Customised aesthetics for provisional profile prosthesis with ceramage gum

By Dr Alisa Tapananon & Dr Pongrapee Kamolrongsawat, Thailand

Case Presentation
A 61-year-old Thai female presented with loosening 9-unit fixed dental prostheses (FDPs). Her chief complaint concerned her loose and unpleasing front teeth with unsatisfactory removable gingiva. The initial clinical examination revealed a long-span Porcelain-Fused-to-Metal (PFM) FDPs of teeth 14-25 fixed with temporary cement since 2009 at private hospital (Fig 1,2). The patient had maxillary hard and soft tissue defects associated with alveolar ridge resorption and loss of lip support. Removable Acrylic Gingival Veneer (AGV, Fig 3) was used to cover those FDPs in order to improve extra-oral soft tissue profile (Fig 4). Without AGV, the patient had concave profile (Fig 5). FDPs were removed to evaluate the existing abutments condition (Fig 6). Abutment teeth 13,24,25 had first degree mobility. Panoramic Xray (Fig 7) revealed that tooth 25 had cast post and core with vertical root fracture. Tooth 25 was endodontically treated with a periapical lesion. After thorough diagnosis and analysis, the treatment plan was presented to the patient with the following phased treatment approach:

Phase 1
Aesthetic evaluation
Aesthetic analysis was performed with evaluation of the smile line, incisal profile, length and proportion. Diagnostic wax-up was fabricated according to the aesthetic evaluation. (Fig 8)

Phase 2
Provisional full arch bridge fabrication
Preparation cast with a diagnostic wax-up cast was sent to a local laboratory for scanning and transforming into STL (Stereolithography) digital impression file. (Fig 8,9) Two sets of STL impressions were super-imposed in the software in order to subtract the overlapping data. This process was done in order to transform the diagnostic wax-up into the STL digital impressions. Consequently, the STL data was sent to the laboratory for milling. (Fig 10) A monochromatic milled PMMA temporary bridge was fabricated in a local laboratory and returned to the dentist for composite layering. (Fig 11) Gingival cutback was made to create sufficient gingival space for pink composite layering. (Fig 12) Prior to composite layering, Ceramage Bond 1 was applied and left for 10 seconds to prime the surface, followed by application of Ceramage Bond 2 for 10 seconds and light cured for 20 seconds. (Fig 13) Ceramage Indirect Composite gingival shade GUM-O (GUM Opaque) was applied to mask the color of PMMA. (Fig 14)齿槽突植骨复合材料应用与软组织

Fig 1. Pre-operative Fixed Dental Prosthesis with Acrylic Gingival Veneer
Fig 2. Pre-operative without AGV
Fig 3. Acrylic Gingival Veneer AGV
Fig 4. Extraoral smile with FDP in place
Fig 5. Concave facial profile
Fig 6. Pre-operative without 9-unit FDPs
Fig 7. Pre-operative Panoramic Xray
Fig 8. Full contour waxing was made according to teeth proportion and position.
Fig 9. Prepared cast and Diagnostic cast were scanned and transformed into STL file.
Fig 10. Two sets of STL data were super-imposed and sent for milling.
Fig 11. Milled Full-contour PMMA bridge
Fig 12. cutback was made to create gingival space for pink composite layering.
Fig 13. Ceramage Bond 1 and 2 (CRB1 and CRB2) were applied to bond the Ceramage pink composite.
Fig 14. Ceramage GUM Opaque (GUM-O) was applied to mask the color of PMMA.
Fig 15. Ceramage GUM Dark (GUM-D) was applied on the attached gingiva area to the buccal flange.
GUIDED BIOFILM THERAPY

AIRFLOW PROPHYLAXIS MASTER

EMS+ MAKE ME SMILE.
was applied to mask the color of PMMA (Fig 24). GUM-D (GUM Dark) was applied on the attached gingiva area to the buccal flange (Fig 25) GUM-L (GUM Light) was applied in order to imitate the free gingival area.

Contouring, Finishing and Polishing of temporary restoration

Meticulous finishing and polishing of the restoration is a crucial step to achieving the desired aesthetics. Dura-Green stone was used to contour and polish the restoration. Flexible diamond polishing paste was applied with a fine brush followed by the cotton buff to achieve the final high-luster polishing (Fig 19).

Phase 3

Flapless guided-surgery with immediate loading protocol

The questionable teeth (23, 24 and 25) were extracted under local anesthesia. The surgical guide was secured in place on the maxillary arch with two anchor pins (Fig 20). Flapless surgery was performed using guided tissue punch. Sequential drilling were made according to the manufacturer’s protocol. All implants were placed through the surgical template. All implants were torqued 35 Ncm to ensure primary stability. The extraction socket were filled with small particle Xenograft Biot-Oss, Geistlich and covered with resorbable collagen plug (Collar plus, Zimmer Incotec). Straigh and angle multi-unit abutments were sealed and torqued 15 Ncm on each implant (Fig 23).

The existing provisional bridge was utilized for converting to a provisional screw retained prosthesis. An immediate loading protocol was utilized. Metal temporary abutments were connected on each implant. Provisional full arch bridge was perfored to match the position of the metal temporary abutments, placed on their correct position and OVD, retined with self-cure acrylic resin. All surfaces were fine-polished. A light cure denture cement (Palakal) was applied on the intaglio surface. The provisional bridge was delivered to the patient’s mouth (Fig. 24-27) Post-operative panoramic XRAY revealed that implants were placed according to the pre-operative planning (Fig. 22) Suture was removed after surgery 14 days. A final profile prosthesis will be fabricated after implant osseointegration.

Conclusion

When treatment planning for restored maxilla, it is important to consider a holistic approach which includes replacement of missing teeth, restoration of significant segments of missing alveolar bone and soft tissue contours to achieve optimal aesthetics. This case helps to showcase the benefits of using a provisional profile prosthesis fabricated with CRANITE Gum Colors to help improve extra-oral soft tissue profile of the patient and result in an aesthetically pleasing maxillary full arch restoration.  

Editorial note:

A lot of references can be obtained from the publisher.

About the author

Alisa Tapasanon
DDS (Mahidol), MSc (Prosthodontics, Mahidol)
Cert. of Advanced Clinical Programme in Aesthetic and Restorative dentistry, UCLA, USA
Part-time faculty, Department of Prosthodontics, Mahidol University, Bangkok, Thailand
Part-time dentist Phathathit 2 Hospital, Bangkok, Thailand

Pongrapee Kamroongwanakul
DDS (Mahidol), MSc (Prosthodontics, Mahidol), AFAID
Cert. of Fellowship in Implant Dentistry, Loma Linda University, USA
Part-time faculty, Department of Prosthodontics, Mahidol University, Bangkok, Thailand
Full-time dentist Phathathit 2 Hospital, Bangkok, Thailand
Associate Fellow of American Academy of Implant Dentistry