

## Maintenance of Dental Implants: A Review

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### Abstract

*Abstract:* The placement of implant necessitates a team approach of dental implant experts for the planning, execution and maintenance of the implants to ensure the best possible outcome. Once the implant have been placed in the edentulous region, maintenance therapy and assessment of implant status and radiographs are necessary to insure the long life of these restorations, and this necessitates the team of dental implant specialists to have thorough knowledge of implant maintenance procedures as well, as an implant malfunction. The divergences in the supporting structure of the implant make them more susceptible to inflammation and bone loss when plaque accumulates as compared to the teeth. Therefore, a comprehensive maintenance protocol should be followed to ensure the longevity of the dental implant.

**Keywords:** Dental Implants; Safeguarding; Maintenance; Edentulous Region; Implant Failure; Osseointegration; Peri- Implant.

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### Introduction

The placement of implant requires a team approach of dental implant specialists which includes a panel of oral surgeon, prosthodontist, periodontist and oral radiologist for the planning, execution and preservation of the dental implants to ensure the finest achievable result. Once they have been positioned in the edentulous region, safeguarding therapy and evaluations of implant status and radiographs are necessary to insure the long life of these restorations, and this necessitates the team of dental implant specialists to have thorough knowledge of implant maintenance procedures as well, as an implant failure. These procedures are usually performed at timely intervals to assist the patient in maintaining health of oral implant. With time, the emphasis for

long-term success of implant has changed focus from the surgical phase of treatment in obtaining osseointegration and, now, recently, the trend is towards the long-term maintenance health of the peri-implant hard and soft tissues. As there are ample number of patients who are opting for dental implants as a treatment modality to replace missing teeth so it becomes essential for the dental team in accepting the challenges of maintaining these complex restorations. Simply put, the routine care of dental implants is like the care of natural teeth. Restored dental implants should be kept uncontaminated and free from plaque using a brush and floss two times a day. The quantum of dental implants management annually is going up, with more implants being placed, refurbished and followed up in the common dentist offices. There is an increasing need to understand how peri-

implant health can be promoted and maintained throughout the treatment process. A dental implant's problem, whether due to mechanical or biological factors, are becoming more evident as increased demands on implants treatment and longer-term care are required. The long-term success of implants fundamentally depends upon both i.e patient's maintenance of effective home care and on the administration of professional prophylaxis procedures in the dental office by the Implant specialist. Hence, patient's contribution is important, especially for the long-term success of dental implants.

### Set of rules for implant maintenance

#### *At Home practice*

1. Brush twice daily with commercially available tooth paste and implant care tooth brush.
2. In narrow areas use Implant Floss once daily.
3. In wider areas use interdental brush once daily.
4. Use Power flosser once a day.
5. Use a mouthwash to rinse once daily.
6. A rubber tip stimulator may be used to stimulate and massage your gums.
7. Report every three months for a check-up for evaluation.

#### *At Office rules*

1. Assess the clinical situation, for evaluation of inflammation and pockets.
2. Probing should be done at the time of placing the implant restoration
3. Evaluate probing changes and see if there is any difference between present probing and initial probing
4. Take radiographs to evaluate bony changes around the implants.
5. Check if there is any residual cement
6. Check for occlusal load.
7. Occlusal adjustment to be done periodically if there is any bone loss/ inflammation of Peri-implant mucosa
8. Use Water Pik professional flosser to remove

the inter implant plaque from your patients.

9. Rubber cups with pumice, air abrasion, and plastic curettes is to be used as they don't modify the implant surface.
10. The use of titanium implant scalers for scaling around implants is recommended.

### Peri-implant diagnostic parameters

The clinical and radiographic parameters are routinely used to check oral implants during the maintenance care and it should be of high sensitivity and specificity, should be easy to measure, and should yield reproducible data. The primary function of a dental implant is to act similar to a natural tooth root and crown, they are fundamentally divergent from the natural teeth. Consequently, dental indices are often modified for the purpose of dental implant evaluation.

Score	Score Apse et al. [2]	Mombelli et al. [1]
0	Normal mucosa	No bleeding when a periodontal probe is passed along the mucosal margin adjacent to the implant
1	Minimal inflammation along with color change and minor edema	Isolated bleeding spots visible
2	Moderate inflammation with redness, edema, and glazing	Blood which forms a confluent red line on mucosal margin
3	Severe inflammation with redness, edema, ulceration, and spontaneous bleeding without probing	Heavy or profuse bleeding

The following are various diagnostic parameters to assess peri-implant health.

1. *Dental Plaque and Mucosal Assessment:* Various workers like Mombelli et al. and Apse et al proposed modified indices for the evaluation of the peri-implant marginal mucosal conditions and plaque assessment.

2. *Bleeding on Probing (BOP):* Lang et al. in 1994 demonstrated that healthy peri-implant sites were characterized by the absence of bleeding (0%), whereas both peri-implant mucositis and peri-implantitis sites showed substantially increased BOP (67% and 91%, resp.). Later on, Luterbacher and associates described that BOP alone yields superior diagnostic accuracy at dental implant sites compared with tooth sites.

3. *Peri-Implant Probing Depth:* The junctional epithelial attachment zone has less attachment

strength to the implant and the connective tissue zone has only two fiber groups and neither of those is inserted into the implant. As a result the probe goes beyond the peri-implant sulcus and reaches closer to the bone; hence, less probing force (0.2-0.3 N) is recommended around implants.

4. *Occlusal Evaluation:* The occlusal status of the implant and its prosthesis must be evaluated on a routine basis. Any signs of occlusal disharmonies, such as premature contacts or interferences, should be identified and corrected to prevent occlusal overload which can in turn cause a host of problems including loosening of abutment screws, implant failure, and prosthetic failure.

5. *Radiographic evaluation:* Preventive maintenance appointments should be scheduled every 3 to 4 months and a periapical or vertical bitewing radiograph at 6 to 8 months should be compared with the baseline to assess crestal bone changes, which occur often during the first year of loading.

6. *Evaluation of implant stability:* A non invasive device based on the principles of resonance frequency analysis (RFA) has been developed to measure primary implant stability and to monitor implant stability over time. This method not only evaluates the stiffness of the bone-implant interface but also allows the detection of any increase or decrease in implant stability that otherwise could not be clinically perceived.

## Conclusion

Dental implants require constant maintenance and monitoring and which further involves assessment of the patient's general plus oral health, professional implant maintenance, and diligent patient home care as critical factors that will ensure the long-term success of implants and a predictable replacement for natural teeth

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