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TIPS FROM OUR READERS

Injectable silicone-based gingival mask technique: Transferring the emergence profile of multiple implant restorations

Ryan Tak On Tse, BDS, MSc[a] and Baldwin W. Marchack, DDS, MBA[b]

Interim implant-supported restorations play an important role in achieving the desired esthetic outcome and long-term success of implant prostheses.[1,2] The initial interim restoration is made from a conventional implant-level impression, which is then modified to sculpt the gingival contour. Additional material is added to mold the papillae and gingival margins and recreate the natural gingival architecture. An appropriate impression technique is essential for an accurate transfer of the peri-implant emergence profile to the definitive cast.[3,4]

Two different techniques have been described to transfer the emergence profile from the patient's mouth to the definitive cast. The indirect technique[5-9] uses a custom impression coping to copy the peri-implant emergence profile. A standard impression coping is modified by filling the space with autopolymerizing or light-polymerizing resin between the impression coping and the submarginal emergence profile as outlined by a silicone matrix. This technique can transfer the emergence profile from the patient's mouth to the definitive cast with high precision. However, the technique is time-consuming and only suitable for a single implant. For multiple implant restorations with pontic site development, this technique is complex, as the subgingival emergence profile of several implant abutments and the pontic area need to be replicated. The custom impression copings must be splinted to accurately transfer the position of the implants. A disadvantage of the indirect technique is that the peri-implant soft tissue will collapse

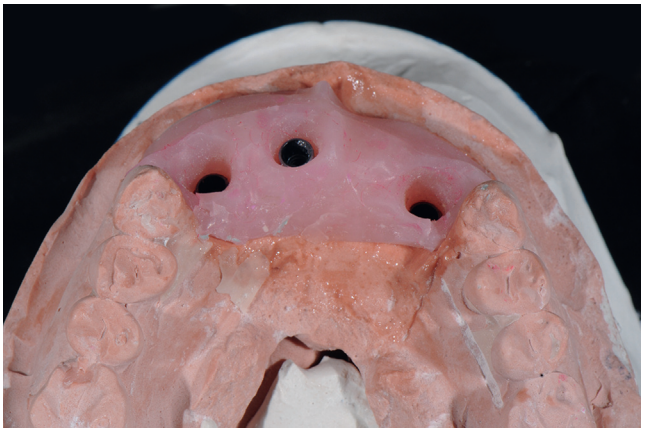

Figure 1. Soft tissue working cast made from original implant impression using splinted impression copings. Gingival contours represent shape of healing abutments.

Figure 2. Interim restoration as fabricated by dental laboratory technician.

[a]Instructor, Department of Continuing Education, Ostrow School of Dentistry of USC, University of Southern California, Los Angeles, Calif.
[b]Instructor, Department of Continuing Education, Ostrow School of Dentistry of USC, University of Southern California, Los Angeles, Calif.

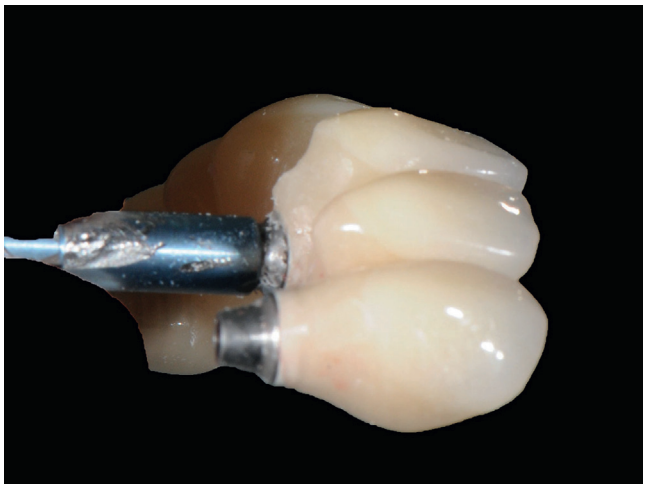

Figure 3. Interim restoration as modified by treating dentist for ideal emergence profile and ovate pontic contour.

Figure 4. Tissue condition after 6-week maturation period.

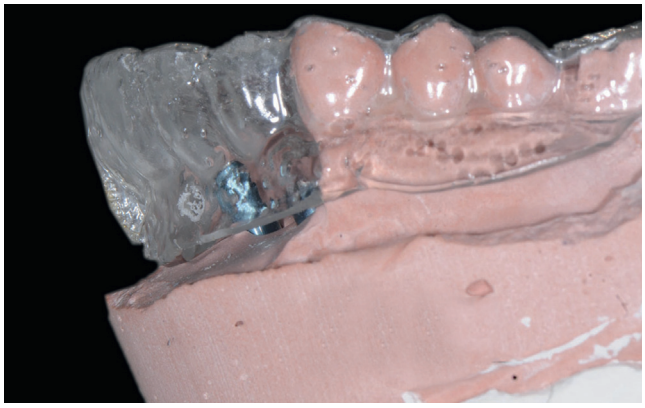

Figure 5. Vacuum-formed clear matrix with hole placed for injection of silicone-based gingival mask.

Figure 6. Interim restoration removed. Note tissue sculpted to desired architecture.

Figure 7. Interim restoration fastened to original definitive cast.

Figure 8. Vacuum-formed clear matrix placed on original definitive cast with interim restoration attached.

during the fabrication of the indirect custom impression copings. When the interim restoration is delivered, the patient will feel discomfort as the tissue is displaced.

Schoenbaum and Han[10] described an efficient and accurate direct custom implant impression coping technique to transfer the emergence profile of an implant

Figure 9. Silicone-based gingival mask material injected into space between definitive cast, clear vacuum-formed matrix, and interim restoration.

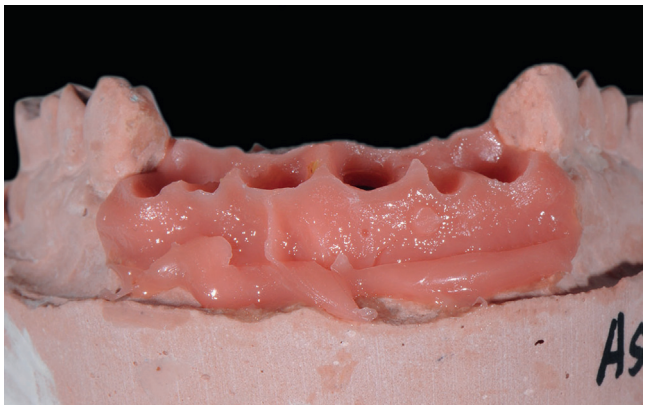

Figure 10. Original definitive cast modified with gingival mask.

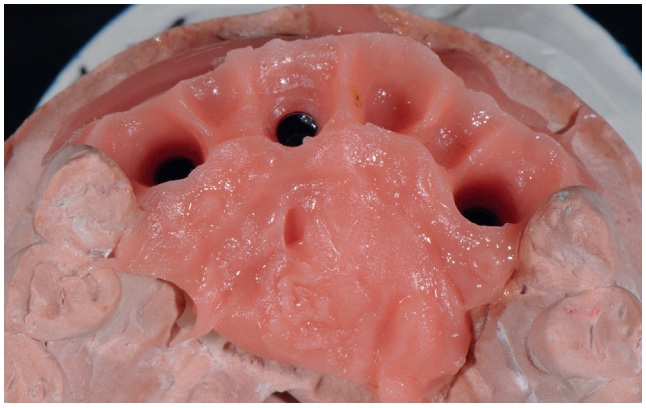

Figure 11. Gingival mask–capturing emergence profile of abutments and contour of pontic sites, eliminating need for second impression.

abutment and pontic site to the definitive cast. However, this technique is limited to restorations supported by 2 implants. A concern has been expressed that the heat generated by the flowable composite resin and its toxicity may damage the gingival tissue.[11] The injectable silicone-based gingival mask technique was developed to transfer the peri-implant emergence profile and the gingival margin of the interim restoration to the definitive cast.[12]

TECHNIQUE

1. Use an implant-level impression, splinting the impression copings, to fabricate a soft tissue cast (Fig. 1).
2. Direct the dental laboratory to fabricate an interim restoration replicating the soft tissue profile of the healing abutments (Fig. 2).
3. Modify the emergence profile and pontic area of the interim restoration with flowable composite resin (Filtek; 3M ESPE) (Fig. 3).
4. Reappoint the patient after 6 weeks to allow tissue maturation (Fig. 4).
5. Make an intraoral impression of the maxilla using an irreversible hydrocolloid (Jeltrate; Dentsply Sirona) to record the interim restoration with the gingival margin and soft tissue profile.
6. Fabricate a vacuum-formed matrix from a clear, hard thermoplastic sheet (Pro-form 0.020 temp splint; Keystone Industries) to cover the gingival tissue and prepare a small hole in the gingival area (Fig. 5).
7. Remove the interim restoration and replace it on the definitive cast without the original gingival mask (Figs. 6, 7).
8. Seat the vacuum-formed matrix over the interim restoration on the definitive cast (Fig. 8).
9. Inject the gingival mask material (Muller; Omicron GmbH & Co KG) directly around the implant replicas and into the space under the pontics through the hole in the vacuum-formed matrix (Figs. 9-11).
10. Alternatively, to ensure that there are no air bubbles in the critical areas, the gingival mask material may be injected directly around the abutments and under the pontics before seating the vacuum-formed matrix. Then seat the matrix and continue to inject through the hole in the matrix until excess flows out under the matrix.

SUMMARY

The injectable gingival mask material can transfer the emergence profile of implant abutments and the pontic site to the definitive cast both accurately and precisely. It is a straightforward technique that saves chairside time and does not require an additional impression. The clinician can modify the emergence profile and mold the papillae to optimize the access for hygiene and esthetics; this is then accurately transferred to the

definitive cast. This technique can be used in different clinical situations, including different implant angulations.

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Corresponding author:
Dr Ryan Tak On Tse
Sino Plaza, Ste 1604
255 Gloucester Road, Causeway Bay
HONG KONG
Email: tsetakon@hotmail.com

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Noteworthy Abstracts of the Current Literature

A pilot study to determine the effect of three months of oral appliance therapy using a mandibular advancement device on HbA1c in subjects with type 2 diabetes mellitus and obstructive sleep apnea

Baslas V, Chand P, Jurel SK, Tripathi S, Arya D, Tripathi S, Singh BP, Dubey A

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Purpose. Continuous positive air pressure (CPAP) is recommended for obstructive sleep apnea (OSA) with type 2 diabetes mellitus(T2DM) but cost and compliance are major barriers. A mandibular advancement device (MAD) may be an economical, feasible alternative to CPAP. Various studies have been published to recommend MAD as an alternative to CPAP for OSA, but not regarding its efficacy for patients having OSA as well as T2DM. This study aims to objectively and subjectively evaluate oral appliance therapy using a MAD in patients having OSA as well as T2DM.

Material and methods. Patients who visited the hospital clinic having OSA as well as T2DM were recruited. After giving informed consent, participants were divided into three equally sized groups of three grades of OSA (mild, moderate, severe) on the basis of a polysomnography report and were given intervention of MAD at 50% of maximum mandibular protrusion and 20% of maximum interincisal opening. Objective outcomes were HbA1c level and apnea hypopnea index score (AHI). Subjective outcomes were Epworth Sleepiness Scale (ESS) and the Berlin Questionnaire. All outcomes were assessed before and after 3 months of intervention.

Results. A statistically significant difference was seen in all outcomes after intervention with MAD ($P<0.01$) in all groups except HbA1clevel in participants having severe OSA.

Conclusions. MAD may be recommended in patients having OSA as well as T2DM. This study provides evidence to inform health care workers about possible use of MAD in OSA with T2DM.