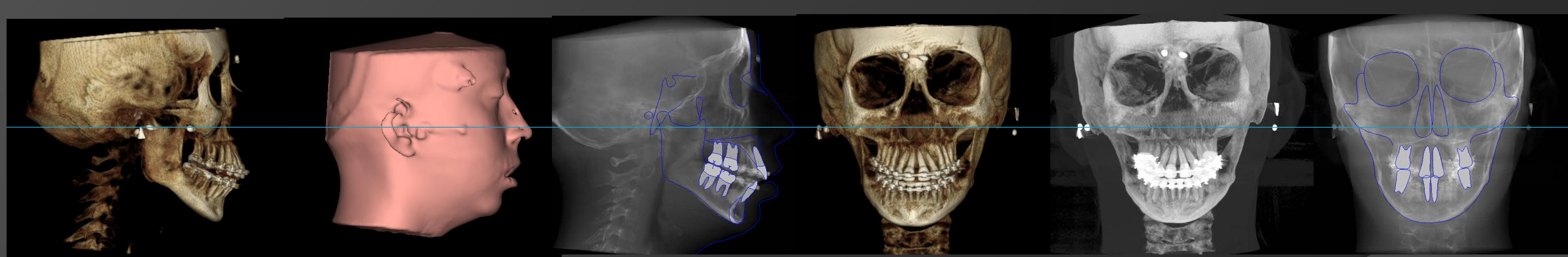


Figure 1

Figure 2

Figure 3

- Next problem in the use of this CBCT machines is that they don't allow to have the patient in natural head position and then no true reference line can be reliable at the time the X-ray lab technician prepare the sets of imaging. He just use his/her judgment to orientate the volume three dimensionally.
- Since the quality of the images obligate the patient be positioned and struts fixed to the machine, we have included the true horizontal line reference transferred to the patients skin through Holta system in our protocol ².
- To the transfer the true horizontal line records (HOLTA, previously obtained in natural head position) was used gutta-percha balls which served as a visualization aid (IN THE X RAYS) and allows to calibrate the size of the image when this is printed or used in tracings. To visualize the true hinge axis obtained by a axis locator, was used silver sheets with triangular form. The acquisition of the image is done with the patient standing and with the first occlusal contact after deprogramming, for which a silicone record is done in the articulator and then, (Fig 5) we give instructions to the patient for the use of that record during the CBCT taking.



THL



Figure 5

CONCLUSION

It is possible to obtain 3D images that are correctly oriented, calibrated and that accurately reproduce a spacial reference such as the true horizontal, as well as not altering the soft tissues, with is necessary in order to integrate these images with the clinical photographs of the patient.

BIBLIOGRAFIA

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