leads to gingivitis and periodontitis, but also can induce the development of peri-implantitis. Thus, personal oral hygiene must begin at the time of dental implant placement and should be modified using various adjunctive aids for oral hygiene to effectively clean the altered morphology of the peri-implant region before, during, and after implant placement. For instance, interproximal brushes can penetrate up to 4 mm into a gingival sulcus or pocket and may effectively cleanse the peri-implant sulcus. In addition to mechanical plaque control, daily rinses using 0.1% chlorhexidine provide a welcome adjunct.

Hygiene with dental implants is so tedious and critical to their long-term success that the patient and dental professional must exercise considerable effort. During the maintenance visit, the dental professional should concentrate on the peri-implant tissue margin, implant body, prosthetic abutment to implant collar connection, and the prosthesis.

Clinical inspection for signs of inflammation, ie. bleeding on prodding, exudate, mobility, probe-able pockets, and a radiographic evaluation of the peri-implant bony housing still remains the standard mode for evaluating the long-term status of endosseous dental implants. For instance, successful and stable endosseous dental implants exhibit no mobility. But, if there is clinically perceptible mobility, then subsequent to radiographic evaluation of the implant and its surrounding bony housing, the abutment retaining screw(s), and/or prosthetic abutment collar interface should be examined for looseness or breakage.

All these modes of clinical assessment are used routinely, except for periodontal probing around peri-implant tissues that appear to be in a state of good health, the baseline data and data from subsequent recare visits should be recorded in the daily progress notes to properly assess the peri-implant status longitudinally.

Subsequent to a thorough intrasural examination, unless there is visual evidence of soft tissue changes, ie. inflammation of peri-implant tissue with even slight attachment loss or mucositis, routine probing of the peri-implant tissue should not be performed. Usually during the first year subsequent to restoring dental implants, a 3-month recare schedule should be implemented, especially if the patient lost teeth because of periodontal disease. But if after 12 months, the patient’s implants are stable and peri-implant tissues are healthy, then a 4-6 month recare regimen can be implemented. However, cognizant of each patient’s level of home care effectiveness, systemic health, and periodontal status of the peri-implant tissue when determining these recare intervals.

With dental implant patients, the dental professional must evaluate the prosthetic components for plaque, calculus, and the stability of the implant abutment. Radiographs of dental implants should be taken every 12 to 18 months following maintenance visits. For dental implant restorations that are screw retained, the dental professional needs to move the prosthesis at least once a year to more easily assess the status of the peri-implant’s hard and soft tissues, the existence of acceptable mobility of the prosthetic components or the implant fixture itself, and the patient’s level of home care effectiveness. Remember that the presence of any symptoms of infection, radiographic evidence of peri-implant bone loss, and/or neoplasias may be indicative of an ailing or failing implant.

Implants vs natural teeth

It is essential to understand the periodontal relationship between the gingiva and the structure it attaches to be it a natural tooth or an implant. (Figs. 1 and 2) The fiber orientation of the gingival cuff around a natural tooth attaches perpendicularly to the long axis of the tooth. (Fig. 3) This acts as a barrier when inserting a periodontal probe within the sulcus. The probe tip advances apically till the tip contacts the gingival fibers and is halted. This orientation is not seen around implants. With an implant, the gingival fiber orientation is parallel to the implant tissues. (Fig. 4) When a periodontal probe is inserted into the sulcus around an implant the probe tip advances perpendicularly between the fibers of the gingival cuff until the crestal bone prevents it from proceeding further.

The peri-implant mucosal seal may be less effective barrier to bacterial plaque than the periodontium around a natural tooth, tissue attachment. There is less vasculature in the gingival tissue surrounding dental implants compared to natural teeth. This reduced vascularity comitant with parallel-oriented collagen fibers adjacent to the body of any dental implant make dental implants more vulnerable to bacterial insult. Therefore, care-appointments, peri-implant periodontal probing should be performed only when signs of infection are present, ie. exudate, swelling, bleeding on probing, mucositis, and/or overgrowth soft tissue, and/or radiographic evidence of peri-implant alveolar bone loss. Lastly, routine periodontal probing of dental implants should not be performed, because this procedure could damage the weak epithelial attachment around dental implants, possibly creating a pathway for the ingress of periodontal pathogens. Commercially available plastic probes should be used when investigating the crevicular depth around dental implants. The probing depth around dental implants may be related closely to the thickness and type of fibrous tissue surrounding the implant. A healthy peri-implant sulcus has been reported to range from 1.5 to 3.5 mm, which is greater than those depths reported for natural teeth. In essence, the best indicator for evaluating an unhealthy site would be probing data gathered longitudinally.

For all of these reasons, periodontal home care and consistent patient hygiene maintenance have proven to be critical to the success and longevity of endosseous dental implants. This is especially true in an environment with adjacent natural teeth, which if affected by periodontal disease, could act as a reservoir for pathogenic bacteria, ie. gram-negative anaerobic rods, and seed the peri-implant sulcus.

The physical characteristics of the peri-implant soft tissue are the focus of all oral hygiene instruction. The presence or absence of keratinization in this critical area has not been unequivocally documented to state its function, influence, or affect the presence or absence of keratinization of surrounding bone. If present, keratinized tissue is always more favorable to the ingress of pathogenic bacteria with or without periodontal disease. If keratinized tissue is not present around dental implants. However, the ability of the patient to maintain good home care around dental implants is facilitated by the presence of keratinized tissue. If keratinized tissue is present, the implant has no keratinized tissue around an implant, and an implant that is free from a chronicle or a chronic peri-implant mucositis exists, then placement of a soft tissue autograft, or autogenous or alloplastic connective tissue graft is recommended to facilitate the regression of periodontal pocketing.

Specific criteria for obtaining clinical data around dental implants that would allow proper monitoring and detect early possible failure of osseointegrated dental implants has not been clearly defined. Presently, the presence of mobility is the best indicator for diagnosis of implant failure. As opposed to natural teeth, dental implants exhibit minimal clinically undetectable movement because of the absence of a periodontal ligament. Therefore, healthy implants should appear nonmobile, even in the presence of peri-implant bone loss, if an adequate amount of supporting alveolar bone still exists.

When monitoring the health of the peri-implant soft tissues, the practitioner should be cognizant of changes in soft tissue color, contour, and consistency. The presence of a fistulous tract could indicate the presence of a pathologic process or implant fracture.

Bleeding

There is controversy in the literature as to the accuracy and significance of bleeding upon probing around dental implants. Presently, the literature advocate the use of bleeding on probing as an indicator of peri-implant disease. However, care must occur prior to histologic signs of inflammation or concurrently with other signs of implant failure, ie. bone loss. However, a negative finding, routine probing is not recommended.

Radiographic evaluation

Radiographic interpretation is one of the most useful clinical parameters for evaluating the status of an endosseous dental implant. Invasion of biologic width, predictable remodeling, or so-called saucerization, is an average marginal bone loss of 1.5.. during the first year following prosthetic rehabilitation followed by an average of 0.2mm of vertical bone loss every subsequent year. Thus, progressive bone loss around a dental implant that exceeds these averages may be indicative of an ailing or failing implant. Lastly, during radiographic evaluation, no evidence of a peri-implant radiolucency should be found, because such a reaction usually indicates infection or failure to osseointegrate.

Professional cleaning instrumentation

Instruments made of metal, such as stainless steel, should be limited to natural teeth and not to be used to probe or scale dental implants. The rationale for this well-documented and spoken conclusion is that metal is so hard it can scratch, contaminate,