Soft Tissue Management around Implant in the Esthetic Zone: A Case Report

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Abstract One of the challenges in restoring anterior space with implant restoration is maintaining the natural looking of peri-implant area. A 48 years old Saudi female came to the prosthodontic clinic complaining from unaesthetic appearance of her upper anterior teeth. After clinical examination, the patient was diagnosed with advanced periodontitis in teeth #12,11,21,22. After discussion with the periodontist, the decision was to extract these teeth and immediately place implants in the sockets of teeth #11 and #22 followed by immediate loading. Implant surgery was performed but primary stability was not gained. The treatment changed to fabricating custom healing abutments to preserve the soft tissue and the use of transitional denture as a temporary restoration. After 3 months, the soft tissue management using provisional restoration with dynamic compression technique and gingivoplasty was done. Then, the use of an indirect-direct technique for transferring and replicating the cervical contours of provisional restorations to a modified impression coping, which is then used to make an impression of both soft tissue contours and implant positions in the dental arch to fabricate the final prosthesis. This method helps to control gingival contour around implant prosthesis to create an emergence profile. It is relatively easy, precise and predictable method for accurate duplication of soft tissue profile. The technique presented differs from other techniques in that it reduces gingival trauma by eliminating the intra-oral use of resin monomer that avoid chemical or thermal insult to the tissues. It also minimizes surgical procedure by remodeling the soft tissue during the healing process to create the proper contour needed. In addition to that, the important advantage is avoiding the possibility of soft tissue collapsing that may occur during the impression procedure, which gives accurate of the peri-implant soft tissue contours. This case report describes the dynamic compression technique with provisional restorations in the esthetic zone and an alternative impression procedure that accurately captures the emergence profile and soft tissue contours around implants after a provisional restoration has been placed.

Keywords: esthetic zone, Implant, Soft tissue management

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1. Introduction

Achieving an optimal esthetic outcome with implant-supported crowns in the esthetic zone remains one of the greatest challenges in implant dentistry. The creation of an appealing implant restoration in the esthetic zone is based on detailed treatment planning and consideration of possible risk factors [1]. Even after a successful and meticulous surgical protocol, the prosthodontics finalization remains challenging. The esthetic outcome depends on surgical and prosthetic aspects. Prosthetic aspects include the quality of the restoration itself and the creation of surrounding peri-implant soft tissues that harmonize with the adjacent dentition [2].

2. Case Presentation

A 48 years old Saudi female came to the prosthodontic clinic complaining from unaesthetic appearance of her upper anterior teeth (Figure 1).
After clinical examination, the patient was diagnosed with advanced periodontitis in teeth #12,11,21,22 (Figure 2).

After discussion with the periodontist, the decision was to extract these teeth and immediately place implants in the sockets of teeth #11 and #22 followed by immediate loading (Figure 3, Figure 4).

3. Treatment Details

Implant surgery was performed but primary stability was not gained. The treatment changed to fabricating custom healing abutments (Figure 5, Figure 6) to preserve the soft tissue and the use of transitional denture as a temporary restoration (Figure 7, Figure 8).

After 3 months, soft tissue management with simplified method was performed. The healing abutment was removed and an impression of the resultant tissue contour was made. On the resultant stone cast, the inner gingival sulcus was reshaped by a rotary instrument to approach the final desired crowns contour. Then, fabrication of an interim crowns was done (Figure 9).

During temporary crowns insertion, we used high speed handpiece with an oval shaped bur to remove circum-implant soft tissue (Figure 10).
During that time, selective pressure was applied by adding volume using flowable composite resin onto the interproximal and external gingival contours (Figure 11 - Figure 13). This process will naturally stretch the gingival tissues, and it was done in increments over a period of time.

After achieving good soft tissue profile (Figure 14), the following technique have been used to transfer the created soft tissue profile to the final master cast: by using an individualized impression coping that has the same tissue profile as the clinically approved provisional (Figure 15 -Figure 18).
The definitive restorations were fabricated and inserted (Figure 19 - Figure 22).

4. Discussion

This case report describes a clinical method that helps to control gingival contour around implant crown to create an emergence profile for the crown. Provisional restoration for implant-supported restoration can help in predicting and achieving the esthetic result. One of the important advantages of provisional restorations is modeling of soft tissue during the healing process [3]. Several techniques have been proposed to restore gingival contour and create emergence profile for an esthetic restoration during provisional restoration. Neale and Chee, Chee and Donovan advised performing gingivoplasty procedures to recontour the tissues before making provisional [4,5]. Hinds [6] described the fabrication of a custom impression coping for the replication of the healed tissue around the implant. Bain and Weisgold [7] and Ormianer et al [8] recorded the soft tissue contour by inserting autopolymerizing acrylic resin directly into the sulcus during impression making. However, use of acrylic resin monomer intraorally may cause thermal and chemical irritation of the soft tissue. Attard and Barzilay [9] presented a technique using a provisional restoration-level impression to register the soft tissue configuration and shape, as well as the implant position.

In this case, we used a relatively easy, precise and predictable method for accurate duplication of soft tissue profile. The technique presented differs from other techniques in that it reduces gingival trauma by eliminating the intra-oral use of resin monomer that avoid chemical or thermal insult to the tissues. It also minimizes surgical procedure by remodeling the soft tissue during the healing process to create the proper contour needed. In addition to that, the important advantage is avoiding the possibility of soft tissue collapsing that may occur during the impression procedure, which gives accurate of the peri-implant soft tissue contours.

5. Conclusion

This case report describes the dynamic compression technique with provisional restorations in the esthetic zone and an alternative impression procedure that accurately captures the emergence profile and soft tissue contours around implants after a provisional restoration has been placed. The definitive restoration is shaped exactly like the provisional, and excellent esthetics results can be achieved.

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