Full Mouth Restoration

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Introduction

In his entire career as a technician, the author has very seldom been privileged to work on a case of this type. It involves a lot of commitment on the part of all the dental professionals involved: the Periodontist, Oral Surgeon, the Prosthodontist and the Lab Technician as well as the patient. The technician needs to have enormous knowledge of the process before the implants are placed and be given all the information gained from the CT analysis scanning. Size of implants and distance between the implants is crucial information because the Periodontist will place the implants based on his analysis of the patient’s scan - which will have an impact on the esthetic outcome of the case. Ultimately, this question is not going to be of concern to the specialist - he is there to perform the surgery. The technician, along with the dentist, has to decide what will be best for the patient in the long-run. Our article will deal with the behind-the-scenes work the author put into helping achieve the best possible results for the patient.

Case Study

In (Fig 1), the mandibular CT scan planning from the Prosthodontist was provided for the author as he looked into case development. One bone reduction guidance stereolithographic stent was created for the case (Fig. 2) along with several other types of stents (Fig. 3). During surgery, four BioHorizon implants were placed (Fig. 4). Size of teeth, shape, tooth protrusion – all these factors were measured and analyzed when implants were placed based on the Treatment Plan Wax-up. Before impression, note the view of copings in the mouth (Fig. 5). During laboratory processing, temporary abutment
placement was verified using primotec gel (Fig. 6). Fit was verified (Fig. 7). In (Figs. 8, 9, 10) putty matrix was placed on top of the model to note the differences between the size of teeth and aid in adding, cutting and placing the UCLA abutments. The author used primopattern LC Paste during fabrication of this case (Fig. 11) after abutments were cut back and primotec gel placed over the top (Figs. 12, 13). Primotec gel was cured (Fig. 14) and then ground down by the author to define the shape based on the full contour wax-up (Fig. 15).

Sprue was placed (Fig. 16) and then put inside the metal ring, the traditional technique since resin is involved, with burn out (Fig. 17). Investment followed (Fig. 18), then casting and finishing with white precious metal from Argen Corporation - 52 HN (Figs. 19, 20). A variety of porcelains were used in this case (Fig. 21) as the first build up was begun (Fig. 22). After the first bake was completed, the restoration was fired (Figs. 23, 24). Depth of dentin, enamel overlay demonstration (Figs. 25, 26) using TN, EN59, EOP 4 and TMO2, follows. Build - up
Figs. 12, 13: Cut back abutments, place gel
Fig. 14: Cure primopattern LC paste
Fig. 15: Shape definition
Fig. 16: Sprue
Fig. 17: Metal ring
Fig. 18: Investment
Figs. 19 and 20: Casting, finish white precious metal

Fig. 21: Variety of GC Initial porcelains

Fig. 22: Build-up

Figs. 23 and 24: After first bake

Figs. 25 and 26: Second bake
was applied with TO as well as gum color (GU) (Fig. 27) and baked for the second time (Fig. 28). Post-firing (Fig. 29), final contour and build-up was applied (Fig. 30).

After contouring, Lustre Paste was layered on (Fig. 31), L3 in this case (Fig. 32) applied to the distal and incisal 1/3 area (Fig. 33). L2 was used on the gingival/horizontal line area (Figs. 34) with L5 (light...
blue) over the incisal 1/3 area (Figs. 35, 36, 37). After firing at 800°C, note appearance (Fig. 38). Finished side view illustrates in/out/in/out line to mimic nature (Fig. 39). Note convexity, created for better cleaning ability for the patient (Fig. 40).
Figs. 41, 42, 43: Tissue contour
Fig. 44: Pre-molars
Fig. 45: Curve of Spee and Wilson
Figs. 46, 47, 48: Mirrored image

Tissue contour (Fig. 41), transparency color depth (Figs. 42, 43) and pre-molar double-check (Fig. 44). Next, lingual horizontal Curve of Spee and Wilson check (Fig. 45). Mirrored view closely illustrates each color, contour and shape (Figs. 46, 47, 48). Healing caps on the lowers and old denture on the maxillary,
Fig. 49: Healing caps
Fig. 50: Torque lowers
Figs. 51 and 52: Intraoral occlusion check
Fig. 53: Occlusion and movement check
Fig. 54: Facial view
Fig. 55: Left side view
Fig. 56: Right side view

pre-operatively shown (Fig. 49) before torquing lower teeth (Fig. 50). Intraoral occlusion check follows (Figs. 51, 52). Occlusion and movement from old to new dentures (Fig. 53) and a facial view (Fig. 54) noted, followed by a left side view (Fig. 55). Desired effect was achieved: right side view and the natural appearance of the teeth - irregular, not too bright, with low opacity (Fig. 56) follows. Custom
restoration - with shape, tissue contour and lobe design are all accounted for. Details and characteristics were checked next (Fig. 57) and the denture was then cleaned underneath with dental floss (Figs. 58, 59). Implant holes were filled in with composite by the clinician (Fig. 60).

A maxillary CT scan plan led to the next step of the total mouth reconstruction (Fig. 61, 62, 63), provided by the dentist. Healing caps in place, the patient was back to be checked after one year (Fig. 64). Bio Horizon implants are in, healing caps out and we can see the beautiful work of the dentist. The thickness of the gingival neck and height makes
the case easy to work with (Fig. 65). An impression was taken next (Fig. 66). Patient will wore a preliminary, provisional denture (Fig. 67) to check for fit and size, etc. Argen 52 HN two piece metal frames (Fig. 68), with UCLA abutments, created because the path of insertion issue made one piece restoration impossible to do.

Firing – opaque with inside color (Fig. 69). Build-up stage is next, (Fig. 70) then placement on the model to check symmetry between 8 and 9, 7 and 10 and 6 and 11 (Fig. 71). A mirrored
image follows (Fig. 72) and then a side view (Fig. 73). The author checked gum contour and tissue (Fig. 74) and the denture teeth, final match up – change contour (Fig. 75).

Mirrored 2 piece restoration – check for translucency (Fig. 76) and then a close-up check for texture (Fig. 77). A mirrored side view (Fig. 78) and reminder to the reader that because of occlusion, we did not need to place an implant at #14 – note that there is framework only (Fig. 79). Also, readers, please note tissue color, harmony of color (Fig. 80) and after an immediate try-in (Fig. 81) a pleased patient (Fig. 82).
Conclusion

This case was a long journey for everyone involved. If we do not have a plan for a case such as this one, we cannot reach our final destination. The dentist and the technician had to work together on this case in order to achieve the best results for the patient. The patient had no dentition which therefore meant implants would hold his restoration in place, but what about planning? Without tooth morphology understanding, after extractions, we would not have had a true strategy for the patient. The technician had to measure size of teeth, contour, and understand how to apply color internally to create a 3 dimensional, natural effect.

The author extends great thanks to Dr. Joseph Caruso for the opportunity to work on this case and hopes that in another six months’ time the patient will provide us with a new photographic image to compare with what we currently have. This is a large scale case with many steps along the way, and fantastic results due to planning and patience! 

About the author

Luke S. Kahng is one of the world’s finest and most accomplished lab technicians, specializing in high-end ceramic restorations. Luke has served on several major dental journal boards as a contributing member.

Luke invented the Chairside Shade Guide – Volumes 1 and 2 and then expanded the breakthrough to a unique ceramic shade guide system named the Seasons of Life Selection. These valuable tools are used daily on a world-wide basis.

Luke is owner and President of his own lab, LSK121 Oral Prosthetics, one of the largest dental laboratories in the country, located in Naperville, IL.

He has published over 100 articles in major national dental publications. Additionally, Luke has authored several books, including Anatomy from Nature, The Aesthetic Guide Book, Smile Selection Plus CS3 Clinical Cases, and The Kaleidoscope Wax-Up Book. These books have been distributed throughout the world as must-haves for Dentists eager to gain more knowledge in their industry.