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POST OPERATIVE CARE FOR DENTAL IMPLANT PATIENTS

Dental Science

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ABSTRACT

Implant procedure allows to give patients a permanent replacement solution for a missing tooth and root. An implant is unlike dentures or a dental bridge that only attempts to replace the tooth. This makes dental implants the most durable and long-lasting solution to tooth loss that you can get. Simultaneously, once an implant is in place, it serves to strengthen and preserve the jawbone, providing much-needed stimulation. For this and many reasons, implants are among the most preferred restorative solutions that we offer.

Since placing an implant requires us to surgically insert a titanium post under the gums, it is typically done under anesthesia. Recovery period is different for every person and influenced by your overall health, age, and how many implants were placed. Patients are concerned about what kind of maintenance their implants will require. This article describes post operative care and instructions that clinician should give to patients after placement of implant.

KEYWORDS

Post operative implant care, Oral hygiene, Maintenance

INTRODUCTION

Implant procedure allows to give patients a permanent replacement solution for a missing tooth and root. An implant is unlike dentures or a dental bridge that only attempts to replace the tooth. Current knowledge indicates that the maintenance of a healthy soft tissue barrier is as important as osseointegration itself for the long-term success of an implant-supported prosthesis (1). The long-term prognosis of an implant is related directly to routine assessment and effective preventive care. While it is true that implants and prosthetic teeth are not capable of decay, they can be indirectly affected by poor oral hygiene.

The absence of keratinized tissue has been documented to be more susceptible to pathogenic bacteria thus leaving the implant vulnerable to peri-implant disease(2). Minimizing the incidence of implant loss by regular monitoring of the patient and preventing the recurrence of disease progression in previously treated periimplantitis, patients along with increasing the probability of locating and treating peri-implant pathology in a timely manner are the main therapeutic goals of maintenance therapy(3).The success of the implant depends directly on the health of this seal, and the hygienist's goal is to educate the patient on how to obtain keratinized tissue and maintain a healthy permucosal seal.

Medications:

Unfortunately, most surgery is accompanied by some degree of discomfort.

Antibiotics – The accepted principles for the use of prophylactic antibiotic are:

- The procedure should have significant risk for and incidence of postoperative infection
- Appropriate antibiotic should be selected
- Appropriate tissue concentration at time of surgery is necessary
- Use of shortest effective antibiotic.

Prophylactic Protocol (4)

Category 1

Infection risk is low which includes normal extractions where grafting is not needed and second stage surgery in healthy individuals patients. Antibiotics are not needed. 0.12% chlorhexidine rinse is recommended pre- and post-operatively.

Category 2

Infection risk is moderate which involves extractions which are traumatic or socket preservation procedures and immediate implant placements. A recommended presurgical antibiotic loading followed by a single dose of antibiotic postsurgically. About 0.12% chlorhexidine rinse twice a day until sutures are removed.

Category 3

Infection risk is moderate to high risk. Multiple implants with extensive soft-tissue reflection or immediate implants placements along with bone grafting and membrane. A preoperative loading dose of antibiotics is followed by three postsurgical doses for a day to be continued for 3 days. About 0.12% of chlorhexidine rinse twice a day until suture removal is also recommended.

Category 4

Infection risk is high. Implant surgeries with sinus floor lifts, autogenous block bone grafts, and the same procedures as category 2 and 3 but on medically compromised patients. The suggested regime is as category three, but postoperative antibiotics are recommended for 5 days.

Category 5

Infection risk is high which includes all sinus augmentation procedures. Loading dose of antibiotics 1 day prior to the surgery (ensuring adequate levels in sinus tissues before surgery) and a beta-lactamase antibiotic to be used for 5 days due to the high incidence of beta-lactamase pathogens in maxillary sinus infections. Chlorhexidine rinse with a concentration of 0.12% has to be used twice daily also recommended, until suture removal.

Pain Medicine –

Pain medications can reduce post-operative discomfort by depressing the nociceptive system, either within the central nervous system or on the peripheral nerve terminals. According to the world health organization guidelines, the procedure and patient must be evaluated and classified as mild, moderate, or severe(4).

Mild pain- mild pain is self-limited and usually will be resolved with normal recommended doses of NSAIDs

Moderate pain- moderate pain is more intense pain than mild and usually not be resolved totally by NSAIDs.

Severe pain-the patient may be confined to bed, and strong opioid treatment will need to be continued for days. Adjuvant drug therapies may be needed for supplementation.

The world health organization formulated an analgesic ladder for the treatment of pain management. The following protocol describes three steps in the treatment of acute pain.(4) (Table.1)

Table1: World health organization analgesic ladder
Three-step conceptual model
1.Non-opioid+adjuvant
2.Non-opioid+adjuvant+opioid(moderate)
3.Non-opoid+adjuvant+opioid(severe)

If a sinus lift was done, ask patients to refrain from nose blowing for 2 weeks after surgery. Recommend use of a decongestant/antihistamine as needed for any nasal congestion.(4)

Diet

After dental implants surgery, it is important for patient to keep up intake of highly nutritious foods since this gives your body the best opportunity for a fast recovery. While understandable, if body is deprived of essential nutrients it can delay your recovery process. Dietary considerations post-surgical procedures are also important to optimize healing(6) (Table 2).

Table2: Dietary Considerations Prior to Surgical Procedures

Points to consider	Reasoning	Approach
Nutrition	Wound healing may require higher intakes of some foods Maintaining a balanced intake of nutrients by using supplements as needed, i.e., Vitamin C may promote healing	Consider multivitamins or other supplements Promote intake of nutrients that may accelerate healing Offer referrals for nutritional counseling
Ease of Intake	The consumption of food should be as painless as possible without damaging or aggravating the wound site	Educate the patient to evaluate the texture, consistency, and temperature of food that is appropriate to their stage in healing Consider different food processing methods to maintain proper nutrition and introduce variety to keep the patient motivated Consider medications that may modulate food intake
Palatability	Food that is appetizing encourages lasting healthy eating habits and an adequate intake of nutrients to promote wound healing	Consider texture or consistency, odor, color, temperature and taste of food Consider the patient's food habits prior to surgery Aim to introduce as much food variety as possible without compromising nutrition and the healing process
Frequency and size of meals	Drastic changes in rate and level of food intake may upset the body's metabolic system especially after surgery The frequency and size of meals are determined by patient's tolerance and comfort level	Educate the patient to return to a regular eating schedule as soon as possible Aim to establish an eating schedule that achieves adequate nutritional intake Consider pre-existing medical conditions.
Fluid intake	Dehydration may impede recovery, and this may be exacerbated by vomiting. Patients on certain medications have a greater risk of developing xerostomia.	Educate the patient on the importance of being well hydrated

Oral Hygiene

To ensure optimum health around the implant, the following must be accomplished:

1. Plaque must be inhibited
2. Early microbial population on the tooth/implant surfaces must be negated
3. All existing plaque must be eliminated
4. The existing plaque must be altered from pathogenic to nonpathogenic microorganisms

Patients rely on clinicians to suggest or recommend products for oral hygiene procedures. When choosing and recommending implements for oral hygiene, the clinicians should consider location, length, angulation of abutments, superstructure design anatomical limitations, habits, motivation and manual dexterity of each patient.(4) To facilitate homecare procedures the superstructure must be self-cleansing and completely fixture-borne, with adequate embrasures for hygiene instruments access.

To keep artificial teeth as clean as possible, recommending dental implant cleaning instruments is more useful.

Secondly, these products should not irritate the permucosal seal(7),or corrode and/or etch the titanium.(8,9) A high fluoride concentrate of > 3.0 sodium fluoride, combined with a low PH, will remove the oxide layer on implants and can make the titanium surface anti-corrosive. Once this layer is removed, the implant is prone to corrosion. Stannous fluoride can cause etching, roughness on implants, and their esthetic restorations.

Brushing

Twice daily cleaning of implants to remove bacterial plaque accumulations should be accomplished using a soft toothbrush or a very gentle power brush (10). Patients should be instructed in circular brushing according to the BASS technique using small, soft-bristled brushes (11).

Several studies have been conducted regarding what type of toothbrush is most effective for implants. The results show no significant difference between sonic, electric, or manual toothbrushes Several automated/sonic tooth brushes with multiple brush tips may result in gingival abrasion from prolonged use. These brushes are considered superior to a manual toothbrush in removing plaque and they contribute to the improved interproximal cleaning due to the combination of their bristle shape (scalloped) and fluid penetration (11). A patient with limited dexterity should use a power or sonic toothbrush (12).

In difficult-to-access areas smaller-diameter toothbrush heads such as end-tufted brushes or tapered rotary brushes may be of benefit (13). An end-tufted brush can be manipulated under hot water to accommodate the shape of the prosthesis and is especially useful in posterior regions where a conventional toothbrush might not reach (12,14).

Interproximal/Circumferential Cleaning

There are many flosses, interproximal cleaners, and water irrigation systems commercially available and safe for use around implants.

Floss

Floss choice should be based on the clinical indication (10). The following types of floss may be used to remove interproximal plaque:

i. Plastic floss is an elastomeric material that bends and flexes to remove plaque or to apply chemotherapeutic agents while preventing the floss from collapsing, snagging, or shredding.
ii. Braided flossing cord is more rigid than conventional floss and suitable for open areas and places where a floss threader may be too fragile to remove denser plaque, debris, and calculus.
iii. Satin Floss or Glide is particularly appropriate for a single tooth implant with intimate tissue adaptation.
iv. Woven or gum Expanding Floss is indicated where there are large interproximal spaces or long expanses of a bar retained prosthesis.
v. Dental Tapes are available in different “widths” and are used to clean the exposed abutment.

Other types include tufted, coated, and gauze thicker dental floss. All of these can be used in a "shoe-shine rag" fashion to facilitate optimal home care procedures around the abutment post (14). Threader floss may also be needed to access bridgework or around connector bars.

Traditional flossing of the mesial and distal surfaces is required, but it is often indicated to use the floss on the facial/lingual surfaces as well following the looping technique (10). Dental floss can also be used to deliver antiseptic agents to the implant on a daily basis.

Interproximal Cleaners

Interdental aids can be selected and recommended considering the size and shape of the embrasure, when patients are unable to use floss. Foam tips, interproximal brushes, and disposable wooden picks are among the many auxiliary devices that can assist in plaque removal and delivering antiseptic rinses to enhance their effectiveness (12).

However, caution must be used with interproximal brushes that have an exposed tip of metal wire or if enough pressure is exerted, as that can easily scratch the abutment's titanium surface. Hence, in case of implant, an interproximal brush with a plastic-coated wire is usually recommended (11). Chemotherapeutic agents can also be applied interdentally.

Water Irrigation

A water irrigation unit is also beneficial in implant maintenance. However, care must be taken to direct the stream interproximally and horizontally between implants, as improper positioning can cause inadvertent damage to the peri-implant seal and bacteremia (10, 14).

Locally Applied Chemotherapeutics

For implant patients especially those prone to occasional tissue inflammation, an at-home regimen of daily cleansing with chemotherapeutic agents in the form of rinses, gels, or solutions is extremely essential. Site-specific application of chlorhexidine or another anti-infective solution is better than rinsing, as it will not only specifically treat the target area but also help to remove plaque, control staining, and decrease tartar buildup at the same time (15).Topical antimicrobials such as products containing chlorhexidine digluconate (0.12%), plant alkaloids, or phenolic agents produce minimal implant surface alterations (16).

Professional Hygiene Care

Implants necessitate intensive care that goes far beyond mere brushing of teeth. Natural teeth are anchored to the socket via periodontal ligament, which has an inherent protective defense mechanism, and hence are better protected against outside attacks than the implant. Despite the long-term predictability of implants, complications do occur in a percentage of cases and can ultimately result in loss of implants and failure of prostheses. Adequate maintenance programs and regular professional hygiene care for patients with dental implants as well as treating peri-implant pathology in a timely manner can minimize and prevent implant loss/failure due to such complications (3).

Instrument Selection

The instruments selected should not be bulky and should be disposable or able to be sterilized, effective in removing plaque and calculus without damaging the implant surface, cost effective, easy to use, and adaptable in the implant sulcus (14).

Scaling

Removal of calculus and plaque, if present, is indicated for implants at a hygiene visit. Metallic instruments, such as stainless steel, should not be used to probe or scale dental implants as they can scratch, roughen, contaminate, or cause a galvanic reaction at the implant-abutment interface that will further make the titanium surface more susceptible to bacterial plaque and calculus buildup, increasing the possibility of peri-implant inflammation (10,17,18).

Plastic instruments produce insignificant alteration of the implant surface and are, thus, recommended for scaling implants, even though residues from the instruments are left behind (13, 19). Conventional ultrasonic scalers with nonmetallic tip also are suitable for implant maintenance. A variety of nonmetallic, plastic, graphite, nylon, or Teflon-coated instruments are available and have been proven to be safe to use on titanium implant surfaces .Plastic instruments reinforced with graphite and gold-plated curettes are more rigid and can be sharpened and can as well be used (13). Upon insertion of the instrument, the blade should be closed against the abutment and then opened past the deposit, engaging it apically with the stroke extending coronally. Depending on the location of the deposit, horizontal, oblique, or vertical, short working strokes and light pressure should be used to prevent trauma to the delicate peri-implant sulcus. Prosthesis can sometimes limit access of the scaler, and, in such cases, an ultrasonic or sonic scaler covered with a plastic sleeve can be used to remove deposits (12).

Polishing

The main indication for polishing an implant is for plaque removal, since titanium surface of an implant abutment is highly polished and with proper care will rarely loose its manufacturer's polished finish (10). Implant polishing kit containing Abutment polishing paste and a variety of polishing cups and soft-tipped brushes (11,14).

The prosthesis and abutments may be selectively polished with a rubber cup and nonabrasive polishing paste such as aluminum oxide, tin oxide, APF-free prophy paste, and low-abrasive dentifrice after hard deposits have been removed (10, 20). An antibacterial solution such as chlorhexidine may be used, when no polishing agent is desired (10). When only soft debris is present, deplaquing the surface is beneficial. Coarse abrasive polishing pastes, flour or pumice for polishing, are contraindicated, as is air polishing (21,22).

Air polishing of implant components remains controversial. Whereas some researchers suggest that the air-abrasive units and are safe and effective in removing deposits (23,24), others contraindicate the use of air polishing as it can cause damage to the porcelain or composite materials (10), can create random pitting or undulating wave-type of surface irregularities on the titanium (16), and may detach the soft tissue connection from the implant due to air pressure leading to emphysema (17).

Follow-up:

It is so important for clinician to properly guide the patients, how to maintain and clean dental implants or else could experience one or more of the complications associated with improper dental implant care.

An established maintenance protocol relating to care of the endosseous dental implants might entail a recall visit every 3 months. At this time the effectiveness of hygiene is documented, and the integrity of the fixture or device is verified by inserting an instrument under the prosthesis and gently prying it up, noting any movement of the superstructure. Probing is an appropriate method to assess potential deleterious changes in the peri-implant environment and should be performed every 3 to 4 months for 1 year after prosthesis delivery (4). However, to avoid interruption during healing and establishment of the soft tissue seal, it should be avoided during the first 3 months after abutment connection .

If the prosthesis is retreivable by means of copings or screws, it should be removed every year to ascertain gingival health and implant stability. The appropriate radiographs and hygiene checks can be accomplished at this time.(4)

REFERENCES :

1. Sclar AG. Beyond osseointegration. Soft tissue and esthetic considerations in implant therapy.Chicago: Quintessence Publishing Co.; 2003.
2. Greenstein G, Cavallaro J. The clinical significance of keratinized gingiva around dental implants. Compend Contin Edu Dent. 2011; 32:24-31
3. R. E. Cohen, "Position paper: periodontal maintenance," Journal of Periodontology, vol. 74, no. 9, pp. 1395–1401, 2003.
4. Misch C. E. An implant is not a tooth: a comparison of periodontal indices. In: Misch C. E., editor. Contemporary Implant Dentistry. 3rd. Mosby, Elsevier; 2007. pp. 1055–1072. (chapter 41)
5. Pippi R. Post-Surgical Clinical Monitoring of Soft Tissue Wound Healing in Periodontal and Implant Surgery. Int. J. Med. Sci. 2017; 14(8): 721-728.
6. Beatrice Y. Lau , Bryan D. Johnston , Peter C. Fritz ,Wendy E. Ward. Dietary Strategies to Optimize Wound Healing after Periodontal and Dental Implant Surgery: An Evidence-Based Review. The Open Dentistry Journal, 2013, 7, 36-46
7. Yukna R. Optimizing clinical success with implants: maintenance and care. Compend Contin Educ Dent. 1993; 15:S554-S561.
8. Nakagawa M et al. Effect of Fluoride concentration and PH on corrosion behavior of titanium for dental use. J Dent Res 1999:78(9): 1568-1572
9. Matono Y et al. Corrosion behavior of pure titanium and titanium alloys in various concentrations of Acidulated Phosphate Fluoride (APF) solutions. Dent Mater J. 2006 Mar; 25 (1):104-112.
10. R. E. Goldstein and K. J. Nimmons, "The expanding esthetic practice: implant maintenance—part 2," Contemporary Esthetics & Restorative Practice, pp. 2–25, 2005.
11. Garg A. K., Duarte F., Funari K. Hygeinic maintenance of dental implants. Journal of Practical Hygiene. 1997;6(2):13–17.
12. G. Sison, "Implant maintenance and the dental hygienist," Access, 1, pp. 1–13, 2003..
13. Humphrey S. Implant maintenance. Dental Clinics of North America.

2006;50(3):463–478. doi: 10.1016/j.cden.2006.03.002.
14. L. D. T. Mortilla, "Hygiene and soft tissue management: the hygienist's perspective," in Dental Implants:The Art and Science, C. A. Babbush, Ed., chapter 9, pp. 423–444, W.B. Saunders, Philadelphia, Pa, USA, 2001.
15. R. E. Goldstein and K. J. Nimmons, "The expanding esthetic practice: implant maintenance—part 1," Contemporary Esthetics & Restorative Practice, pp. 12–13, 2005.
16. D. Thomson-Neal, G. H. Evans, and R. M. Meffert, "Effects of various prophylactic treatments on titanium, sapphire, and hydroxyapatite-coated implants: an SEM study," The International Journal of Periodontics & Restorative Dentistry, vol. 9, no. 4, pp. 301–311, 1989.
17. G. M. Kurtzman and L. H. Silverstein, "Dental implants: oral hygiene and maintenance: implant," Dentistry Today, vol. 1, no. 3, pp. 48–53, 2007.
18. J. B. Suzuki, C. E. Misch, D. Bronstein, and L. D. T. Mortilla, "Maintenance of dental implants: implant quality of health scale," in Contemporary Implant Dentistry, C. E. Misch, Ed., Chapter 42, pp. 1073–1085, Mosby, Elsevier, 3rd edition, 2007.
19. L. J. Walsh, "Implant hygiene: clues, caveats and cautions," Australasian Dental Practice, vol. 18, no. 2, pp. 58–59, 2007.
20. S. Matarasso, G. Quaremba, F. Coraggio, E. Vaia, C. Cafiero, and N. P. Lang, "Maintenance of implants: an in vitro study of titanium implant surface modifications subsequent to the application of different prophylaxis procedures," Clinical Oral Implants Research, vol. 7, no. 1, pp. 64–72, 1996.
21. T. Bergendal, L. Forsgren, S. Kvint, and E. Lowstedt, "The effect of an airbrasive instrument on soft and hard tissues around osseointegrated implants.Acase report," SwedishDental Journal, vol. 14, no. 5, pp. 219–223, 1990.
22. J. W. Rapley, R. H. Swan, W. W. Hallmon, and M. P. Mills, "The surface characteristics produced by various oral hygiene instruments andmaterials on titaniumimplant abutments," The International Journal ofOral&Maxillofacial Implants, vol. 5, no. 1, pp. 47–52, 1990.
23. M. Augthun, J. Tinschert, and A. Huber, "In vitro studies on the effect of cleaning methods on different implant surfaces," Journal of Periodontology, vol. 69, no. 8, pp. 857–864, 1998.
24. A. W. Homiak, P. A. Cook, and J. DeBoer, "Effect of hygiene instrumentation on titanium abutments: a scanning electron microscopy study," The Journal of Prosthetic Dentistry, vol. 67, no. 3, pp. 364–369, 1992.