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SPECIAL SECTION

The Current and Future Treatment of Edentulism

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Abstract

The purpose of this review and summary is to focus the clinician's attention on existing potential limitations regarding the management of edentulism. The current published data and opinions concerning the need for treating edentulism, the quality of dentures, related morbidity, and alternative or related therapeutics (e.g., dental implants) suggest there are opportunities for improvement in the treatment of the edentulous population. This may be achieved by adopting a broader therapeutic strategy focused not solely on technical aspects of an oral prosthesis. Instead, a wider array of clinical features of the edentulous patient should be addressed. A contemporary strategy may include concerns for prevention of tooth loss, evaluation of residual alveolar ridge resorption, and related issues of denture function, continual evaluation of oral mucosal health, compassionate management of maladaptive patients, a rationale for timely replacement of dentures, and continued development of dental implant therapies. The importance of therapeutic technical quality can be underscored, but should not overwhelm the broader concerns for assuring the overall health and well-being of the edentulous population.

The future success of edentulous patient care is dependent on the development of shared goals for both the edentulous patient and the clinical team. This requires careful elucidation of a goal and strategies to reduce or eliminate edentulism, of new and improved standards for management of edentulism, and of innovation in the delivery of denture care. Success will be achieved when therapeutic success is similarly viewed by the clinician and the patient. The selective use of technology to improve denture fabrication should be guided by factors that improve the process and outcome of denture fabrication and use as viewed by the denture wearer.

The causes of edentulism are many. While largely the result of genetic or microbial diseases that have strong individual and behavioral influences, total tooth loss can be the result of iatrogenic, traumatic, or therapeutic causes. Unfortunately, in addition to patient neglect and poor oral hygiene, the failure of prostheses is a real issue facing individuals and populations with comprehensively restored dentitions.

The truth about edentulism is that it has not disappeared nor is it disappearing. Eklund and Bert[1] indicated that in the United States, future edentulism may be predicted based on the degree of partial edentulism, but not other variables. Such statistical predictions suggest that for approximately 150 million adults, over 10 million new cases of edentulism will be presented in the next decade. Other investigators suggest there are reductions in edentulism in various parts of the world (i.e., continental Europe[2]). Mojon et al[3] indicated that reductions in edentulism are to be expected in Scandinavian countries; however, these and similar reports from developed nations and small populations of interest (compared to larger centers of developing nations such as China and India), may not fully represent the worldwide status of edentulism. Edentulism remains an individual concern, a professional responsibility, and a prominent public health issue. Many reports claim that while the prevalence of tooth loss is diminishing with each generation, the longevity of populations worldwide and the potential accommodation to sugar-rich diets and Western lifestyles contribute to sustaining the actual number of edentulous individuals throughout the world.

Public health strategies to prevent edentulism include maintenance of optimal levels of fluoride in community water supplies, oral health promotion for all age groups, and expansion of dental insurance coverage, particularly for older persons. Other preventive measures include the appropriate use of fluoride-containing or antibacterial agents such as dentifrices, topical gels, mouth rinses, and varnishes. In addition, improved access

to clinical dental services and expanded community tobacco-control activities can help prevent total tooth loss. These suggestions are largely based on knowledge of existing populations and studies performed on mobile, active adults. As a new generation of institutionalized elderly grows, it will be important to understand how and if it is possible to prevent edentulation of individuals with failing tooth- (or implant-) supported prostheses.

Fortunately, the variability in total tooth loss reported throughout the world and the sociodemographic variation in tooth loss suggests edentulism is not an inevitable outcome of aging. Moreover, the impact of oral health promotion (hygiene, smoking cessation, etc.) and public actions such as water fluoridation suggest that edentulism is preventable. Douglass et al[4] summarized their findings of the prevalence of edentulism in the United States by stating that a sizable minority of the population will continue to need complete denture services, and if dental education supporting these services is eliminated, millions of patients will seek alternative providers.

Facing the reality of edentulism

Edentulism exists, it will remain prevalent (>20% in some socioeconomic sectors of the population), and its management is beneficial to the affected population and society. It has been elegantly stated that "the predicament of being both elderly and edentulous undermines life quality for both patient and dentist. The former suffer because of morphological and functional compromises, the latter because of a dearth of safe and predictably successful clinical techniques."[5] The global management of edentulism as a socially relevant public health issue requires that clinicians examine edentulism as a chronic oral condition with relationships to chronic oral diseases and significant links to chronic systemic conditions. Mignogna and Fedele[6] reported that chronic oral diseases, despite not being life threatening, result in pain and suffering and reduce the overall quality of life. They are costly, and these costs are often out-of-pocket expenses. Importantly, chronic oral diseases that result terminally in edentulism are associated with the prevalent chronic diseases of developed nations (cardiovascular disease, cancer, chronic respiratory disease, and diabetes) due to common risk factors (dietary factors, tobacco, and alcohol misuse). *The prevention of edentulism is a primary aspect of any broad-based contemporary strategy in the global management of edentulism.*

Edentulation may represent an intervention (or interventions) in a lifelong process of managing chronic oral diseases. While effective in removing the focus of dentoalveolar infections, it creates other chronic conditions that require additional clinical care and pose other clinical risks. Edentulism results in a reduction in oral and social functions (both measured and perceived). It is managed, perhaps incompletely, by the provision of complete dentures.

Complete denture therapy is further associated with an entire set of related complications and associated clinical manifestations of denture use. Examples include denture stomatitis, traumatic ulcers, irritation-induced hyperplasia, altered taste perception, burning mouth syndrome, and gagging. Residual ridge resorption leads to unfavorable dimensional changes to the lower third of the face when dentures do not compensate properly. In addition to treatment-related morbidity, treatment outcomes may not meet the physiological, psychological, or social needs of the individual.[7]

Residual ridge resorption

It is well known that removal of teeth leads to alveolar bone resorption.[8,9] This response varies in extent among individuals,[10] but appears to be a general occurrence that is inevitable for the majority of individuals experiencing complete tooth loss. The continued reduction in alveolar bone volume leads to unstable clinical conditions that require awareness of the process and accommodation to it.

Tooth extraction in the mandible will result in continual reduction in alveolar bone volume. It is more dramatic in the mandible than the maxilla. The continued resorption of the mandibular alveolar bone is associated with greater difficulty with mandibular denture construction, use, and satisfaction. This absence of teeth is also associated with reduced social and physiologic function.[11-13]

Oral implant placement may prevent the continued resorption of bone and has been associated with increased mandibular bone height distal to the implant location.[14] Wright et al[15] described an increase in posterior mandible bone height in response to functioning with implant-supported fixed dentures, but not overdentures. Subsequent contradictory findings indicated that implant-supported overdenture use was associated with mandibular bone resorption.[16] Although positive bone responses are widely recognized following implant placement in the parasymphyseal mandible, the extent of this benefit remains controversial and merits additional investigation. Posterior mandibular alveolar ridge resorption should be anticipated. The management of the edentulous patient by well-trained clinicians is necessary and involves the continued monitoring of residual alveolar ridge resorption and related issues of denture function. Clinical management of residual alveolar bone mass must be addressed. *Beyond the promise of endosseous implants, the prevention or management of residual alveolar ridge resorption should be the second part of a contemporary strategy in the treatment of edentulism.*

Oral mucosal lesions

The prevalence of oral mucosal lesions among edentulous subjects is not fully defined. It is sufficient to acknowledge its presence in the population and to understand the causes and associated risk factors and to appreciate the need for intervention, management, or treatment. At the most simple level, denture wearers may exhibit a significantly higher prevalence of oral mucosal conditions than individuals without dentures. The literature implies that the comparator group is the dentate, and this suggests there has not been a focused effort to understand the differences between edentulous individuals wearing dentures and those who have no prostheses. It is suggested that denture use, not edentulism, is associated with the prevalence of oral mucosal lesions.

The results presented in the third National Health and Nutrition Examination Survey (NHANES III) involving over

17,000 individuals 17 years and older demonstrated that denture-related lesions accounted for 8.4% of all oral mucosal lesions.[17] Commonly reported denture-related problems include traumatic ulcers, denture stomatitis, and angular cheilitis.[18] In addition, denture-induced inflammatory fibrous hyperplasia may occur in approximately one-third of denture wearers.[19] Inflammatory fibrous hyperplasia was associated with duration of prosthesis use[20] and appears to occur more frequently in women.[19] Inflammatory fibrous hyperplasia is frequently associated with pain.

Most recently, evaluations of elderly patients revealed a high incidence of denture stomatitis.[20,21] The incidence may be higher when denture use is associated with comorbid disease states such as HIV and irradiation.[22] Diabetes is implicated as a cofactor in the severity of periodontitis, but when 30 diabetic and nondiabetic denture wearers were evaluated, no significant differences were observed in denture retention or oral mucosal lesions.[23] The relationship of oral inflammation of edentulous individuals with chronic systemic diseases should be further investigated.

The etiology of denture stomatitis is controversial. Zissis et al[24] reported that denture stomatitis was significantly related to the years of denture-wearing experience and the current denture's useage. Continuous denture wearing was highly related to denture stomatitis prevalence. When 200 Croatian patients were examined, denture wearing habits, hygiene, and denture cleanliness had significant influence on the degree of denture stomatitis in denture wearers. A clear correlation between denture plaque accumulation and denture stomatitis was defined;[25] however, Barbeau et al[26] and Emami et al[27] suggest that denture cleanliness and presence of *Candida* species are not significant risk factors for denture stomatitis. Moreover, when Emami et al[27] evaluated possible causes of denture stomatitis among 173 edentulous elders, it was observed that the risk of denture stomatitis was 4.5 times greater in individuals wearing conventional dentures than in those who wore an implant-retained overdenture ($p < 0.00001$). The authors suggest that denture-related trauma leading to inflammation is reduced by use of endosseous oral implants. Additional data indicated that there were no differences in denture cleanliness or frequency of denture cleaning. Beyond the type of prosthesis, only nocturnal use of the prosthesis was associated with the frequency of denture stomatitis. Nocturnal or continuous use of the denture may mitigate the protective effect of saliva, oxygenation of the mucosa, and the positive biological features of the keratinized mucosa. It is of further importance to note that there may be little relationship between patients' perceptions of denture stability or stomatitis and the ability to wear a denture. *The continual surveillance of oral mucosal health, including the concern for both inflammatory and malignant lesions, may be included as a third feature of contemporary management of the edentulous patient.*

There is only limited information concerning the oral mucosal biofilm of denture wearers. An understanding of the microbiota of the edentulous adult with complete dentures has only recently received detailed attention.[20] From a group of 61 edentulous subjects using maxillary and mandibular complete dentures, samples of the oral mucosa were analyzed by DNA probe analysis of 41 species. The total bacterial counts were highest for the tongue and attached gingiva. Equal bacterial counts were found in saliva samples and on the denture hard palate. An important finding was that the periodontal pathogens *A. actinomycetemcomitans* and *P. gingivalis* were found in samples of the edentulous subjects. The authors suggested that complete denture patients may be at some risk for systemic diseases possibly associated with these periodontal pathogens.

The relationship of denture adherent biofilm to oral health is poorly understood. Yet, the cleanliness of dentures is suspect. When Dikbas et al[29] examined 234 denture patients, they observed few clean dentures (11.9%). Moreover, older dentures were dirtier than newer dentures and had an accompanying higher incidence of denture stomatitis. Most denture wearers did not clean their dentures well and indicated that their dentists did not inform them how to clean their dentures. Similar findings were reported for 321 Jordanian patients; there was a high percentage of unclean dentures and a significant relationship between stomatitis and denture hygiene.[30]

The microbiology of denture plaque has received little attention in comparison with dental plaque. It differs in location and composition. Oral bacteria have been implicated in bacterial endocarditis, pneumonia, chronic obstructive pulmonary disease, and gastrointestinal infection, and dentures offer a reservoir for microorganisms associated with these infections.[31] *Candida albicans* figures prominently in the etiology of oral mucosal inflammation and is frequently part of any differential diagnosis. The acquisition of *Candida*-containing species in denture retentive plaque is associated with stomatitis.[32]

It may be possible to directly control oral microbial infection by management of the denture surface. A simple management strategy is the cleaning of dentures. Recent literature suggests a renewed and growing interest in developing denture cleaning aids. The simple act of mechanical debridement of denture adherent plaque is a recurrent theme in these reports. When the ability of ambulatory denture wearers to clean biofilm from dentures was evaluated, Salles et al[33] demonstrated that mechanical cleaning of a denture with a designated denture cleaning agent was effective in removing biofilm. One portion of the denture-wearing population includes the institutionalized elderly who may not have the capacity to achieve mechanical cleaning of the dentures and who unfortunately do not receive sufficient assistance.[34] Denture hygiene improvements are indicated and may benefit from additional development of denture cleaning agents and devices.

Further improvement in control of denture biofilm and related oral mucosal inflammation may be possible. Milillo et al[35] illustrated this possibility using a varnish containing 5% amorolfine (antifungal agent used for onychomycosis). In this pilot study, treatment of the denture with the amorolfine varnish suppressed nystatin-resistant denture stomatitis. Other agents that may be useful in controlling denture stomatitis by treating the denture base include typical anti-mycotic agents (nystatin, fluconazole, etc.), several denture cleaners, and an innovative application of salivary proteins. Edgerton et al[36] showed that polymethylmethacrylate resin could be modified and loaded to affect the controlled release of histatin 5 in an effort to control *Candida albicans* adhesion.

The eventual control of chronically accumulated denture biofilm is an important goal. When complete denture renewal

was investigated as a means of controlling (eliminating) existing denture biofilm, few parameters related to denture function changed; however, the main effects of denture renewal were observed for patient satisfaction and improved condition of the oral mucosa.[37]

It has become apparent that the denture is an important factor affecting oral biofilm. As denture use continues without proper denture hygiene, changes in oral biofilm and oral mucosal health may be evident. Pursuing optimal oral health requires that the denture be evaluated and treated as necessary. Contemporary denture therapy must include periodic denture evaluation and management of denture-adherent biofilm. The replacement of existing dentures every 5 years is suggested to effectively meet the many clinical challenges of the edentulous denture wearer. *Contemporary denture therapy should, as a fourth strategy, include the rational replacement of existing dentures based on defined criteria and the future development of dentures as therapeutic devices that aid in control of (not the exacerbation of) oral mucosal lesions.*

Maladaptation to dentures

Successful accommodation of patients to dentures is a frequently acknowledged challenge to many clinicians. The mindset that clinical management of the patient can be guided by technical features of the denture or its construction is suggested by clinical behavior of clinicians; however, recent data strongly suggest that patient-based measures of denture success may differ from those of clinicians. Both the clinician and the patient are quick to identify individual features of the denture as the cause of dissatisfaction.

When new dentures are provided, the patient's reported satisfaction did not correlate with the method of denture fabrication.[38] Brunello and Mandikos[39] examined 100 patients with ongoing denture dissatisfaction. They too observed an association with denture design faults and the condition of the patient's mucosa. Most of the patients experienced poor denture retention. Interestingly, approximately one-third of the subjects showed mucosal irritation. Among the most prevalent problems recorded were: (a) underextension of the denture bases and (b) incorrect jaw relationships. Less frequently, incorrect occlusal vertical dimension and inadequate posterior palatal seal were noted. They concluded that complete denture patients present with complaints only when there is a real design fault or a tissue problem. When patient complaints were considered in the context of dentist-observed denture faults, Dervis[40] indicated that there were significant relationships between denture construction faults, the condition of the bearing mucosa, and patient complaints. These observations were reiterated in a review of literature concerning patients who experienced ongoing difficulties with new complete dentures.[41]

The notion that key features of the denture itself underscore dissatisfaction strongly implies that clinical success is dependent on technique of fabrication, design, and quality of the denture. A spectrum of functional impairments that range from reduced masticatory function, to impaired phonetic ability, to claims of lowered social function including sexuality are all associated with mandibular edentulism and associated denture instability.[42,43] While several investigators have shown that patient-based and clinician attitudes about denture quality and use are not well correlated, the aforementioned studies that address denture quality directly suggest that worldwide improvement in therapy requires enhanced clinical ability. Both educational and technological advances should be explored by organized dentistry if these observations are taken at face value.

Dissatisfaction with mandibular dentures has a multifactorial basis. When considering the self-reported satisfaction regarding complete denture use, patients have described instability and discomfort as key reasons for dissatisfaction. Comparison of outcomes for mandibular versus maxillary denture use has revealed that stability and comfort are the features that distinguish maxillary denture acceptance from more generalized mandibular denture dissatisfaction.[44] Suggested is the possibility that stability of the prosthesis may be a key feature of denture acceptance.

The importance of denture base stability may underscore the present interest in pursuing treatment of edentulism using oral implants. When oral implants are beyond the capacity of the clinician, health care system, or patient's desire, few techniques are left to aid the patient. The use of neutral zone impressions, altered occlusal forms, and the use of denture adhesives have been advocated.

Recent interest in the use of denture adhesives is obvious in the literature. For example, de Baat et al[45] used a measure of incisal force before dislodgement of maxillary denture dislodgement to objectively score the effect of denture adhesive on maxillary denture retention. They observed a benefit of the denture adhesive, particularly for existing (vs. new) dentures. This confirms observations made by clinicians earlier.[46] When patients were polled regarding their assessment of denture adhesives, all subjects responded that retention of their dentures was better when using an adhesive paste.[47] In a similar study comparing five denture adhesives, the majority of subjects also declared benefit from the use of adhesive pastes.[48]

In a further key paper by Fenlon and Sherriff,[49] a refined patient satisfaction structural model revealed strong relationships between the quality of mandibular residual alveolar ridges, new denture quality, and patient satisfaction with the new dentures. The accuracy of jaw relations was indicated as a key variable in the model. In turn, this affected mandibular denture security and mandibular anatomy. This work strongly suggests that the process of fabricating a denture—that is, the quality of the individual procedural steps—influences denture satisfaction by influencing mandibular denture stability. Other approaches to increasing mandibular denture stability include detailed emphasis on the neutral zone technique[50] that aims to establish muscular control over the denture.

Other technical aspects of denture construction are often viewed passionately as factors affecting success. Most investigations fail to show any preference by the patient for dentures fabricated using different impression techniques, various tooth arrangements or occlusal designs, or articulator preferences.[51] Yet the delivery of a denture is often not fully explored. Irrespective of how a denture may be constructed, its delivery may help to harmonize the prosthesis with the recipient. Shigli et al[52] compared the fabrication and delivery of dentures with and without laboratory and clinical remount procedures and revealed that remount procedures and occlusal corrections

reduced the number of postinsertion visits and resulted in enhanced patient comfort. Again, there may be some reason to carefully evaluate the curricular content of denture techniques, education, and practice. While current thought is intensely focused on endosseous oral implants to provide denture stability, it must be recognized that not every patient desires nor can afford to obtain such treatment.

Alternatively, a long-standing assumption is that a subset of patients may not adapt to denture use, irrespective of the technique or quality of the denture. Historical reference to patient dissatisfaction and its management is well known.[53] There may be more than anectodal value to this understanding. Bolender et al[54] investigated effects of patient personality on satisfaction with complete dentures in 402 patients and found a significant association between high neuroticism scores and patient dissatisfaction. Fenlon et al, however, found significant negative associations between Neuroticism (but not Extrovertism or Psychotism) and all aspects of satisfaction with new dentures. In an interesting report, depression and denture satisfaction were associated in the general population of older adults examined in a cross-sectional study.[55] Depression represents a comorbid condition that may influence our ability to treat individual patients. It is critical that management of edentulism be expansive and not restricted to the technical aspects of denture construction. Contemporary denture therapeutic success must comprehensively embrace technical, patient, and socioeconomic features of the treatment scenario. Furthermore, there is need to examine new materials, techniques, and clinical business models for delivery of excellent complete dentures. *Both the detailed quality of denture technique and patient management represent essential educational and professional mandates that comprise a fifth aspect of contemporary denture therapy.*

Given the therapeutic limitations addressed above, are dentures the solution to edentulism? Fortunately and unfortunately, the answers to this question include both yes and no. The ability to replace missing teeth for various anticipated and expected reasons using a seemingly simple device such as a removable denture has been available to the edentate person for centuries. In fact, much of the technology we depend on to create dentures for individual patients has not changed at all. Unfortunately, the rehabilitation of the edentate person using dentures can be incomplete. The historically recent advent of endosseous oral implants and the refinement of methods for implant-supported dentures offer limited improvements for a limited set of individuals.

Endosseous oral implants for treatment of edentulism

Brånemark and coworkers provided a fixed solution for mandibular edentulism. The advantages of this prosthodontic therapy using oral implants include both stability and comfort of the fixed prostheses. Importantly, it offers a perception that the prosthesis is fixed to the mandible. Biological advantages suggested for this approach include the induction of posterior mandibular bone apposition[15] and increased masticatory function;[56] however, relative disadvantages include potential maladaptation to the complex intraoral appliance, inability to perform necessary oral hygiene, and cost.

Implant-supported or -retained removable prostheses offer alternative advantages for rehabilitation of the edentulous mandible. The selection of the overdenture versus a fixed implant prosthesis may be favored on initial cost advantages.[57] Other advantages such as access for hygiene, avoidance of food impaction, and support of facial profile by the denture flange are commonly cited as factors that favor a removable prosthesis supported by mandibular implants.[58] It remains an unfortunate fact that too few edentulous individuals worldwide are able to benefit from this therapy.

Burns[59] indicated that there is consensus among investigators that: (i) retention and stability problems negatively influence treatment outcomes for conventional mandibular dentures; (ii) oral implant success in the anterior mandible is generally excellent; (iii) implant-retained or -supported mandibular overdentures offer many benefits compared with conventional denture treatment; (iv) implants in the anterior mandible can slow the process of physiological bone resorption; (v) periimplant mucosal and osseous responses to mandibular implant overdenture treatment are favorable; (vi) treatment complications are a concern, especially during the first year of treatment service, and there is need for routine recall and follow-up evaluation and treatment; and (vii) data indicate significant increases in patient satisfaction with mandibular implant overdenture treatment when compared with conventional denture treatment.

Positive long-term outcomes for implant-supported overdentures were reported by in a 10- to 19-year review of 42 consecutively treated mandibular overdenture patients.[60] In addition to observing that the prosthetic and implant cumulative survival rates were greater than 90%, the authors further noted a requirement for relining, on average, every 4 years. In fact, the majority of investigations that considered the implant and prosthetic outcomes of mandibular implant overdenture therapy indicated similar high implant survival rates, low biological complication rates as well as the important requirement for prosthetic intervention. Mandibular edentulism treatment using implant-retained overdentures with ball abutment-retained overdentures is cost-effective and highly accepted.[61]

The treatment of the edentulous patient using implants to retain mandibular overdentures has been suggested to be a standard of care.[62] Fitzpatrick[63] argues that prosthodontists should consider a broader range of therapeutic choices and that the "standard of care" for the treatment of edentulous mandibles is to offer choice. Informed decision making at the individual level requires that choices are based on a wide range of factual data, patient perceptions, and economic factors. Addressing edentulism as a condition affecting diverse populations worldwide requires further distillation of information driving policies that affect professional education, prevention, and therapy. Oral implants are firmly established among the other aforementioned strategies to comprehensively address the treatment of edentulism.

Despite the highly successful outcomes for the implant-supported overdenture, it seems that a majority of edentulous individuals have not pursued implant-based rehabilitation of mandibular function and self-esteem. Among the reasons cited for this discrepancy between highly successful therapy and its acceptance are the cost of treatment and the process of treatment. Newer immediate provisionalization/loading protocols

for implant-retained mandibular overdentures may address the perceptions of lengthy treatment. Although every patient will not consent to receive oral implants, Walton and MacEntee[64] suggest that pain, perceptions of poor chewing function and speech, and dissatisfaction with appearance motivated patients to choose oral implants. Endosseous oral implants have been used to improve the function, physiology, and perceived outcomes of treatment of mandibular edentulism. Promotion of oral implant therapy is recognized as a first choice treatment strategy; however, the worldwide acceptance of oral implant treatment for mandibular edentulism faces both educational and economic challenges. *A sixth feature of contemporary strategies in the management of edentulism is the continued development of oral implant technology and worldwide enhancement of educational standards concerning oral implant-supported prosthesis therapy*.

Summary

Contemporary management of the edentulous population should include improvements in the general oral health of edentate patients. Clearly, prevention of edentulism is foremost as a public health strategy; however, the management of tens of millions of edentulous people requires renewed focus. In particular, organized dentistry must reinforce (1) *prevention,* (2) *the continued monitoring of residual alveolar ridge resorption and related issues of denture function,* (3) *the continual surveillance of oral mucosal health including the concern for both inflammatory and malignant lesions and development of dentures as therapeutic devices,* (4) *a rationale for timely replacement of existing dentures based on defined criteria*, (5) *clinical responses to maladaptive denture patients be expansive and not solely restricted to the technical aspects of denture construction*, and (6) *the management of edentulism by the continued development of oral implant technology and worldwide enhancement of educational standards concerning oral implant overdenture therapy and denture quality*.

TIPS FOR THE PRACTICING DENTIST

1. Emphasize prevention for the dentate patient.
2. Continually monitor residual alveolar ridge resorption and related issues of denture function.
3. Continually monitor oral mucosal health, with a particular emphasis on both inflammatory and malignant lesions.
4. Develop a rationale for timely replacement of existing dentures based on defined criteria.
5. Respond to maladaptive denture patients not solely through the technical aspects of denture construction but also through patient personality and socioeconomic features.
6. Remain up-to-date on the latest oral implant technology, and educate patients on the benefits of this treatment.

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