



ISSN Print: 2394-7489  
ISSN Online: 2394-7497  
IJADS 2020; 6(1): 17-18  
© 2020 IJADS  
www.oraljournal.com  
Received: 13-11-2019  
Accepted: 15-12-2019

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## Achieving optimal esthetics (Emergence profile) during implant placement: A review article

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### Abstract

Replacing single missing teeth with implant restorations has always proved to be a prosthodontic challenge. Ideal soft tissue contours in the peri-implant area allow for a more natural appearance of the restoration. With the help of three different techniques, this tissue architecture can be established, in turn delivering the best esthetic result for the patient.

**Keywords:** Surgical guides, interim prosthesis, CAD-CAM customized abutments

### 1. Introduction

The natural tooth defines the shape of the surrounding soft tissues. Upon removal of the tooth, the soft tissue contour collapses and changes, initially because of lack of support of hard tissue. Soon afterward, the biological cascade of the healing process remodels the tissue and contours it [1]. Maintaining or reconstructing the original soft tissue contours is essential to create a dental implant-supported crown with a natural appearance. Various hard and soft tissue augmentation techniques have been described [2]. In addition, a proper usage of guides, fabrication of interim crowns, and use of digital softwares can add to the stability and maintenance of the soft tissue contours in immediate implant placement sites and also in healed sites [3]. This article aims to review 3 treatment modalities which would enable the clinician to achieve the most natural as well as functionally acceptable prosthetic result for the patient.

### 2. Papilla preservation and grafting

The pouch roll technique helps in preservation of the integrity of the papilla, increased soft tissue thickness, improvement in esthetics by eliminating the buccal soft tissue concavity, and obtaining healing by primary intention [4]. In cases with minimal bone volume, narrow implants and the modified pouch roll technique can be used as an alternative to bone grafts to minimize postoperative morbidity and risks of infection and to reduce cost and treatment time. This technique uses a connective tissue graft obtained from the palate to bulk up the soft tissue profile in the region. Scharf and Tarnow and Hu rzeler suggested the use of this technique to reconstruct the gingival margin contour of a mild or moderate buccal deficiency during the second stage of implant surgery [5].



**Fig 1:** Pouch Roll Technique [6]

### 3. Fabrication of a surgical guide prior to implant placement

This method draws emphasis on chairside fabrication of customized healing abutments. In addition, the system allows for orienting the abutments in the pre-designed 3-dimensional position and for an approximate soft tissue biological width dimension of 2.5 to 3 mm above the platform of the implant [7]. The use of a cast poured from a polyvinyl siloxane (PVS) impression facilitates chairside fabrication. Since the implant position and emergence profile of the soft tissue contours are predefined, the impression for the definitive restoration can be made at the time of implant placement by using established techniques [8]. The major advantage of the proposed workflow is reduced number of appointments. To best go about this method, an irreversible hydrocolloid impression is made of the edentulous area, models are poured and with the help of the adjacent teeth and composite resin a surgical guide mimicking the proposed gingival contour is made. This guide is used during the time of surgery and attached onto the healing abutment prior to surgical site closure. This method therefore enables us to replicate the soft tissue profile at the time of surgery itself.



Fig 2: Customised healing abutment fabricated chairside

### 4. Cad-cam designed custom abutments

This new technique proposes a new digital impression workflow that captures soft tissue contours and the emergence profile around implant-supported interim restorations as well as the 3-dimensional (3D) position of the implant [9]. In this method an intra-oral scanner (Trios 3 Shape) is used to make a scan of the patient's mouth after osseointegration of the implant. A second scan is again made with the same scanner of the interim prosthesis that was given to the patient with the optimum tissue profile. With the help of this software, the two scans are superimposed onto each other, this helps in the fabrication of a customized zirconia abutment and zirconia final prosthesis that copies the same gingival contours of the interim prosthesis. This facilitates reproduction of an ideal gingival contour, greatly contributing to the final esthetic outcome.



Fig 3: CAD CAM designed abutment

### 5. Conclusion

The placement of dental implants as a permanent, fixed, aesthetic alternative, can allow the clinician to predictably restore patients suffering from partial or complete edentulism. While numerous treatment techniques have been developed to assist in the preservation of hard and soft tissues, the clinician's ultimate goal should be to preserve these tissues, and minimize the duration of treatment. The use of surgical stents, patient specific interim prosthesis and custom abutments all aid in achieving appropriate anatomical contours which allow the creation of imperceptible restorations that accurately mimic nature. As the clinician's restorative armamentarium continues to expand based on evolving technological advancements, the ability to deliver functional and aesthetic results with predictable longevity will also expand, allowing optimal results following implant placement [10].

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