Classification System for the Completely Dentate Patient

Thomas J. McGarry, DDS;[1] Arthur Nimmo, DDS;[2] James F. Skiba, DDS;[3] Robert H. Ahlstrom, DDS, MS;[4] Christopher R. Smith, DDS;[5] Jack H. Koumjian, DDS, MSD;[6] and Gregory N. Guichet, DDS[7]

The American College of Prosthodontists (ACP) has developed a classification system designed for use by dental professionals in the diagnosis and treatment of completely dentate patients. This classification is the third in a series and is similar to the Classifications for Complete Edentulism and Partial Edentulism previously developed by the ACP. These guidelines are intended to aid practitioners in the systematic diagnosis of each patient which, in turn, should lead to an appropriate treatment. Four categories of a completely dentate situation are defined (Class I–IV), differentiated by specific diagnostic criteria, with Class I representing an uncomplicated clinical situation and Class IV representing the most complex clinical situation. Potential benefits of the system include (1) improved intraoperator consistency, (2) improved professional communication, (3) insurance reimbursement commensurate with complexity of care, (4) an improved screening tool for dental school admission clinics, (5) standardized criteria for outcomes assessment and research, (6) enhanced diagnostic consistency, and (7) a simplified aid in the decision-making process associated with referral.

J Prosthodont 2004;13:73-82. Copyright © 2004 by The American College of Prosthodontists.

INDEX WORDS: diagnosis, treatment planning, prosthodontics, dental education, outcomes assessment, quality assurance, treatment outcomes, patient risk profiles, restorative dentistry

COMPLETELY DENTATE patients needing prosthodontic treatment exhibit a wide range of physical variations and health conditions. The absence of organized diagnostic criteria for such patients has been a long-standing impediment to the effective recognition of risk factors that may affect treatment outcomes. Whereas there have been previous published classification efforts, these have not been widely utilized.[1-4] To address this problem, the American College of Prosthodontists (ACP) charged a subcommittee on prosthodontic classification with the task of developing a classification system for the completely dentate patient consistent with the existing classification systems for complete and partial edentulism.[5,6] A summary of the Classification System for Partial Edentulism is listed in Table 1.

The classification system provides a framework for the organization of clinical observations. Clinical variables that establish different levels for the completely dentate patient are organized in a simplified, sequential progression designed to facilitate consistent and predictable treatment planning decisions. This framework is structured to accommodate increasing levels of diagnostic and restorative complexity. This structure may suggest points at which referral to other specialists is appropriate. The framework supports diagnostically driven treatment plan options and will also be useful in an educational environment for triaging patients on entry into an institutional setting.

A completely dentate patient is defined as an individual with an intact continuous permanent dentition with no missing teeth or roots excluding

[1]*Private Practice, Oklahoma City, OK.*

[2]*Professor and Chair, Department of Prosthodontics, University of Florida College of Dentistry.*

[3]*Private Practice, Montclair, NJ.*

[4]*Private Practice, Reno, NV, and Associate Professor, Department of Removable Prosthodontics, University of the Pacific, San Francisco, CA.*

[5]*Associate Professor, Department of Clinical Surgery, University of Chicago.*

[6]*Clinical Associate Professor, Department of Restorative Dentistry, UCSF School of Dentistry and Private Practice, Palo Alto, CA.*

[7]*Private Practice, Orange, CA.*

Accepted February 17, 2004

Presented at the Annual Sessions of the American Dental Education Association in Chicago in 2001 and the American College of Prosthodontists in New Orleans in 2001 and Orlando in 2002.

This project was funded by the American College of Prosthodontists.

Correspondence to: Thomas J. McGarry, DDS, 4320 McAuley Boulevard, Oklahoma City, OK 73120. E-mail: mcgarry@qns.com

1059-941X/04

doi: 10.1111/j.1532-849X.2004.04019.x

Table 1. ACP Classification System for Partial Edentulism

Class I
This classification level is characterized by being ideal or minimally compromised in: location and extent of edentulous area which is confined to a single arch, abutment conditions, occlusal characteristics, and residual ridge conditions. All 4 of the diagnostic criteria are favorable.
- Location and extent of the edentulous area is ideal or minimally compromised
- Edentulous area is confined to a single arch
- Edentulous area does not compromise the physiologic support of the abutment
- Edentulous area may include any anterior maxillary span that does not exceed 2 incisors, any anterior mandibular span that does not exceed 4 missing incisors, or any posterior span that does not exceed 2 premolars or 1 premolar and a molar
- Abutment condition is ideal or minimally compromised, with no need for preprosthetic therapy
- Occlusion is ideal or minimally compromised with no need for preprosthetic therapy
- Maxillomandibular relationship: Class I molar and jaw relationships
- Residual ridge morphology conforms to the Class I complete edentulism description

Class II
This classification level is characterized by being moderately compromised in: location and extent of edentulous areas in both arches, abutment condition requiring localized adjunctive therapy, occlusal characteristics requiring localized adjunctive therapy, and residual ridge condition.
- Location and extent of the edentulous area is moderately compromised
- Edentulous areas may be in 1 or both arches
- Edentulous areas do not compromise the physiologic support of the abutments
- Edentulous areas may include:
  - any anterior maxillary span that does not exceed 2 incisors,
  - any anterior mandibular span that does not exceed 4 incisors
  - any posterior span (maxillary or mandibular) that does not exceed 2 premolars, or
  - one premolar and a molar or any missing canine (maxillary or mandibular)
- Condition of the abutments is moderately compromised
  - Abutments in 1 or 2 sextants have insufficient tooth structure to retain or support intracoronal or extracoronal restorations
  - Abutments in 1 or 2 sextants require localized adjunctive therapy
- Occlusion is moderately compromised
  - Occlusal correction requires localized adjunctive therapy
  - Maxillomandibular relationship: Class I molar and jaw relationships
- Residual ridge morphology conforms to the Class II complete edentulism description

Class III
This classification level is characterized by being substantially compromised in: location and extent of edentulous areas in both arches, abutment condition requiring substantial localized adjunctive therapy, occlusal characteristics requiring reestablishment of the occlusion without a change in the occlusal vertical dimension, and residual ridge condition.
- Location and extent of the edentulous areas is substantially compromised
- Edentulous areas may be present in 1 or both arches
- Edentulous areas compromise the physiologic support of the abutments
- Edentulous areas may include:
  - any posterior maxillary or mandibular edentulous area that is greater than 3 teeth or 2 molars
  - anterior and posterior edentulous areas of 3 or more teeth
- The condition of the abutments is moderately compromised
  - Abutments in 3 sextants have insufficient tooth structure to retain or support intracoronal or extracoronal restorations
  - Abutments in 3 sextants require more substantial localized adjunctive therapy, i.e., periodontal, endodontic, or orthodontic procedures
  - Abutments display fair prognosis
- Occlusion is substantially compromised
  - Requires reestablishment of the entire occlusal scheme without an accompanying change in the occlusal vertical dimension
  - Maxillomandibular relationship: Class II molar and jaw relationships
- Residual ridge morphology conforms to the Class III complete edentulism description

Class IV
This classification level is characterized by being severely compromised in: location and extent of edentulous areas with guarded prognosis, abutments requiring extensive therapy, occlusion characteristics require reestablishment of the occlusion with a change in the occlusal vertical dimension, and residual ridge condition.
- Location and extent of the edentulous areas results in severe occlusal compromise
- Edentulous areas may be extensive and may occur in both arches
- Edentulous areas compromise the physiologic support of the abutment teeth to create a guarded prognosis

(Continued)

Table 1. Continued

- Edentulous areas include acquired or congenital maxillofacial defects
- At least 1 edentulous area has a guarded prognosis
  - Abutments are severely compromised
  - Abutments in 4 or more sextants have insufficient tooth structure to retain or support intracoronal or extracoronal restorations
  - Abutments in 4 or more sextants require extensive localized adjunctive therapy
  - Abutments have a guarded prognosis
- Occlusion is severely compromised
  - Reestablishment of the entire occlusal scheme, including changes in the occlusal vertical dimension
  - Maxillomandibular relationship: Class II Division 2 or Class III molar and jaw relationships
- Residual ridge morphology conforms to the Class IV complete edentulism description
- Severe manifestations of local or systemic disease including sequelae from oncologic treatment
- Maxillo-mandibular dyskinesia and/or ataxia

NOTE. Table 1 is based on McGarry TJ, Nimmo A, Skiba JF, Ahlstrom RH, Smith CR, Koumjian JH, Arbree NS. Classification system for partial edentulism. J Prosthodont 2002;11:181-193. Used with permission.

the third molars. This definition should be understood to include patients who may have missing teeth or roots but who nevertheless have a continuous symmetric dental arch of at least 12 teeth, such as occurs in many post-orthodontic treatment patients who are missing a premolar in each quadrant. In such a dentate patient, the degree of loss and continuing degradation of the alveolar bone, adjacent teeth, and supporting structures influences the level of difficulty in achieving adequate prosthodontic restoration. The quality of the supporting structures contributes to the overall condition and is taken into account in the diagnostic levels of the classification system.

Widely recognized significant diagnostic criteria have been identified. Selection of appropriate treatment will be developed subsequently in a Parameters of Care document.[7] It is anticipated that all 3 classifications, Complete Edentulism, Partial Edentulism and the Completely Dentate Patient, will be incorporated into existing electronic diagnostic and procedural databases (SNODENT, ICD, CPT, and CDT).

The classification system offers the following benefits:

1. Improved interoperator consistency
2. Improved professional communication
3. Insurance reimbursement commensurate with complexity of care
4. An objective method for patient screening in dental education
5. Standardized criteria suitable for use in outcomes assessment and research
6. Improved diagnostic consistency
7. A simplified, organized aid in the decision-making process associated with referral.

Applications

Before treatment recommendations can be made, a diagnosis must be determined. Whereas this classification system cannot serve as a predictor of the success of the prosthodontic treatment, it will allow clinical outcomes to be evaluated in terms of evidence-based criteria. When combined with the Parameters of Care document, this classification system will provide a basis for selecting diagnosis and treatment procedures. The experiences gained will enable updating of the Parameters of Care based on clinical outcomes evidence. The classification system will be subject to revision based on input from clinicians, as well as on new diagnostic and treatment information.

Review of the Diagnostic Criteria

This section describes the 2 broad diagnostic categories relevant to the classification of the completely dentate patient: tooth condition and occlusal scheme.

Criteria 1. Tooth Condition

A. Ideal or minimally compromised tooth condition

- No localized adjunctive therapy required.

- Pathology that affects the coronal morphology of 3 or fewer teeth in only 1 sextant.*

B. Moderately compromised tooth condition

- Tooth condition—insufficient tooth structure to retain or support intracoronal or extracoronal restorations—in 1 sextant.
- Pathology that affects the coronal morphology of 4 or more teeth in a sextant.
- Pathology may occur in 2 sextants and may be present in opposing arches.
- Teeth require localized adjunctive therapy, i.e., a periodontal, endodontic, or orthodontic procedure for a single tooth or in a single sextant.

C. Substantially compromised tooth condition

- Tooth condition—insufficient tooth structure to retain or support intracoronal or extracoronal restorations occurring in 2 sextants.
- Pathology affecting the coronal morphology of 4 or more teeth in 3–5 sextants.
- Pathology may occur in 3 sextants in the same arch and/or in opposing arches.
- Teeth require localized adjunctive therapy, i.e., a periodontal, endodontic, or orthodontic procedures for teeth in 2 sextants.

D. Severely compromised tooth condition

- Tooth condition—tooth structure in 3 or more sextants insufficient to retain or support intracoronal or extracoronal restorations.
- Pathology affecting the coronal morphology of 4 or more teeth in all sextants.
- Teeth requiring localized adjunctive therapy, i.e., periodontal, endodontic, or orthodontic procedures in 3 or more sextants.

Criteria 2. Occlusal Scheme

A. Ideal or minimally compromised occlusal scheme.

- No preprosthetic therapy required.
- Contiguous, intact dental arches.

B. Moderately compromised occlusal scheme

- Intact anterior guidance.
- Occlusal scheme requires localized adjunctive therapy.

C. Substantially compromised occlusal scheme

- Major therapy required to maintain entire occlusal scheme without any change in the occlusal vertical dimension.

D. Severely compromised occlusal scheme

- Major therapy required to reestablish entire occlusal scheme including any necessary changes in the occlusal vertical dimension.

Classification System for the Completely Dentate Patient

Class I (Fig 1)

The Class I classification level is characterized by an ideal or minimally compromised tooth condition and occlusal scheme.

1. Ideal or minimally compromised tooth condition

- No localized adjunctive therapy required.
- Pathology affecting the coronal morphology of 3 or fewer teeth in a sextant.

2. Ideal or minimally compromised occlusal scheme

- No preprosthetic therapy required.
- Contiguous, intact dental arches.

Class II (Fig 2)

The Class II classification level is characterized by moderately compromised tooth conditions and/or occlusal scheme.

1. Moderately compromised tooth condition

- Tooth condition—insufficient tooth structure available to retain or support intracoronal or extracoronal restorations—in 1 sextant.
- Pathology affecting the coronal morphology of 4 or more teeth in a sextant.

*A sextant is a subdivision of the dental arch. The maxillary and mandibular arches may be subdivided into 6 areas or sextants. In the maxilla, the right posterior sextant extends from tooth 1 to 5, the left posterior sextant extends from tooth 12 to 16, and the anterior sextant extends from tooth 6 to 11. In the mandible, the right posterior sextant extends from tooth 28 to 32, the left posterior sextant extends from tooth 17 to 21, and the anterior sextant extends from tooth 22 to 27.

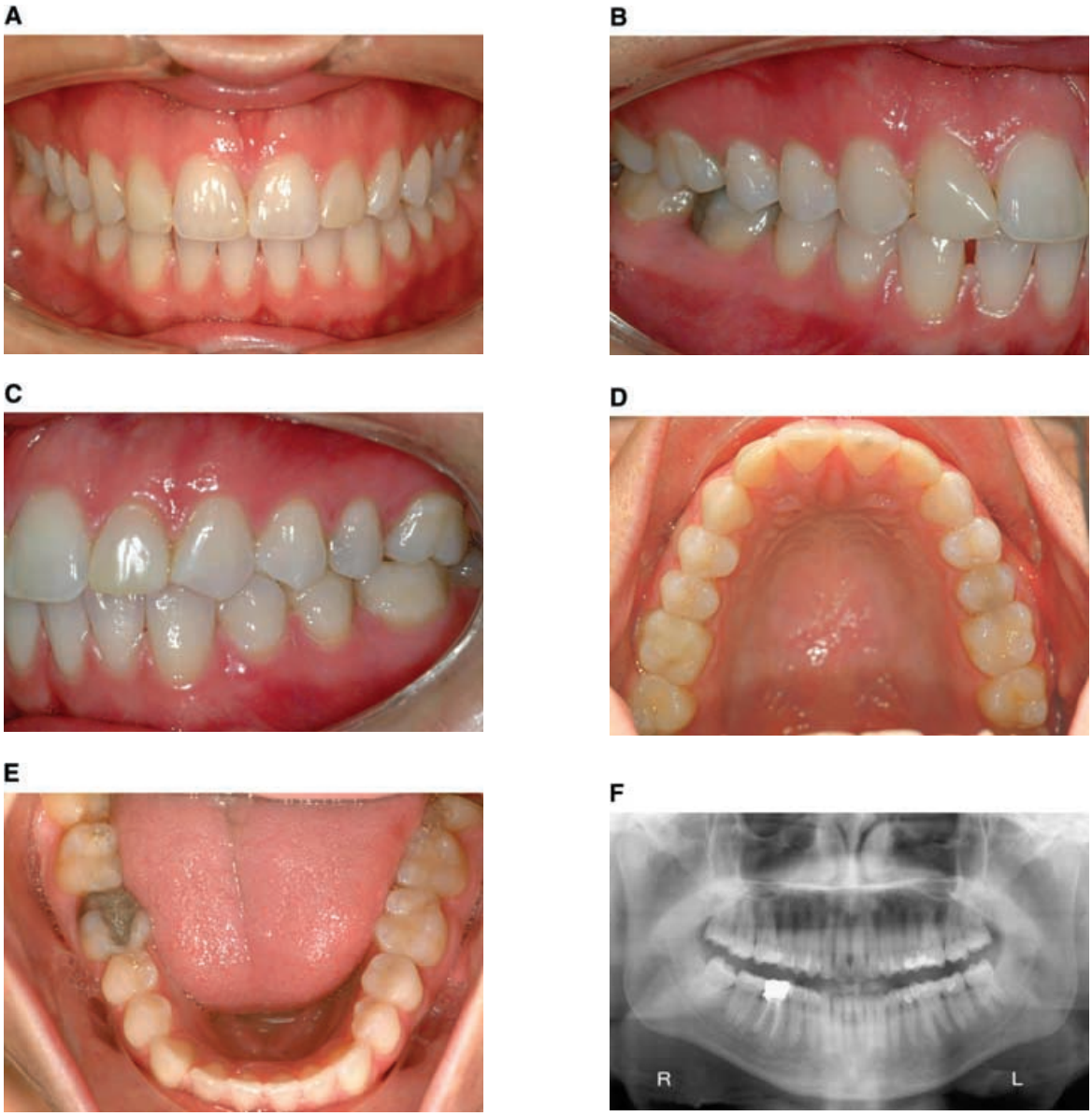

Figure 1. Class I patient: The patient in this figure is categorized as Class I because an ideal or minimally compromised tooth condition and occlusal scheme is exhibited. A single large amalgam core restoration requires a full coverage restoration in 1 sextant. (*A*) Frontal view, maximum intercuspation. (*B*) Right lateral view, maximum intercuspation. (*C*) Left lateral view, maximum intercuspation. (*D*) Occlusal view, maxillary arch. (*E*) Occlusal view, mandibular arch. (*F*) Panoramic radiograph.

- Pathology may be present in 2 sextants and may occur in opposing arches.

2. Moderately compromised occlusal scheme

- Intact anterior guidance.
- Occlusal scheme requires localized adjunctive therapy.

Class III (Fig 3)

The Class III classification level is characterized by substantially compromised tooth conditions requiring localized adjunctive therapy in multiple sextants and arches and/or an occlusal scheme requiring reestablishment without a change in the occlusal vertical dimension.

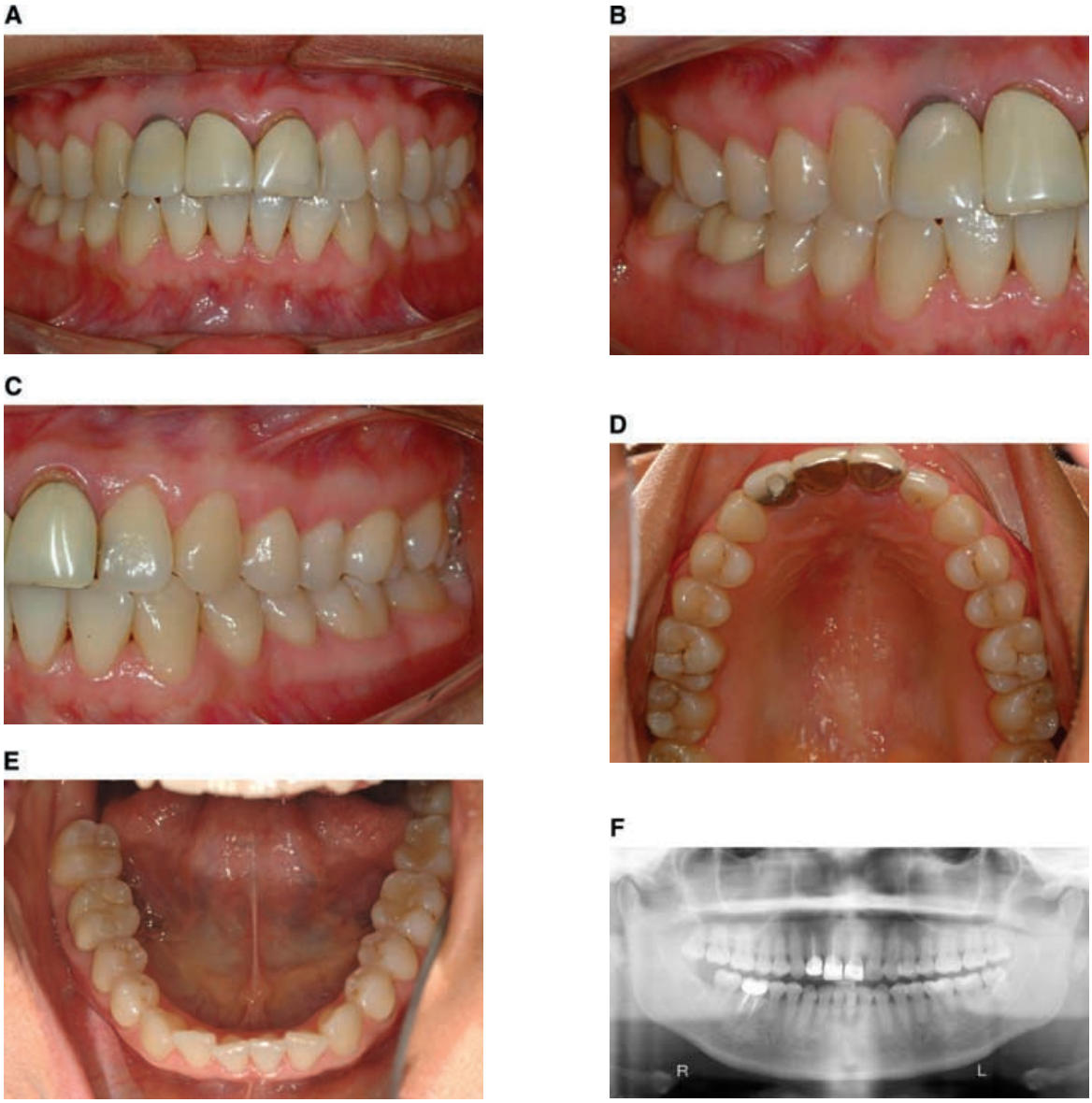

Figure 2. Class II patient: The patient in this figure is classified as Class II because 1 sextant exhibits 3 defective restorations with an esthetic component. Additional variables of gingival architecture and individual tooth proportions increase the complexity of diagnosis. (*A*) Frontal view, maximum intercuspation. (*B*) Right lateral view, maximum intercuspation. (*C*) Left lateral view, maximum intercuspation. (*D*) Occlusal view, maxillary arch. (*E*) Occlusal view, mandibular arch. (*F*) Panoramic radiograph.

1. Substantially compromised tooth condition

- Tooth condition—insufficient tooth structure to retain or support intracoronal or extracoronal restorations—in 2 sextants.
- Pathology affecting the coronal morphology of 4 or more teeth in 3 or more sextants.
- Pathology may occur in 3 sextants in the same arch and/or in opposing arches.
- Teeth require localized adjunctive therapy, i.e., periodontal, endodontic, or orthodontic procedure in 2 sextants.

2. Substantially compromised occlusal scheme

- Major therapy required to maintain occlusal scheme without any change in the occlusal vertical dimension.

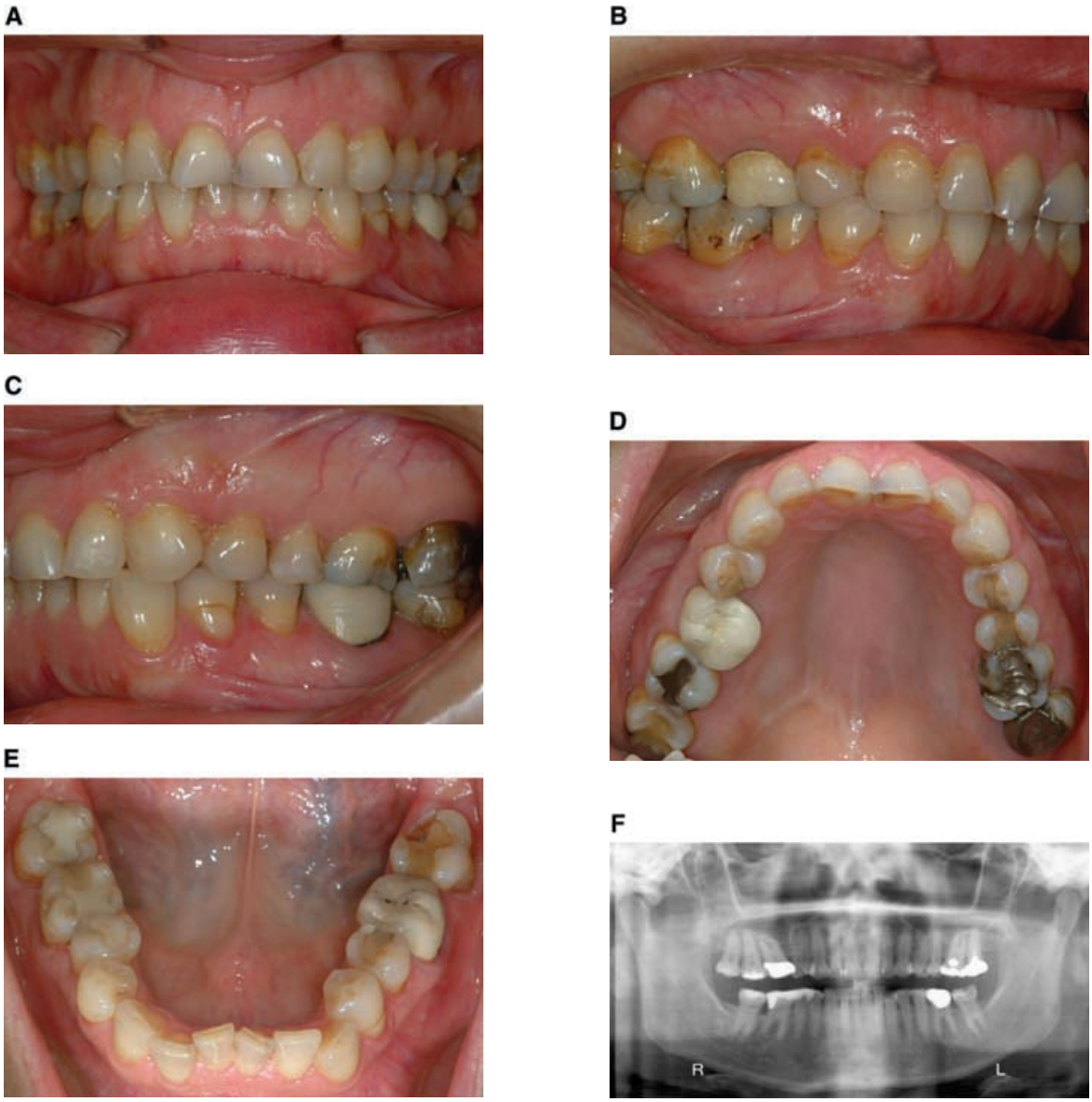

Figure 3. Class III patient: The patient in this figure is classified as Class III since large defective amalgam and composite restorations occur in 4 sextants. The remaining tooth structure is substantially compromised in most posterior teeth. The occlusion is substantially compromised requiring reestablishment of the occlusal scheme without a change in the occlusal vertical dimension. (*A*) Frontal view, maximum intercuspation. (*B*) Right lateral view, maximum intercuspation. (*C*) Left lateral view, maximum intercuspation. (*D*) Occlusal view, maxillary arch. (*E*) Occlusal view, mandibular arch. (*F*) Panoramic radiograph.

Class IV (Fig 4)

The Class IV classification level is characterized by severely compromised tooth conditions requiring extensive therapy and/or reestablishment of occlusal scheme with change in the occlusal vertical dimension.

1. Severely compromised tooth condition

- Tooth condition—insufficient tooth structure to retain or support intracoronal or extracoronal restorations—in 3 or more sextants.

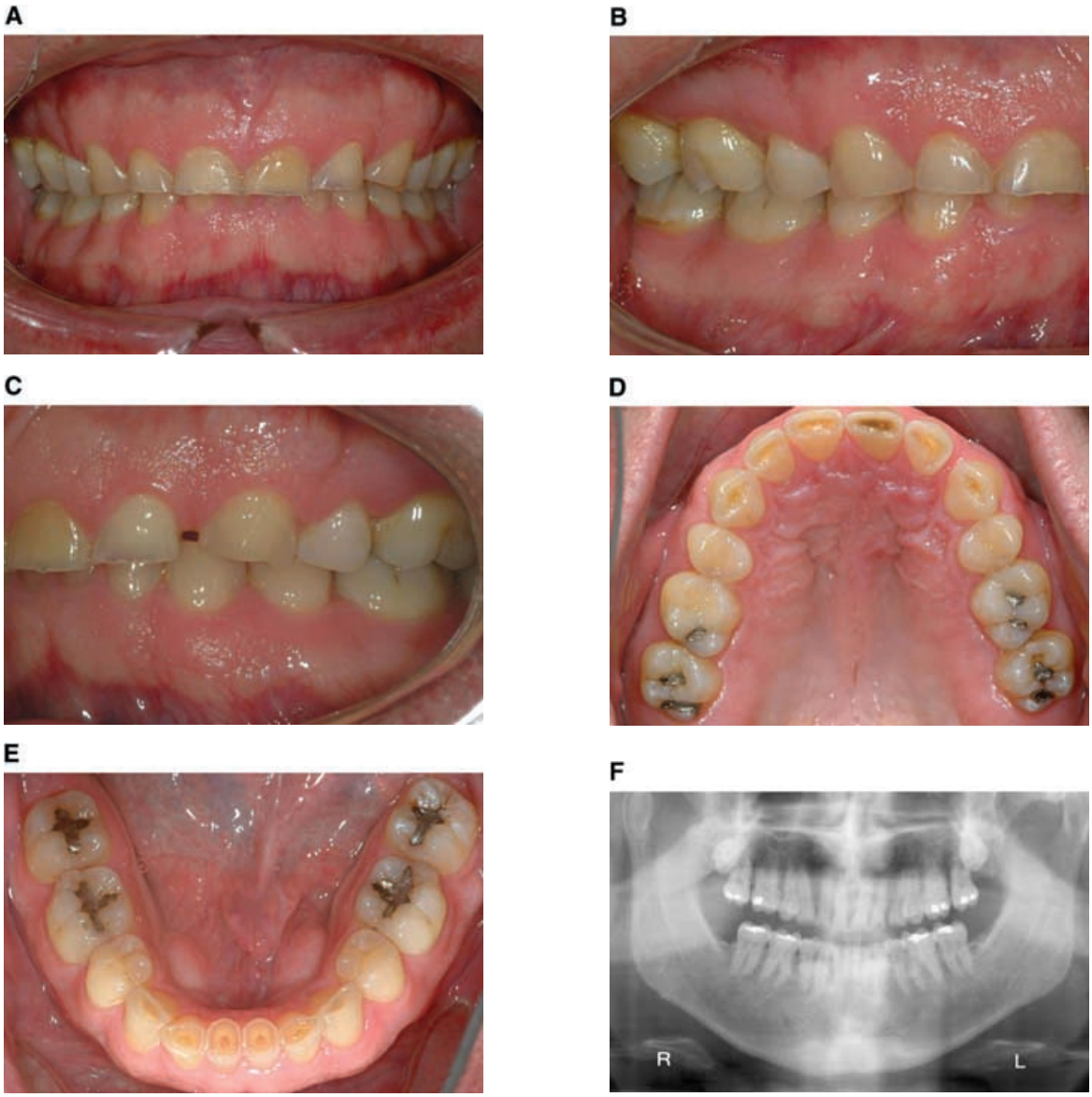

Figure 4. Class IV patient: The patient in this figure is categorized as a Class IV. Advanced attrition of the occlusal surfaces occurs in more than 3 sextants. The occlusion is severely compromised with the need to reestablish occlusal vertical dimension and a proper occlusal scheme. (*A*) Frontal view, maximum intercuspation. (*B*) Right lateral view, maximum intercuspation. (*C*) Left lateral view, maximum intercuspation. (*D*) Occlusal view, maxillary arch. (*E*) Occlusal view, mandibular arch. (*F*) Panoramic radiograph.

- Pathology affecting the coronal morphology of 4 or more teeth in all sextants.
- Teeth require localized adjunctive therapy, i.e., periodontal, endodontic, or orthodontic procedure in 3 or more sextants.

2. Severely compromised occlusal scheme

- Major therapy required to reestablish the entire occlusal scheme including any necessary changes in the occlusal vertical dimension.

Other characteristics of the Class IV patient may include severe manifestations of local or systemic disease, including the sequelae from oncologic treatment; maxillomandibular dyskensia and/or atxia; or a refractory response (i.e., the patient who presents with chronic complaints following appropriate therapy.)

Table 2. Worksheet Used to Determine Classification

	Class I	*Class II*	*Class III*	*Class IV*
Teeth Condition				
Ideal or minimally compromised—3 or less teeth in 1 sextant	x			
Moderately compromised—4 or more teeth in 1 to 2 sextants		x		
Substantially compromised—4 or more teeth in 3 to 5 sextants			x	
Severely compromised—4 or more teeth, all sextants				x
Occlusal Scheme				
Ideal or minimally compromised	x			
Moderately compromised—anterior guidance intact		x		
Substantially compromised—extensive rest/same OVD			x	
Severely compromised—extensive rest/new OVD				x
Conditions Creating a Guarded Prognosis				
Severe oral manifestations of systemic disease				x
Maxillomandibular dyskinesia and/or ataxia				x
Refractory patient				x

Note. Individual diagnostic criteria are evaluated and the appropriate box is checked. The most advanced finding determines the final classification.

Guidelines for use of the worksheet

1. Consideration of future treatment procedures must not influence the diagnostic level.
2. Initial preprosthetic treatment and/or adjunctive therapy can change the initial classification level.
3. If there is an esthetic concern/challenge, the classification is increased in complexity by one or more levels.
4. In the presence of TMD symptoms, the classification is increased in complexity by one or more levels.
5. It is assumed that the patient will receive therapy designed to achieve and maintain optimal periodontal health.
6. Patients who fail to conform to the definition of completely dentate should be classified using the classification system for partial edentulism.

Guidelines for the Use of the Classification System for the Completely Dentate Patient

The analysis of diagnostic factors will be facilitated with the use of a worksheet (Table 2). As each criterion is evaluated, a checkmark is placed in the appropriate box. In those instances in which a patient's diagnostic criteria overlap 2 or more classes, the patient is assigned to the more complex class.

The following additional guidelines should be followed to ensure consistent application of the classification system:

1. Consideration of future treatment procedures must not influence the choice of diagnostic level.
2. Initial adjunctive therapy may change the original classification level. Classification may need to be reassessed after existing restorations are removed.
3. Esthetic concerns or challenges raise the classification by 1 or more levels in Class I and II patients (see Fig 2).
4. The presence of temporomandibular disorders (TMD) symptoms raises the classification by 1 or more levels in Class I and II patients.
5. Periodontal health is intimately related to the diagnosis and prognosis for completely dentate patients. For the purposes of this system, it is assumed that patients will receive therapy designed to achieve and maintain periodontal health so that appropriate prosthodontic care can be accomplished.
6. Patients who fail to conform to the definition of completely dentate should be classified using the classification system for partial edentulism.[6]

Closing Statement

The classification system for the completely dentate patient is based on the most objective criteria available to facilitate uniform use of the system. It is anticipated that such standardization should lead to improved communications among dental professionals and third parties. This classification system will serve to identify those patients most likely to require treatment by a specialist or a

practitioner with additional training and experience in advanced techniques. This system should also be useful in the development of research protocols to evaluate various treatment alternatives. With the increasing complexity of patient treatment, this classification of the completely dentate patient, coupled with the classifications of complete and partial edentulism, will help dental school faculty better assess entering patients to ensure the most appropriate assignment. Based on use and observations by practitioners, educators, and researchers, this system will be modified as needed.

Acknowledgment

The authors thank Dr. John Zarb for his contributions to this manuscript.

References

1. Braly BV: Occlusal analysis and treatment planning for restorative dentistry. J Prosthet Dent 1972;27:168-171
2. Turner KA, Missirlian DM: Restoration of the extremely worn dentition. J Prosthet Dent 1984;52:467-474
3. Lytle JD, Skurow H: An interdisciplinary classification of restorative dentistry. Int J Periodontics Restorative Dent 1987;7:8-41
4. Douglass GD, Jenson L, Mendoza D: A practical guide to occlusal management for the general practitioner. J Calif Dent Assoc 2000;28:792-799
5. McGarry TJ, Nimmo A, Skiba JF, et al: Classification system for complete edentulism. J Prosthodont 1999;8:27-39
6. McGarry TJ, Nimmo A, Skiba JF, et al: Classification system for partial edentulism. J Prosthodont 2002;11:181-193
7. McGarry TJ, Edge MJ, Gillis RE Jr, et al: Parameters of care for the American College of Prosthodontists. J Prosthodont 1996;5:3-70