Making Virtual Full Arch Working model by modified Cerec3D

Akihiko Murazumi,D.D.S. Sapporo, Japan

I had modified Cerec3D Imaging Unit in order to save its calculating time. Fixing Cerec3D camera in proper 3-D position produced a complete virtual model. This time I could make InCeram Alumina crown with this virtual working model.

Materials and Method: The contents of modified Cerec3D imaging unit is follow: Supermicro X5DAL-G (Motherboard), Dual Xeon3.06GHz CPU, 8GB memory, 120GB HDD, Matrox Parhelia 256MB video card, 19 inch TFT monitor on Windows Server2003.I had put Sirona imaging capture card and power distribution card into this.(Fig.1.2.3) This calculating time was 16 times less than the original.
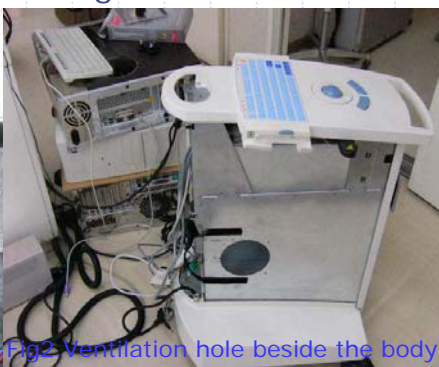

Fig1. Inside view of the imaging unit   Fig2.Ventilation hole beside the body   Fig3. Modified Imaging unit

After making individual trimmed dies on a master cast like standard crown-bridge technique in Lab-side, I covered upper part of the sectioning around abutments with wax.(Fig.4) Then powdered on this model.
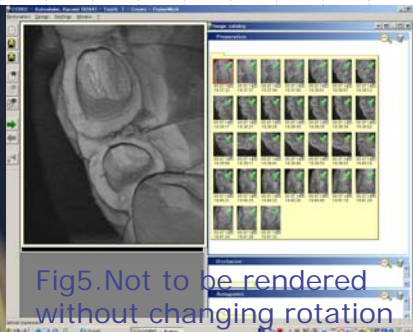

Fig4. Wax-up on the model

Fig5.Not to be rendered without changing rotation
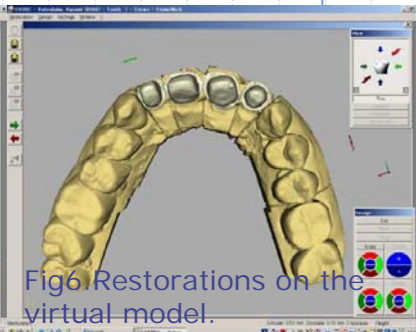
Fig6.Restorations on the virtual model.

Fixing Cerec3D camera with a Ney`s surveyer not to touch powdered casts while taking multiple OIs, I took total 31 OIs of working cast using Cerec3D Crown-Framework mode(Fig4.5.6.7.8). After designing, milling, and proceeding several steps to make some InCeram labo work, I could make a nice esthetic crown.
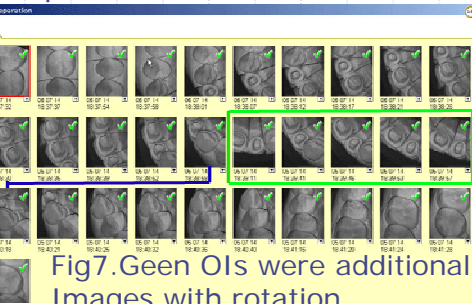

Fig7.Geen OIs were additional Images with rotation

Fig8.Good adaptation: Just after milling

Fig9.Final Result

Result: Virtual working model with Cerec3D camera was very precise. All InCeram Alumina crown had good adaptation. Modified Cerec3D had very fast calculation time.

Conclusion:It is almost impossible to obtain very precise virtual model using Cerec3D, unless one changes the angle from which OIs are taken by moving either the lense or the object:however,doing so may lead to some distorted images. I have found that by simply rotating the plane on which the object lies horizontally, it is possible to take all the OIs necessary to render an accurate virtual model free of distortion.