



Maintenance of peri-abutment skin interface in implant retained facial prosthesis : A Technical report case

Bharat Mirchandani, Binit Shrestha, Sita Thaworanunta, M L Theerathavaj Srithavaj

Maxillofacial Prosthetics Service, Faculty of Dentistry, Mahidol University.

Abstract

Objectives: Osseointegrated implants have been successfully used to retain facial prosthesis. This method of retention offers several advantages over conventional adhesive retained facial prosthesis: eliminate dependence on adhesives, enhancement of the aesthetics, improvement of the easy and accuracy of prosthesis placement, an increase in the life span of the facial restoration. Nonetheless, the implant retained prosthesis requires additional hygiene procedures to keep the prosthesis, retentive elements free of debris and to maintain the health of surrounding skin. Regular maintenance of prosthesis and retentive elements prevents the incidence of peri-implantitis.

Materials and Methods: Patients with implant retained facial prosthesis are instructed to follow hygiene protocol advocated in Maxillofacial Prosthetic Service, Mahidol University. In this article the routine hygiene protocol followed in the service, which includes use of modified toothbrush, super-floss, mini-brush and other cleaning methods has been illustrated.

Results: This article suggests steps to maintain the implant retained facial prosthesis, its corresponding retentive components and peri-implant tissue in good health.

Conclusion: In spite of the several advantages of implant retained facial prosthesis patient's compliance for additional hygiene procedures are required to keep prosthesis, retentive components and the skin healthy. A hygiene protocol has been described to accomplish the described goals.

Keywords: extraoral implants, hygiene maintenance, peri-implantitis, facial prosthesis, implant retained prosthesis, technical report

How to cite: Mirchandani B, Shrestha B, Thaworanunta S, Srithavaj T. Maintenance of peri-abutment skin interface in implant retained facial prosthesis: A technical report case. M Dent J 2015; 35: 147-150.

Corresponding author:

Binit Shrestha
Maxillofacial Prosthetic Service,
Faculty of Dentistry, Mahidol University,
6 Yothi Street, Bangkok 10400, Thailand.
Phone: 02-200- 7735
Email: binit_shrestha@hotmail.com

Received: 16 May 2015

Accepted: 14 July 2015

Background

Osseointegrated implants have improved rehabilitation of patients with severe craniofacial defects due to loss of soft and hard tissues. The benefits derived from use of implant-retained prosthesis include improvement of retention and stability of the prosthesis, elimination of occasional skin reaction to adhesives, improvement of the ease and accuracy of prosthesis placement, enhancement of the aesthetics of lines of juncture between prosthesis and skin and many more.¹ The success of implant-retained facial prosthesis depends on a multidisciplinary treatment including aesthetics, function, biocompatibility, durability, and the area around the implants and prosthesis. The health of a peri-implant tissue is a critical factor for the long-term success of treatment with intraoral and extra-oral implants. Biologic and mechanical behaviours are significantly different for extra-oral implants in comparison with the oral environment in the presence of saliva.^{2,3} Following implant placement infection can occur around the implant owing to the penetration of an exogenous factor through the weal seal of percutaneous tissue, causing additional load to the biologic protection system. This can be prevented if patients maintain additional hygiene procedures to keep the prosthesis, retentive elements and surrounding skin in healthy and clean condition.^{2,3,4}

The objective is to keep the surfaces of the abutments and retentive elements clean and free of debris. The most critical area to clean is around the abutment where it projects through the skin.

Technical Methods

In our service, Maxillofacial Prosthetics Service, Faculty of Dentistry, Mahidol University patients with implant retained facial prosthesis are advocated additional hygiene

procedures for keeping the prosthesis, retentive elements and skin clean. The hygiene procedures advocated has been divided into office-care and home-care. Office care is the procedures done by clinicians in our service and home-care are procedures which patients are advised to perform at home on daily basis. Home care: Hygiene procedures should be performed at least one daily and preferably at night before the patient goes to bed. Usually patients prefer for performing hygiene procedures while bathing or showering. Those with reduced dexterity or vision should be assisted with spouse or other family member. As most facial prosthesis given in our service are made from silicone rubber it is suggested that it is removed for sleeping to allow exposure of the soft tissue and retentive elements to the open air as this prevents moisture accumulation from perspiration which may promote adhesion of bacteria and fungus. In addition wearing prosthesis during sleeping hours can cause undue pressure on the retentive elements or skin leading to inflammation and irritation. All surfaces of the prosthesis should be brushed gently with a soft, small head nylon toothbrush and a mild detergent soap. The bristles should also be used into areas of the retentive elements to ensure that all debris is removed. Care must be taken not to brush aggressively on intaglio surface as surface layer of colour could be damaged.

Office care: The first step is to wet the entire area loosen any dried debris. This is done with a cotton swab dipped in mixture of hydrogen peroxide and water in 50:50 concentration (Figure 1).

The area should be dapped with copious amount of this mixture to soften the hard debris and then cleaned with a soft nylon toothbrush and mild soap (Figure 2).



Figure 1 Use of gauze and irrigation of mixture of hydrogen peroxide and saline for cleaning the interface

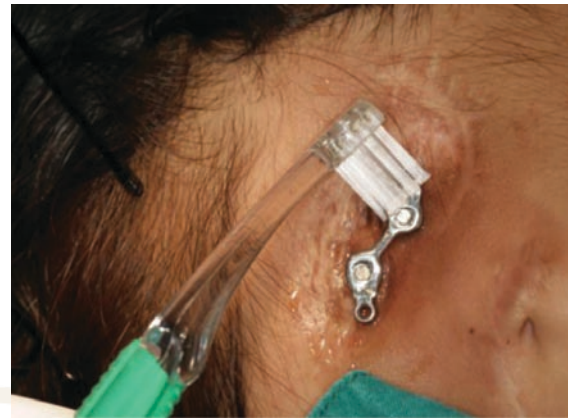


Figure 2 Modified super soft toothbrush

Special care must be taken to work the bristles into and around the abutment-skin junction to clean away the debris. In a bar connection bristles are worked into areas between the bar and the skin. Also the rubber tip of mini brush is used to clean around the abutment (Figure 3). The tip should be gently placed between skin and abutment and wiped circumference to the abutment. Care is taken not to traumatize the skin.

An alternate method for cleaning the retentive elements is with a tufted dental floss, Super-floss. The tufted section of the floss strand is wrapped around the abutment and motioned back and forth to clean the surfaces (Figure 4).

Discussion

A critical difference in extra-oral implants from intra-oral implants is the lack of seal between the skin and implant which plays important role in occurrence of peri-implantitis.⁵ The main pathogens commonly associated to peri-implantitis are Staphylococcus aureus, Enterococcus spp, Pseudomonas aeruginosa and Klebsiella spp. These organisms can easily penetrate into deeper peri-implant tissues because of lack of seal and cause infection. The other factors related to peri-implant health are thickness of skin graft, movement of soft tissue around abutment, prosthetic factors such as selection of attachment design and patients factors like extra-oral environment particularly the humidity and improper hygiene maintenance.⁶ These factors cause accumulation



Figure 3 Use of mini brush for cleaning the interface



Figure 4 Superfloss for cleaning the abutment

of debris and colonization of microorganisms, which leads to infection.

Thus it is of foremost importance to reduce the bacterial load around the peri-implant tissue. To achieve this goal a good hygiene protocol has to be advocated (Figure 5 & 6).

The benefits of hygiene protocol described in this article are use of simple instruments, which are easily available, and have low cost.



Figure 5 Condition of peri abutment soft tissue before treatment protocol



Figure 6 Condition of peri abutment soft tissue after treatment protocol

Conclusion

The regimen used in this study is successful and is intensive both of patient and professional time and resources. This should be emphasized to patients at the onset of treatment planning. A further consideration is the willingness of patients to attend specialist units for long-term maintenance. To reduce the necessity of frequent visits, the initial hygiene instruction should be as thorough and intensive as possible. In summary, a stepwise hygiene regimen is given in this article.

Funding: None

Competing interests: None

Ethical approval: None

References

1. Beumer J, Curtis J, Marurick MT. Maxillofacial Rehabilitation 3rd edition, IL, USA: *Quintessence Publishing Co Inc*. 2013.
2. David J, Reisberg SW. Hygiene procedure for implant retained facial prosthetics *J Prosthet Dent* 1995; 74: 499-502
3. Allen PF, Watsen G, Stassen L, Mc Millan AS. Peri-implant soft tissue maintenance in patients with craniofacial implant retained prostheses. *Int J Oral of Maxillofacial Surg* 2003; 29: 99-103
4. Watson G, Allen PF, Mc Millan AS. Facial Prosthesis retained by implants: Hygiene procedures. *Dent Health* 1998: 37 8-10.
5. Holgers KM, Bjursten LM. Soft tissue reactions around percutaneous implants: A clinical study of soft tissue conditions around skin-penetrating titanium implants for bone anchored hearing aids. *American Journal of Otology* 1988; 9(1): 56-59
6. Holgers KM, Thomsen P, Tjellstorm A. Electronic microscopic observation on soft tissue around clinical long-term percutaneous titanium implants. *Biomaterials* 1995; 16: 83-90