

Psychological Impact of Communication



Patient is a 47 year old female was unhappy with her smile and self conscience of her appearance. She is missing teeth, which was impinging during mastication. The treatment plan included sealing and root planning, along with orthodontic therapy to manage the spaces and to align the teeth in proper centric relation (Fig 1).

The patient underwent comprehensive examination and evaluation. FMX, Models, face bow, centric relation bite, soft and hard tissue exam, TMJ exam, cancer screening, and periodontal analysis.

After the orthodontic treatment was completed (Fig 2), a new set of study models were taken and a stick bite in centric relation were taken. The models were articulated and a LSK treatment plan wax up was completed by the dental laboratory. The wax up was used to provide anterior guidance and cuspid disclusion.

The patient agreed to the treatment plan of full mouth reconstruction and was appointed to have her teeth prepared in one visit (Fig 3 & 4).

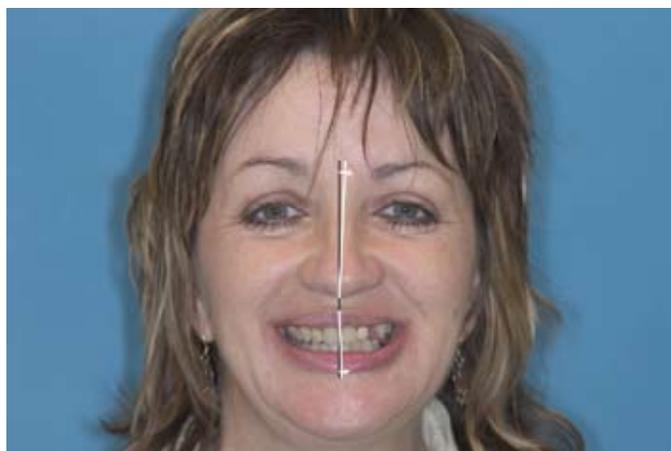


Fig 1. Initial view of vertical disharmony and facial analysis



Fig 2. Teeth shape and size can suggest the ideal proportions for the restorations



Fig 3. Maxillary preparation is completed.



Fig 4. Mandible preparation is completed.

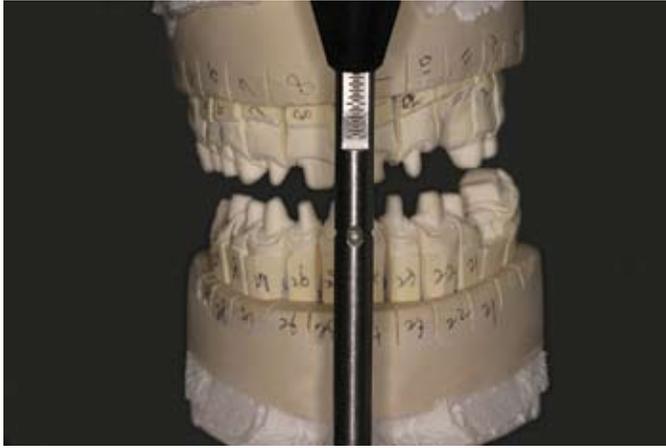


Fig 5. The models are mounted on articulator by doctor, the doctor can compare to what is seen in the mouth.

Impregum impressions were taken and Exacta Bisacryl temporaries were made. A 2 cord technique for retraction was used for the impressions. Ultradent Ultra Pac #00 cord was soaked in Astringe dent and lightly blotted dry. The cord was lightly pushed into the sulcus and the teeth were reprepared after the #00 retraction. Ultra Pac #1 was soaked in astringe dent blotted dry and was placed around all the prepared teeth. Any excess tissue that was lying on the margins of the prepared teeth was removed with a Parkell semimatic ilictrosurge 500SE. Areas of residual bleeding were scrubbed with a small cotton pledget soaked in Astringindent. The preparations were rinsed with water, scrubbed with a clean cotton pledjet to remove any debris from the preparation, rinsed and lightly dried. When all margins were clearly visible and clean the #1 cord was removed (making sure the cord was wet when removing), the preparations were rinsed again and dried.

Permadyne Garant (a light body polyether) was injected around the margins of the prepared teeth. Air was directed to thin out the material at the margin and to make sure that all the margins were coated. Permadyne Garant was then injected over the preparations and a stock bite sani-tray that had been painted with 3M ESPE ployether adhesive was loaded with Permadyne Penta H and placed over the prepared teeth. The tray was left undisturbed for 5 minutes.

TEMPORIZATION

Stone models were made using the LSK treatment plan wax up as a matrix and clear stents were fabricated. Exacta temp xtra (shade A1) was used for the temporaries. The margins were trimmed; the contour and the esthetic were evaluated. The bite was adjusted into Centric Relation occlusion and it was confirmed. The upper and lower temporaries were each sectioned into 3 pieces.

TAKING THE BITE AND ARTICULATION

The anterior segments are placed onto the maxillary and mandible preparations. Futar D (Kettenbach dental) was injected onto the posterior teeth and the patient bit down into centric relation. After the Futar D set, the bites were removed and the anterior temps were removed. The posterior temps were placed and the bite was verified. Futar D was injected onto the anterior preparations and the patient was guided into centric relation until the posterior teeth were in contact. The upper temporaries were then placed onto the maxillary preparations and a new bite was taken of the upper temporaries to power posterior preparations. After the bite setup, the lower posterior temporaries were placed and the anterior prepared teeth were registered against the upper temporaries.

The temporaries were then cleaned and cemented with Zone temporary cement (non-eugenol) (Dux dental).

The temporaries were cleaned at the margins and the #00 cord was removed. A stick bite was taken of the midline and horizontal using 6" wooden sticks. Upper and lower alginates were taken of the temporaries and poured up in vel-mix stone.

The upper temporary model was articulated on a KAVO articulator using the stick bite impression for a guide of placement. The lower model was articulated against the lower using a bite. The die model of the lower was articulated against the upper temporary model. The upper die model was articulated against the lower die model (Fig 5).

DENTAL LAB PROCEDURES

LSK full colored treatment plan wax-ups with frame support were completed on the maxillary (Fig 6). The full colored wax-ups were checked in the mouth and necessary correction were completed (Fig 7). This will let the dental technician establish the bite for the mandible.

It was decide to use Kavo Everest Zirconia (Fig 8) on the mandible and Porcelain to Metal on the Maxillary. The Kavo Everest Zirconia single copings were completed for 22 through 29 and a 3 unit Zirconia bridge for 18–20. GC Initial Zi porcelain was applied on the Zirconia framework (Fig 9). The porcelain build up was built to full contour and

included tooth morphology and anatomy. After the first firing the porcelain was examined for contour and proper firing temperature (Fig 10).



Fig 6. LSK 121 full colored treatment plan wax-ups with a frame for support, to be used to try in mouth.



Fig 7. Necessary corrections can easily be made by means of full color wax-up by trying in the mouth, #8 will need to be increase in height.



Fig 8. The framework is made using the Kavo Everest Zirconium.



Fig 9. The framework has GC Initial ZR porcelain applied.



Fig 10. After firing the porcelain, the buccal contour is examined and the correct temperature of the porcelain is confirmed.

The mandible porcelain fired restorations occlusion is checked using the full colored wax ups on the maxillary (Fig 11). By using red marking paper the bite is checked, the relationship to the maxillary wax ups (Fig 12) and the lower porcelain to Zirconia restorations (Fig 13) is examined. The

final modification of the restorations is completed, checking the interproximal contacts and three dimensional line images (Fig 14). The restorations are finished (Fig 15) and ready for try-in. The maxillary metal framework is completed (Fig 16) and prepared for opaque.



Fig 11. The Maxillary is a LSK 121 full colored wax-up and the bite is checked with the lower Zirconium restorations, after the first bake.



Fig 12. The colored wax-up occlusion pattern is checked from the red marking paper.



Fig 13. Occlusion is checked of the Kavco Everest restorations on the mandible.

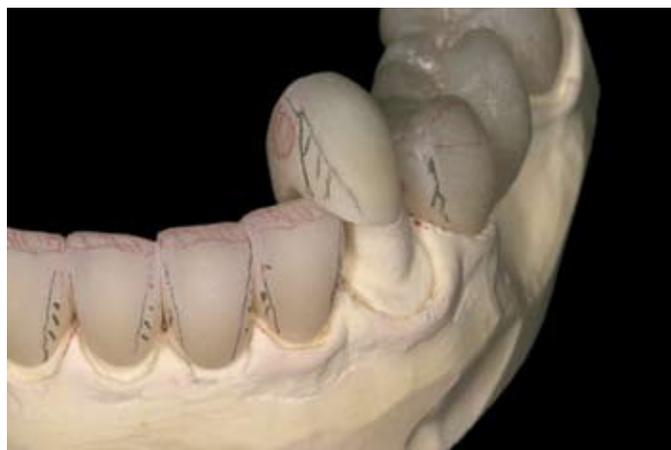


Fig 14. Red pencil lines show proper interproximal contacts and black pencil lines show three dimensional line images from lower teeth in bisque bake stage



Fig 15. Finished Kavco Everest with GC Initial ZR porcelain



Fig 16. Maxillary metal frame design is checked on the solid model.

The finished mandible lower restorations and full colored wax ups are tried in the mouth. The dentist is able to check the cusp-fossa relationship (Fig 17). The full colored wax-ups are examined for contour and lip support (Fig 18). If any adjustments are needed, it is easy to change the wax. The metal framework can be tried in the mouth with the wax ups in, this will enable to check room available and framework design (fig 19).



Fig 17. Maximum cusp-fossa relationship between the LSK 121 full colored wax-up and lower final restorations



Fig 18. Lip support is checked using the full color wax-ups

The case is returned to the dental laboratory and the technician can do final checks on the framework (Fig 20). The LSK full colored wax up is used during the porcelain application to assure proper contour (Fig 21).



Fig 19. Opaque coping next to the full color wax-up. This will enable to check room available and framework design.



Fig 20. Opaqued framework with LSK Treatment Plan Wax-up before porcelain application and check framework design



Fig 21. GC Initial MC Porcelain is used for build-up. The full colored wax-up are left in place to assure proper contour of build-up.

After the firing of the porcelain the contour is checked with the full colored wax up on the master model (Fig 22). The restorations can be interchanged with the full colored wax ups (fig 23). The final restorations are checked (Fig 24) and ready for delivery to the dental office (Fig 25). The surface texture is checked in the mouth (Fig 26) and a natural appearance is achieved. The lip support and contour of the restorations are checked (Fig 27). The patient is pleased with the appearance, before she had discoloration (Fig 28) compared to harmony (Fig 29). Some areas of the patients mouth was missing teeth

(Fig 30), she no longer will have trouble mastication (Fig 31).

CEMENTATION

After the temporaries were removed and the teeth were pumiced, cleaned and dried. The restorations were tried in and evaluated for color, contour, texture, bite and proper esthetic harmony to the patients face (Fig 32). The restorations were cemented with GC Fuji Cem. The patient had a recall appointment a week later to re-evaluate the occlusion (Fig 33).



Fig 22. After the first firing, the crown #8 contour is checked to #7, 9, and 10-full colored wax-ups



Fig 23. The LSK 121 full colored wax-ups (#3,6,8) and PFM crowns (#5,7,9) are checked on the master cast.



Fig 24. Finished restorations; upper-porcelain to metal crowns and bridge, lower-Kavo Everest Zirconia crowns and bridge.



Fig 25. Immediate view of final restorations.



Fig 26. Right side view of occlusion.



Fig 27. Mandible Zirconia restorations



Fig 28. Pre-op right side view



Fig 29. A Post-op right side view, patient desired no black triangles



Fig 30. Pre-op left side view



Fig 31. Post-op left side view



Fig 32. Facial view of the restorations shows the suitability of the re-established incisal length and 3-Dimensional appearance.



Fig 33. The successful integration of the restorations and the radiating symmetry is re-established.

About the author

Luke Kahng, CDT, is the founder and owner of Capital Dental Technology Laboratory, Inc. its division, LSK 121, provides highly personalized custom cosmetic work. He is also the official clinician for G.C. America and Bisco. He is an advisory board member of Spectrum Dialogue and has published articles in Journal of Esthetic and Restorative Dentistry, Practical Procedures and Aesthetic Dentistry,

The Journal of Cosmetic Dentistry, QDT Book, Dental Dialogue, Spectrum and Contemporary Esthetics.

He developed the LSK 121 Treatment Plan, which incorporates a Wax-Up technique that focuses upon a biomechanical design of occlusal surfaces for reconstructive and esthetic dentistry. He has also developed a series of shade conversion table for porcelain.

* Case courtesy Kaz M. Zymantas, DDS, Naperville, IL