

CUSTOMIZING THE EMERGENCE PROFILE USING A SCREW RETAINED IMPLANT PROVISIONAL RESTORATION- A CASE REPORT

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Abstract:

Position of the Implant surrounded by enough amounts of soft and hard tissues are essential for achieving optimum functional and aesthetic outcome. A key factor in achieving aesthetics in implant dentistry is the emergence profile. Immediate loading allows the formation of near ideal gingival contours. Therefore, provisional restoration can play the role of a tissue mold and can greatly enhance the appearance of the final restoration. The absence of cementing medium during temporization helps the formation of healthy gingival tissue contours. This article describes a clinical technique for customizing the emergence profile with a bio simulated contour to achieve desired aesthetics.

Key words: immediate loading, emergence profile, screw retained temporary, implant temporization, soft tissue collar

Introduction

Currently, Implant treatment is considered as the minimum standard of care to replace any missing teeth especially in the anterior region.¹ Osseointegration being the primary requisite of implant success. However, implant is considered successful only if it fulfils the aesthetic requirements

with in a well-balanced soft and hard tissue frame.² Loss of tooth leads to resorption and subsequent soft tissue collapse resulting in unaesthetic appearance. Therefore, it is of utmost importance to preserve and enhance the soft tissues profile which can otherwise collapse if preventive measures are not taken. Placement of a provisional restoration preserves soft tissue following surgical placement of implant.³ Several authors have proved that the temporaries help in osseointegration as they provide the necessary stimulus to the bone during the healing phase.⁴ Continual advancement in the design of the implant and their surface modifications have led to increase in primary torque, decrease in implant micro motion, and has also resulted in enhanced bone apposition during the healing process. Immediate restoration, apart from the preservation of the hard and soft tissues, provides the patient with an immediate tooth as a replacement of the missing teeth which help the patient both socially and psychologically. Mimicking a near natural emergence profile may be possible by customizing the abutment contour in the region between implant platform and gingival margin. Typically, this contouring was done in the laboratory by a technician with limited access to clinical perspectives during or after second stage surgery. The requirements of the hard and soft tissue contours are rarely met

by the stock abutments provided by the implant system. Therefore, we believe the desired contours can be achieved through provisional restoration. Literature demonstrate different techniques which can be used for fabrication of implant supported temporary restorations. Provisional crown can be fabricated in the laboratory using diagnostic casts and inserted immediately after implant placement or during stage II surgery.

This article describes a technique, which was used to fabricate a screw-retained temporary restoration using a custom-made heat cure acrylic shell which was placed over the implant a week after implant placement.

Case Report:

A 28 years old male patient visited the clinic with a complain of missing tooth in the upper front region (Fig 1). On examination, maxillary right lateral incisor was missing, and the patient was wearing a removable partial denture for the same. A detailed case history was recorded followed by routine investigation for placement of dental implant. Implant (Hitek implants dimension: 4.5mm*11.5mm) was placed (Fig 2a, 2b) and a temporary abutment of suitable dimension was placed immediately (Fig 3) followed by customization of emergence profile after one week of placement.



1. Pre-Op



2a: Parallelism



2b: Implant placement



3. Placement of temporary abutment



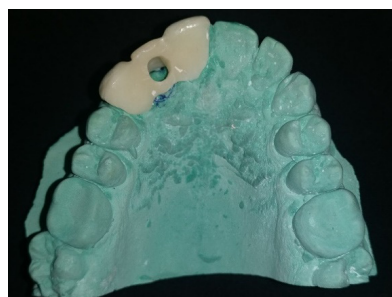
4a: PMMA Crowns (Buccal View)



4b: PMMA Crowns (Palatal View)



5. Fit verified



6. Access hole made to accommodate temporary abutment



7. Crown cemented on the abutment

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Technique to customize the emergence profile

1. Diagnostic impressions of maxilla and mandible were made before implant placement and the casts were obtained.
2. An anatomic wax up was done in area of missing crown and a provisional methyl methacrylate Maryland bridge was fabricated and the wings extended onto the buccal surface of the teeth (Fig 4a, 4b). The extension of the wings on the buccal

surface ensures proper seating (Apico-Coronally) of the crown during cementation.

3. After surgical placement of implant, the provisional abutment was selected and trimmed to the required height.
4. The Maryland bridge was tried clinically (Fig 5), and an appropriate lingual access hole was made to accommodate the temporary abutment. (Fig 6)



8a: Polished temporary restoration (Palatal View)



8b: Polished temporary restoration (Proximal View)



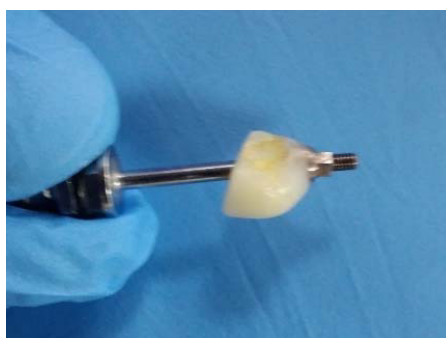
9. Screw retained provisional



10. Emergence profile prior to customization



11. Emergence profile after customization



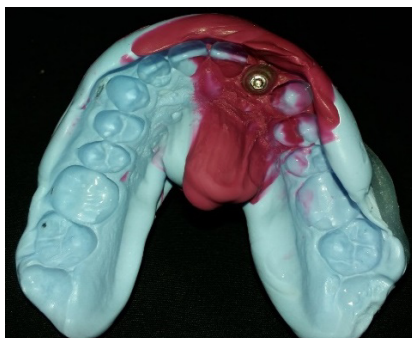
12. Provisional crown



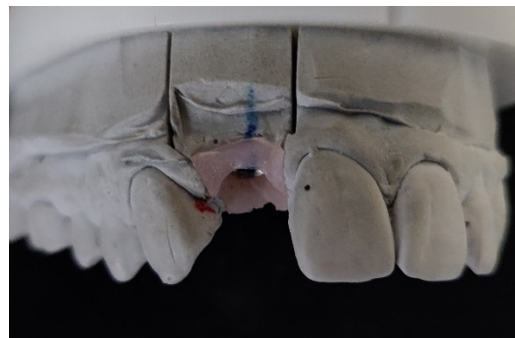
13. Putty index



14. Customized impression post



15. Implant level impression



16. Emergence profile transferred on to the master cast

5. Once accurate seating of the Maryland was confirmed, the pontic was hollowed to create space for luting agent and the access hole of the implant abutment was plugged with cotton.
6. Flowable composite was filled in the pontic, extra orally and the prosthesis was then seated on the implant abutment and cured. (Fig 7)
7. The access hole was redefined. The prosthesis was unscrewed, and the wings were trimmed.
8. Any unfilled void between the crown and the abutment was filled with flowable composite (Fig 8a, 8b).
9. The provisional was polished using So-flex (Dentsply- Sirona) disks and the prosthesis screw retained onto the implant (Fig 9).

The current technique demonstrates the conversion of a Maryland bridge into a screw retained implant provisional restoration showing a drastic improvement in the emergence profile. (From Fig 10 to Fig 11).

After the provisional restoration is placed over the implant it is recommended to wait for 21 days to

allow the gingival tissues to remodel.⁵

Technique for transferring the achieved gingival profile to the master cast:

1. A putty index of the provisional crown (Fig 12) attached with a lab analogue was made (Fig 13).
2. The provisional crown is carefully removed from the putty index; care should be taken not to change the position of the analogue.
3. An impression post is carefully screwed in to the putty index containing the implant analogue.
4. Self-cure acrylic or a flowable composite is flowed in to the space between putty and the impression post. (Fig 14)
5. This customized impression post is used to record the implant level impression. (Fig 15)

Using this technique, the emergence profile was transferred onto the master cast (Fig 16). Following the impression, the conventional steps (Jig verification (Fig 17), Abutment placement (Fig 18), Cementation of screw retained prosthesis (Fig



17. Jig verification

18. Abutment placement



19a: Crown cementation

19b: Final Restoration (Occlusal view)

19c: Final Restoration (Frontal View)

20. One year follow up CBCT

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19a), Final Restoration (Fig 19b, 19c) for restoration of an implant was carried out.

A CBCT report after one-year follow-up showed clinically insignificant crestal bone loss. (Fig 20)

Conclusion:

An implant restoration should be both aesthetic as well as functional in nature.⁶ Gingival reencountering using a temporary restoration is a non-invasive procedure.⁷ The final restoration which lies in a well-balanced and harmonized soft tissue frame can be successfully achieved by customizing the emergence profile during the healing phase.

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