

CLASSIFICATIONS

*Established in 1994
as a subcommittee of the*
Prosthodontic Care Committee

Committee Members

- Thomas J. McGarry, DDS, Chair
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-

The value of information and the cost of uncertainty:

Who pays the bill?

Lysle E. Johnston, Jr. DDS, Ph.D.
The Angle Orthodontist Vol. 68 No 2 1998

- In the long run, a willingness to treat without reference to evidence has a price that can be measured.
- Stated simply, it is the difference between what the patient actually gets and what he or she could have gotten from the best available treatment.
- The cost of this difference (the “regret”) always comes due and is borne in full by the patient.

Perhaps because there is no obvious penalty for being **wrong** *(or for not being as right as one might like),*

decision-making in the face of **uncertainty** *(i.e., in the absence of data)*

is a time-honored prosthodontic tradition.

Diagnostic Classification of Complete Edentulism

Do different physical variations require a change in treatment procedures?

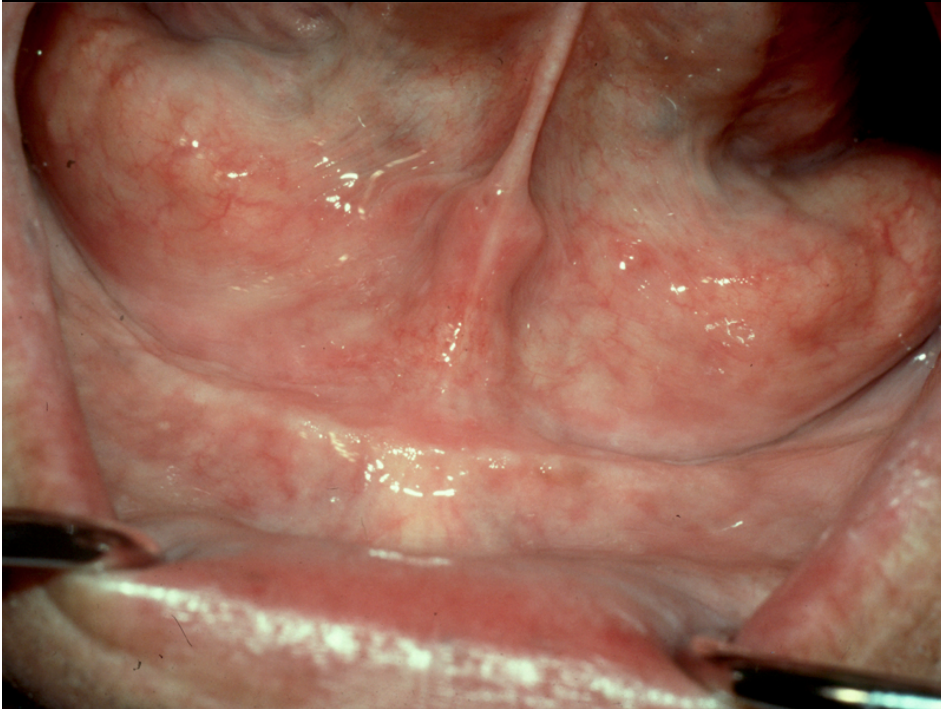
Do different treatment procedures require additional education and training?

Do patient mediated variables require a change in treatment procedure?

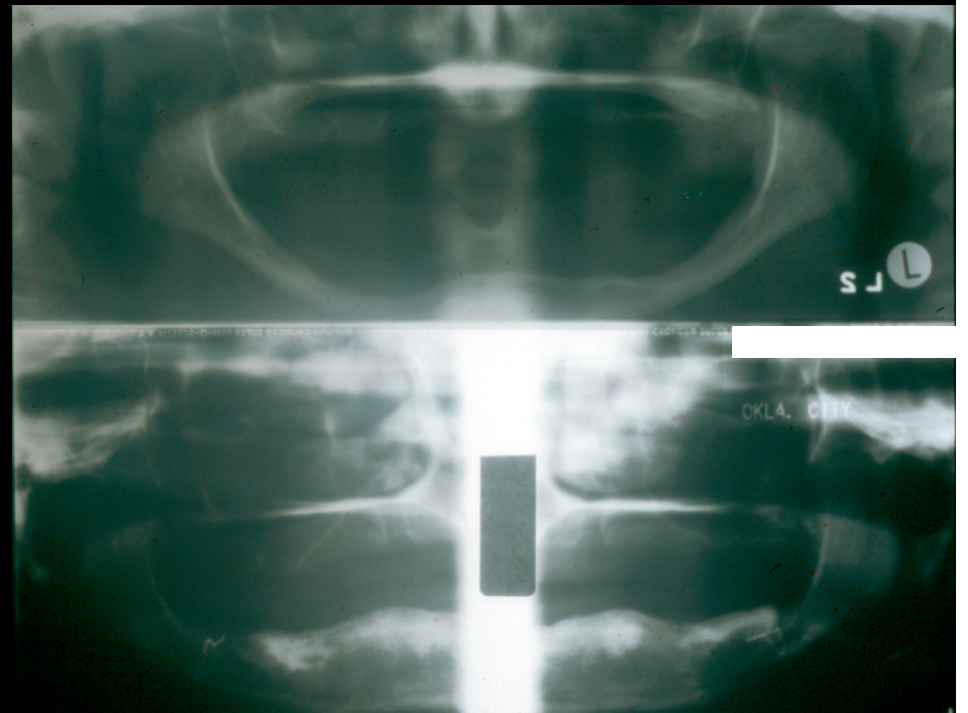
Evidence based treatment procedures require:

- Accurate diagnosis
- Differentiation of treatment procedures to a specific diagnosis
- Outcome assessment criteria

EDENTULOUS



EDENTULISM



PHYSIOLOGY OR ABUSE?

Resorption

Increased osteoclastic activity,
as in hyperparathyroidism and
pressure mediated resorption

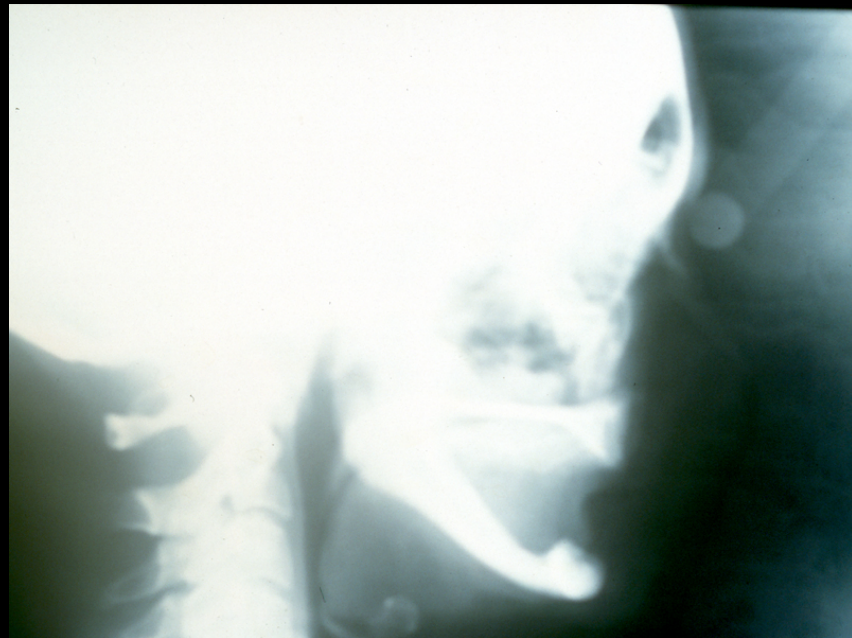
Establish the continual resorption/atrophy for the majority of edentulous patients

- Increasing dysfunction

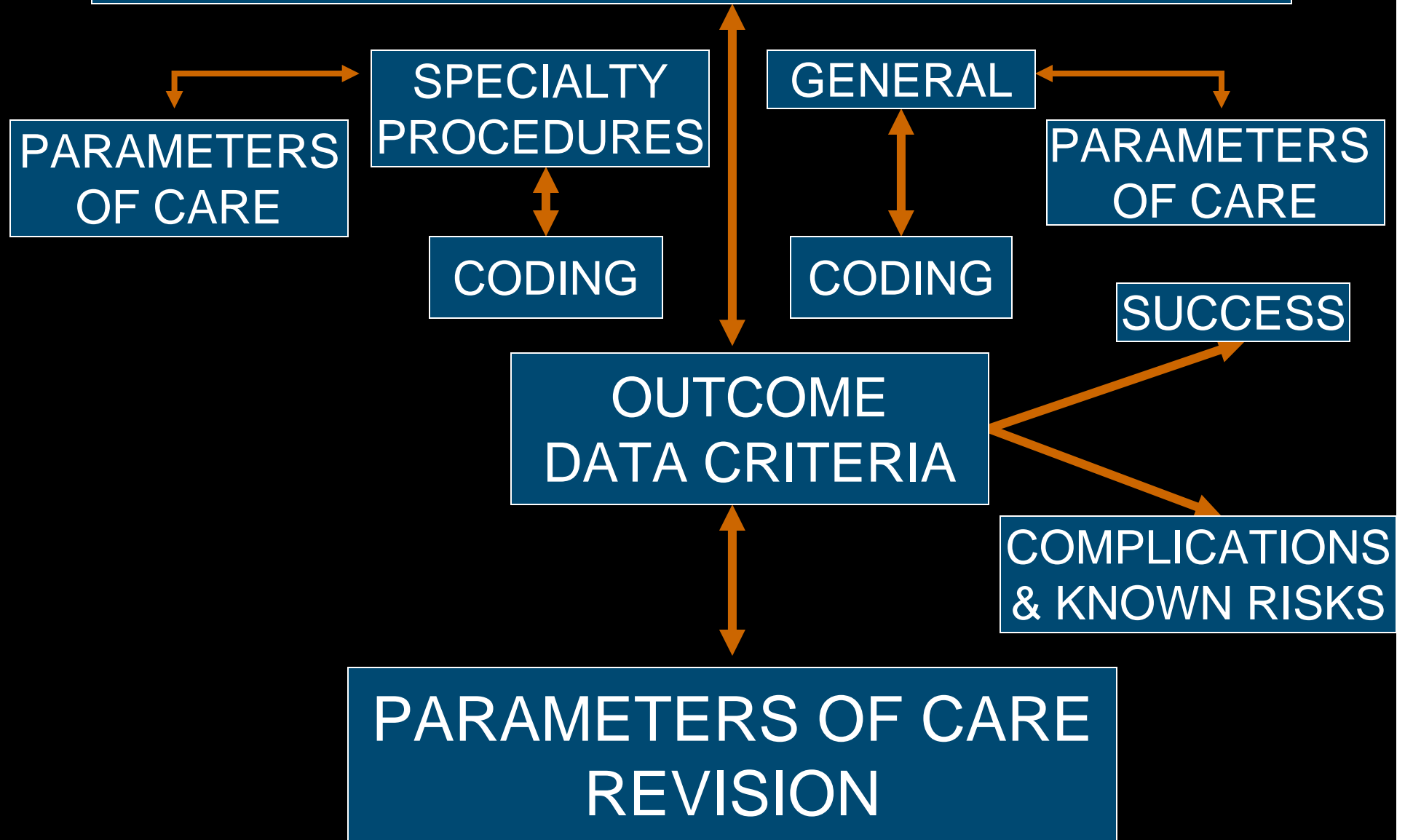
Residual Ridge Reduction

- Maxilla 0.1mm
- Mandible 0.4mm

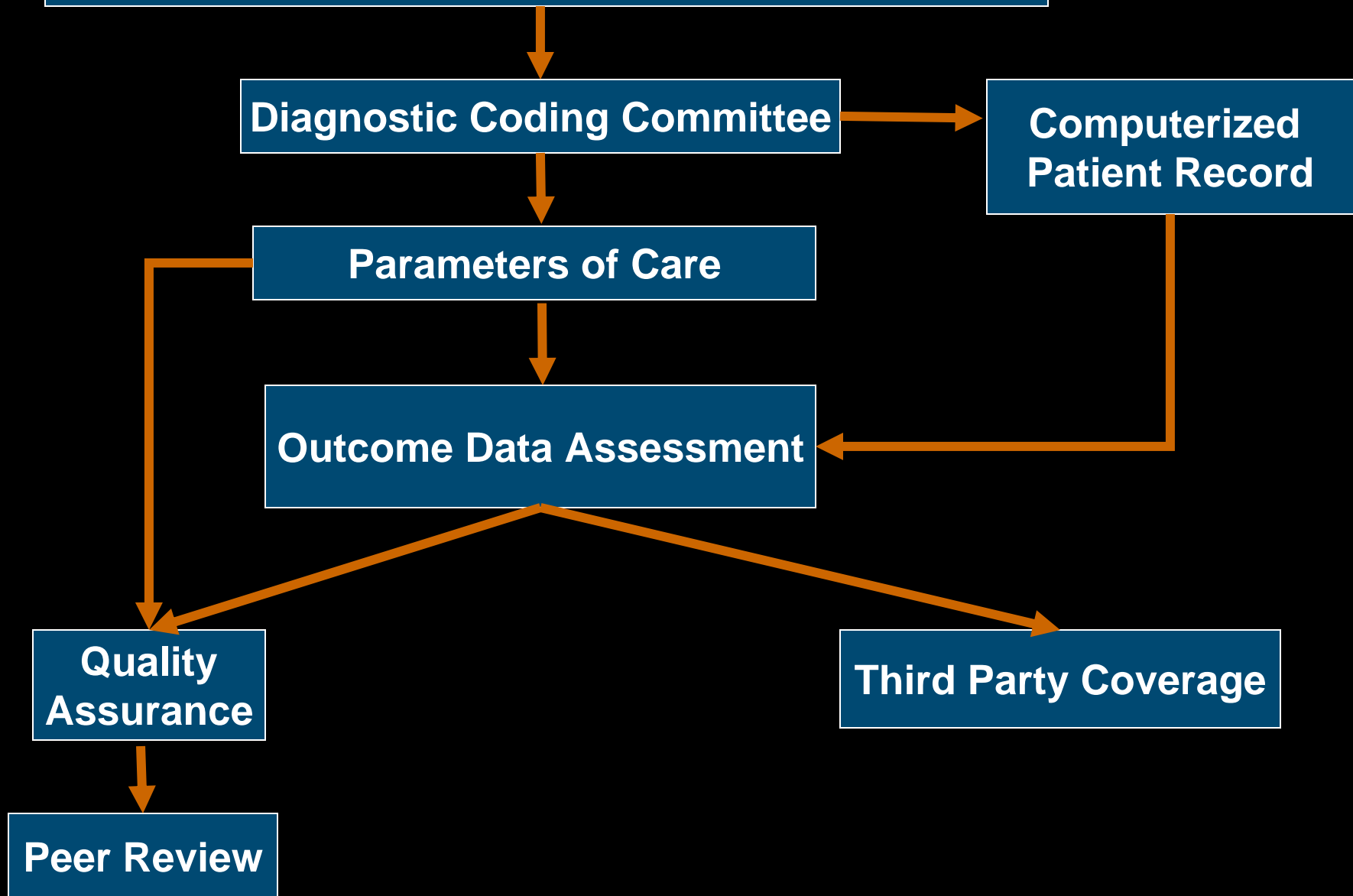
Chronic progressive, irreversible and disabling disease process probably of multifactoral origin. At the present time, the relative importance of various cofactors is not known.



TREATMENT PROCEDURES



DEFINITION OF SPECIALTY



American College of Pathologists

SNOMED

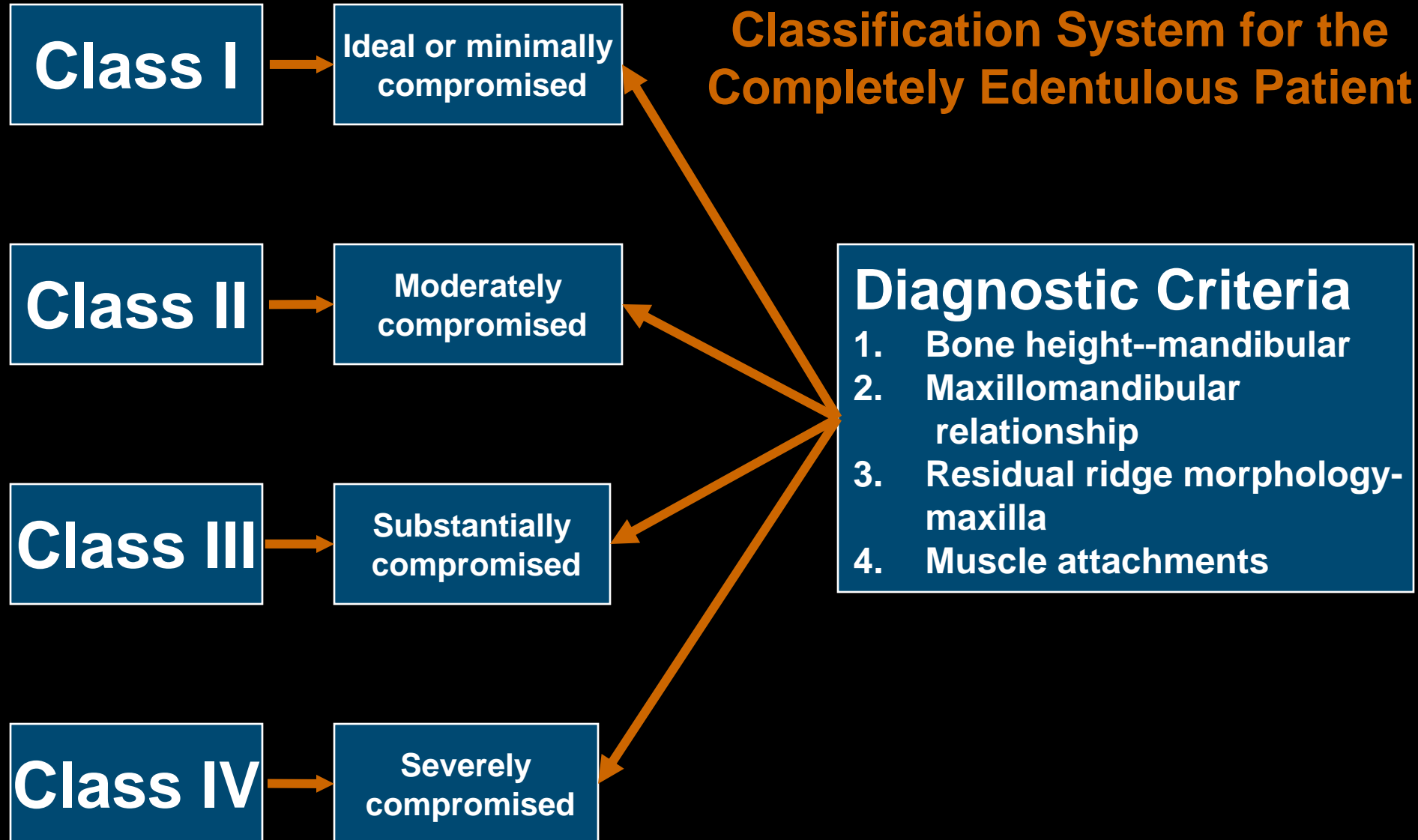
Dental Diseases

SNODENT

**Diagnostic Code
+Treatment Code
Outcome Data**

Complete Edentulism

Classification System for the Completely Edentulous Patient



Diagnostic Criteria Addendum

The diagnostic criteria are ordered by their objective nature and not in their rank of significance.

Objective criteria will allow for the most accurate application of the classification system and measurement of its efficacy.

Objectivity will also provide reliable outcome data and mechanisms for review by administrative panels.

Bone Height

Mandibular

Quantity of the Underlying Bony Foundation

- Denture foundation area
- Tissues remaining for reconstruction
- Loss of facial muscle support/attachment
- Decrease in total facial height
- Residual ridge morphology

Classification of Alveolar Atrophy



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Alveolar measurements

Incisal edge to vestibule	19mm
Alveolar crest to vestibule	10mm

Alveolar Measurements

Occlusal plane to inferior border	40mm
Mental nerve to inferior border	15mm
Alveolar crest to inferior border	32mm



The objectivity of residual bone height measurement is affected by the magnification and variance of radiographic procedures and equipment of different manufacturers.

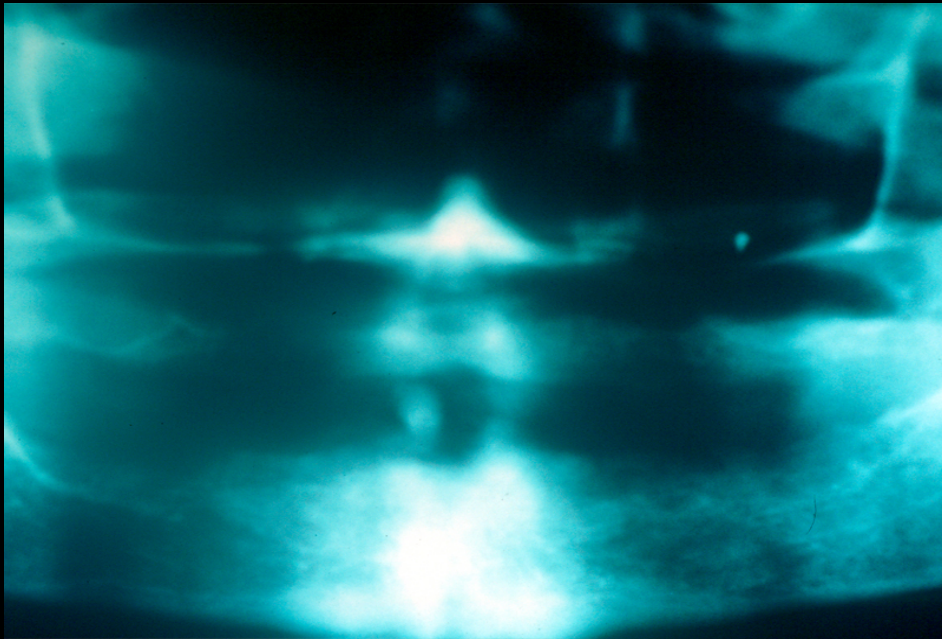


However, this diagnostic measurement reveals the most information of all the criteria.

In order to minimize variance in techniques, the measurement should be made at that portion of the mandible of the least vertical height.



Type I



Residual bone height of 21mm or greater measured at the least vertical height of the mandible.

Type II



Residual bone height of 16-20 mm measured at the least vertical height of the mandible.

Type III

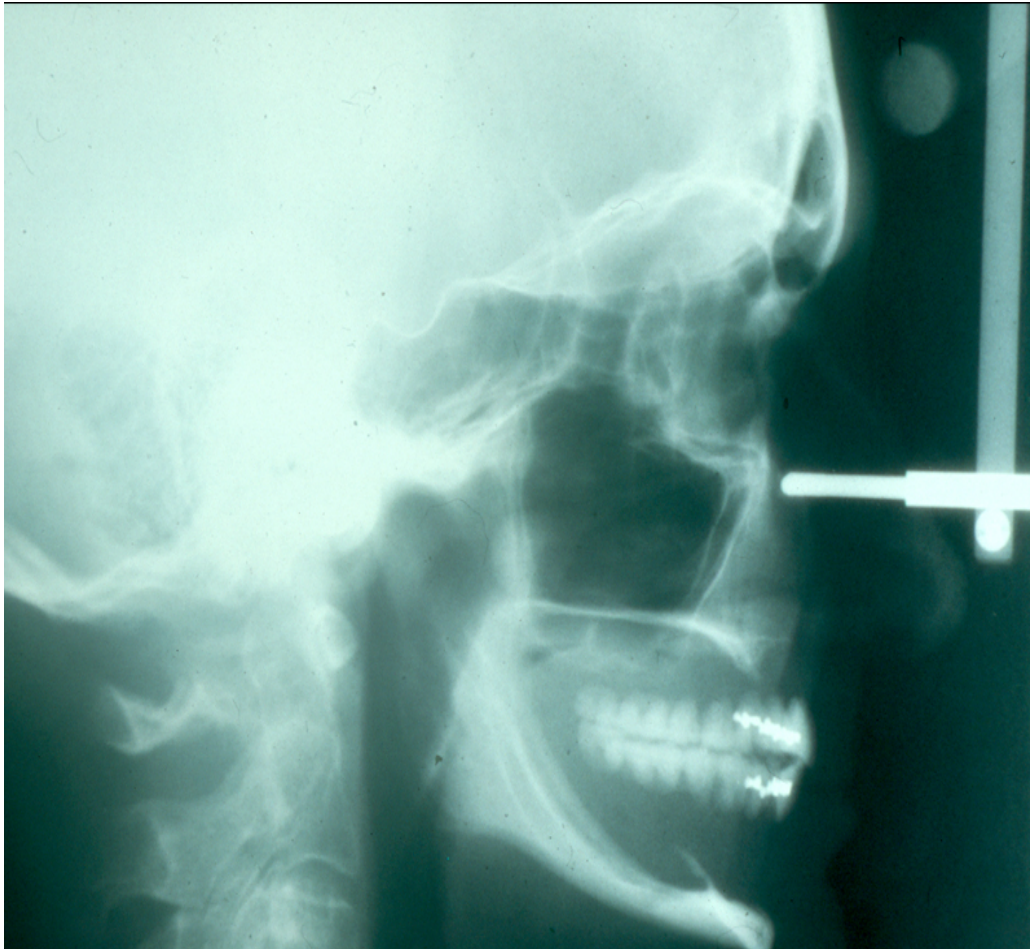


Residual alveolar bone height of 11-15 mm measured at the least vertical height of the mandible

Type IV

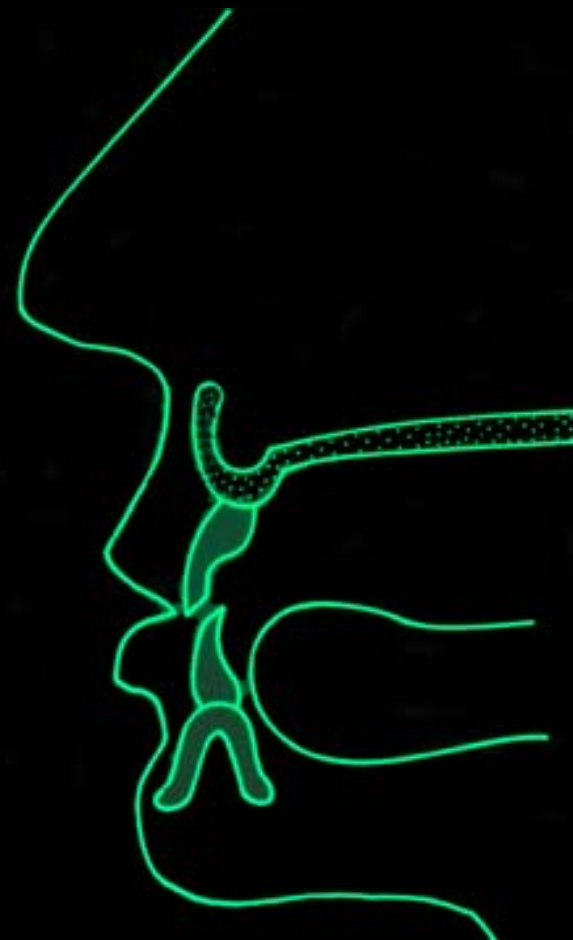


Residual vertical bone height of 10 mm or less measured at the least vertical height of the mandible



Functional Positioning of the Artificial Teeth

Maxillomandibular relationship classification relates to the position of the artificial teeth to the residual ridge and to the opposing dentition.



Maxillomandibular Relationship

Class I



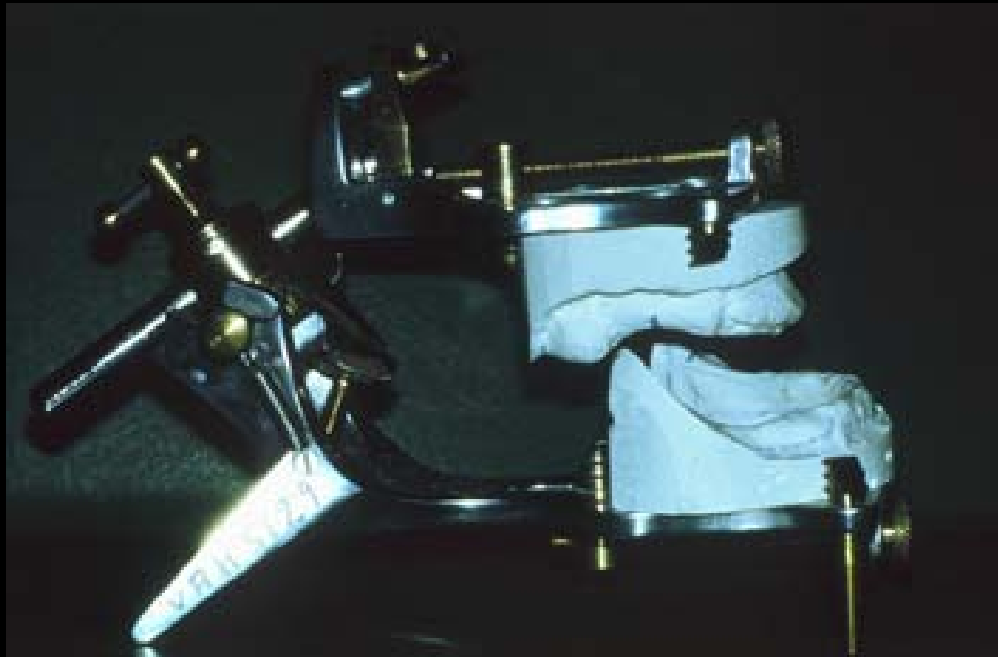
Maxillomandibular relationship allows tooth position that has normal articulation with the teeth supported by the residual ridge.



Class II

Maxillomandibular relationship requires tooth position outside the normal ridge relation in order to attain phonetics and articulation; i.e., anterior or posterior tooth position not supported by the residual ridge/anterior vertical overlap that exceeds the principles of articulation.

Class III



Maxillomandibular relationship requires tooth position outside the normal ridge relation in order to attain phonetics and articulation; i.e., crossbite— anterior or posterior, tooth position not supported by the residual ridge.

Complete Edentulism



Position and Angulation of the Occlusal Plane



Residual Ridge Morphology: Maxilla

Residual ridge morphology is the most objective criteria for the maxilla since measurement of the residual bone height by radiography is not reliable.

The following descriptive scenario follows a logical progression to describe the effects of residual ridge morphology and muscular influence on the maxillary denture.

Type A

Maxilla

- Hard Palate form
- Anterior Maxilla
- Maxillary Tuberosities

- Anterior labial and posterior buccal vestibular depth that resists vertical and horizontal movement of the denture base
- Palatal morphology that resists vertical and horizontal movement of the denture base
- Sufficient tuberosity definition that resists vertical and horizontal movement of the denture base
- Hamular notch is well defined to establish the posterior extension of the denture base
- Absence of tori or exostoses

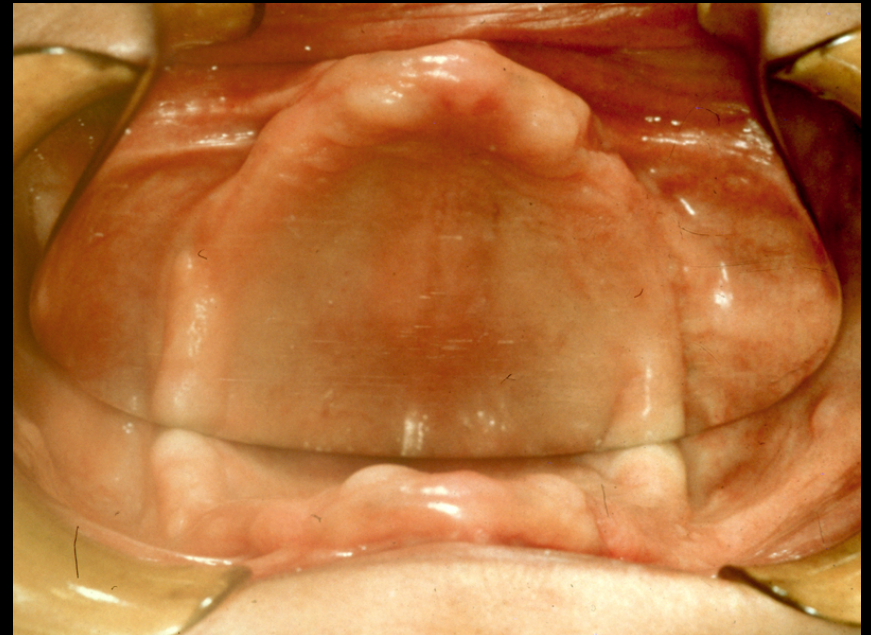


Type B

Maxilla

- Hard Palate form
- Residual Alveolar Ridge
 - Anterior
 - Posterior
- Maxillary Tuberosities

- Loss of posterior buccal vestibule
- Tuberosity and hamular notch are poorly defined compromising delineation of the posterior extension of the denture base
- Maxillary palatal and/or lateral tori are rounded and do not affect the posterior extension of the denture base
- Palatal vault morphology that resists vertical and horizontal movement of the denture base



Type C

Maxilla

- Hard Palate form
- Anterior Maxilla
- Maxillary Tuberosities

- Loss of anterior labial vestibule
- Prominent midline suture
- Maxillary palatal and/or lateral tori with bony undercuts that do not affect the posterior extension of the denture base
- Hyperplastic, mobile anterior ridge that offers minimum support and stability of the denture base
- Palatal vault morphology that offers minimal resistance to vertical and horizontal movement of the denture base
- Reduction of the post malar space by the coronoid process during mandibular opening and/or excursive movements

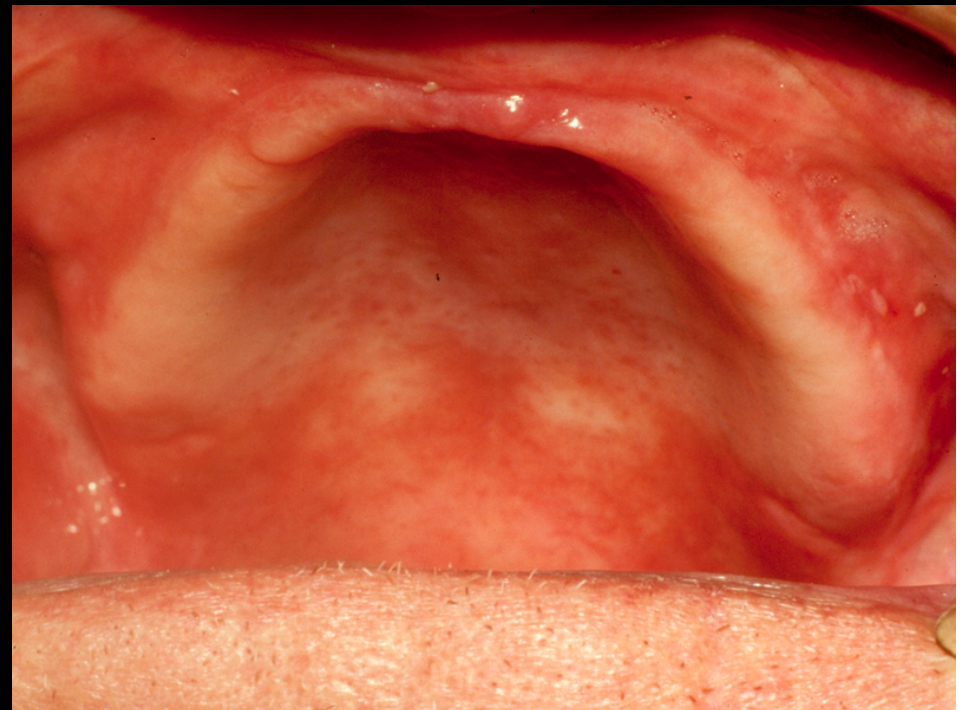


Type D

Maxilla

- Hard Palate form
- Residual alveolar ridge
 - Anterior
 - Posterior
- Maxillary Tuberosities

- Loss of anterior labial and posterior buccal vestibules
- Maxillary palatal and/or lateral tori-rounded or undercut- that interferes with the posterior border of the denture
- Hyperplastic, redundant anterior ridge
- Palatal vault morphology that does not resist vertical or horizontal movement of the denture base
- Prominent anterior nasal spine



The location and influence of the muscle attachments affecting a complete denture are most commonly associated with the mandibular denture.

Although, arguably the most significant measurement, it is also the most difficult to quantify.

The following descriptive scenario follows a logical progression to describe the effects of muscular influence on the mandibular denture.

**Anatomy that resists anterior
(forward) movement of the
denture base**

Muscle Attachments

Type A

Adequate attached mucosal base without undue muscular impingement during normal function in all regions.



Type B

- Adequate attached mucosal base in all regions except anterior buccal vestibule—cuspid to cuspid
- High mentalis muscle attachment



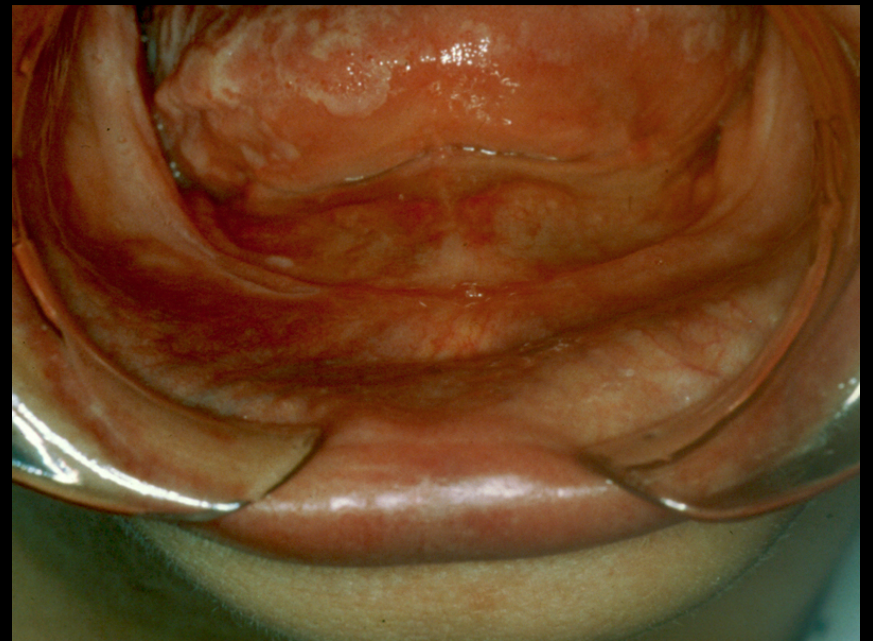
Type C

- Adequate attached mucosal base in all regions except anterior buccal and lingual vestibules—cuspid to cuspid
- High genioglossus and mentalis muscle attachments



Type D

- Adequate attached mucosal base only in the posterior lingual region
- All other regions are detached



Type E

- No attached mucosa in any region
- Cheek and lip movement = tongue movement



Diagnostic Classification of Complete Edentulism

Class I

This classification level describes the stage of edentulism that is most apt to be successfully treated by conventional prosthodontic techniques with complete denture prosthesis.

All four of the diagnostic criteria are favorable.

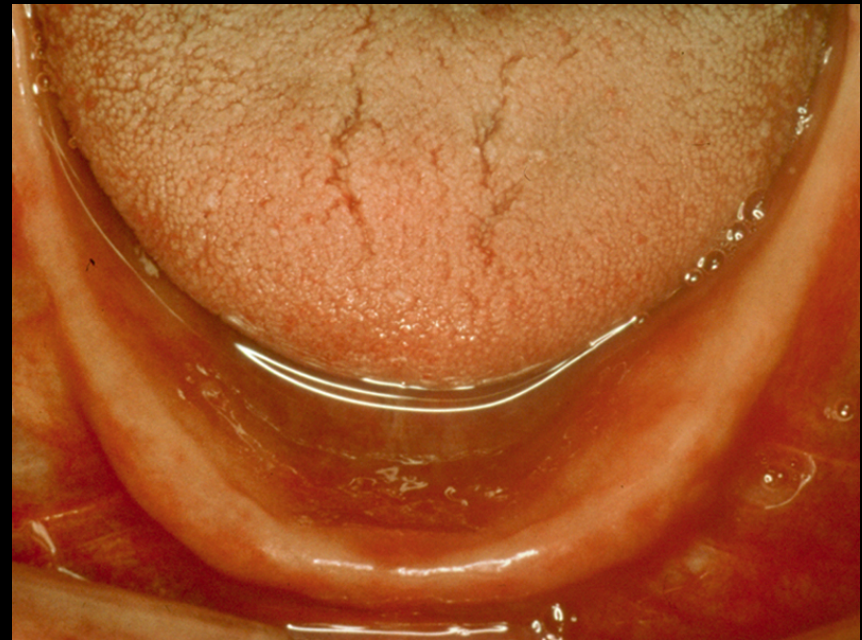
Class I

- Residual bone height of 21 mm or greater measured at the least vertical height of the mandible
- Class I maxillomandibular relationship



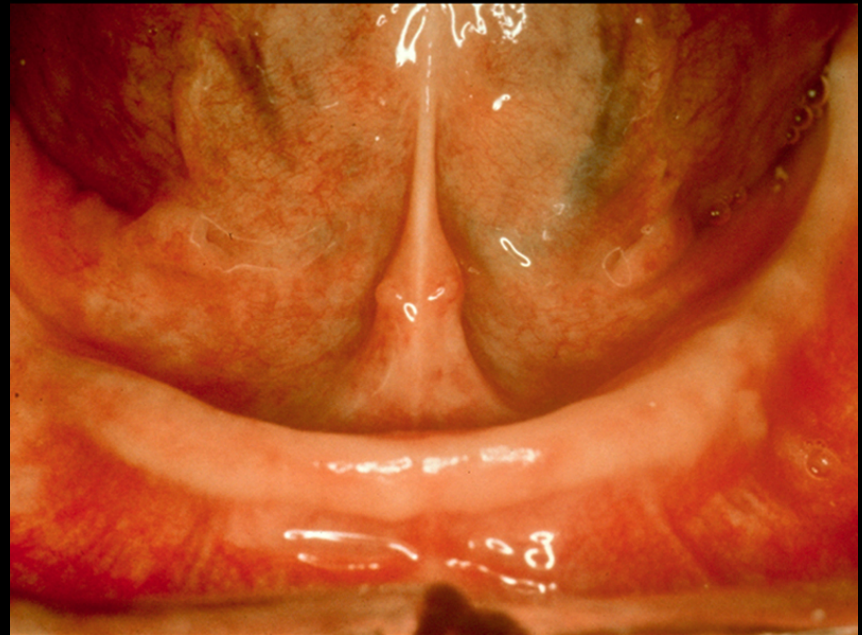
Class I

- Residual bone height of 21 mm or greater measured at the least vertical height of the mandible
- Class I maxillomandibular relationship



Class I

- Residual ridge morphology that resists horizontal and vertical movement of the denture base—
Type A—Maxilla
- Location of muscle attachments that are conducive to denture base stability and retention—
Type A, B--Mandible



Class I

- Residual ridge morphology that resists horizontal and vertical movement of the denture base—
Type A—Maxilla
- Location of muscle attachments that are conducive to denture base stability and retention—
Type A, B--Mandible



Class II

This classification level distinguishes itself with the noted continuation of the physical degradation of the denture supporting structures and in addition is characterized with the early onset of systemic disease interactions, localized soft tissue factors and patient management/lifestyle considerations.

- Residual bone height of 16-20 mm measured at the least vertical height of the mandible
- Class I maxillomandibular relationship
- Residual ridge morphology that resists horizontal and vertical movement of the denture base—Type A, B--Maxilla

Class II



- Residual bone height of 16-20 mm measured at the least vertical height of the mandible
- Class I maxillomandibular relationship
- Residual ridge morphology that resists horizontal and vertical movement of the denture base—Type A, B--Maxilla

Class II

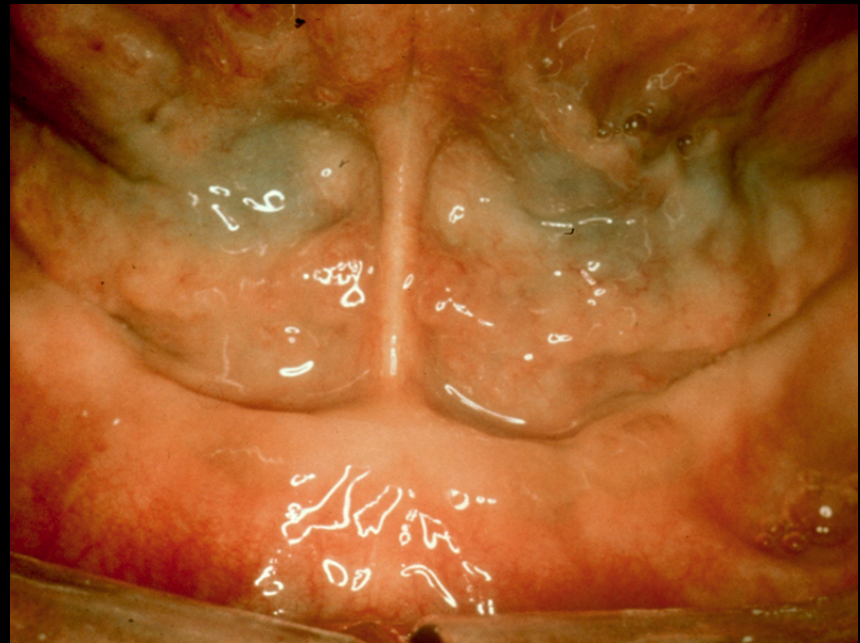


- Location of muscle attachments with limited influence on denture base stability and retention

Type A,B—Mandible

- Minor modifiers, psychosocial considerations, mild systemic disease with oral manifestations and localized soft tissue conditions

Class II



- Location of muscle attachments with limited influence on denture base stability and retention

Type A,B—Mandible

- Minor modifiers, psychosocial considerations, mild systemic disease with oral manifestations and localized soft tissue conditions

Class II



Class III

This classification level is characterized by the need for surgical revision of denture supporting structures to allow for adequate prosthodontic function.

Additional factors now play a significant role in treatment outcomes.

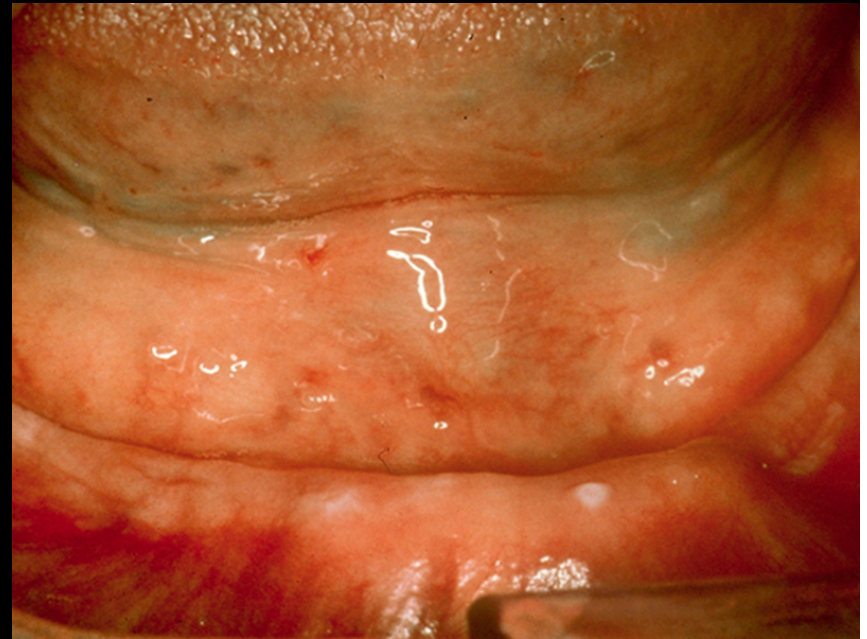
Class III

- Residual bone height of 11-15 mm measured at the least vertical height of the mandible
- Class I, II and III maxillomandibular relationship
- Residual ridge morphology has minimum influence to resist horizontal or vertical movement of the denture base—Type C—Maxilla
- Location of muscle attachments with moderate influence on denture base stability and retention—Type C--Mandible



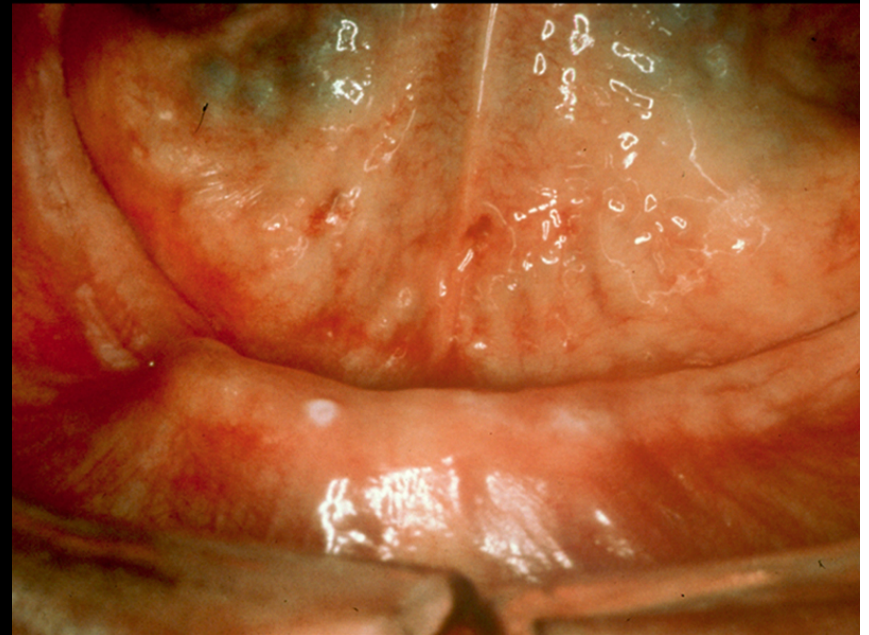
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- Location of muscle attachments with moderate influence on denture base stability and retention—Type C--Mandible



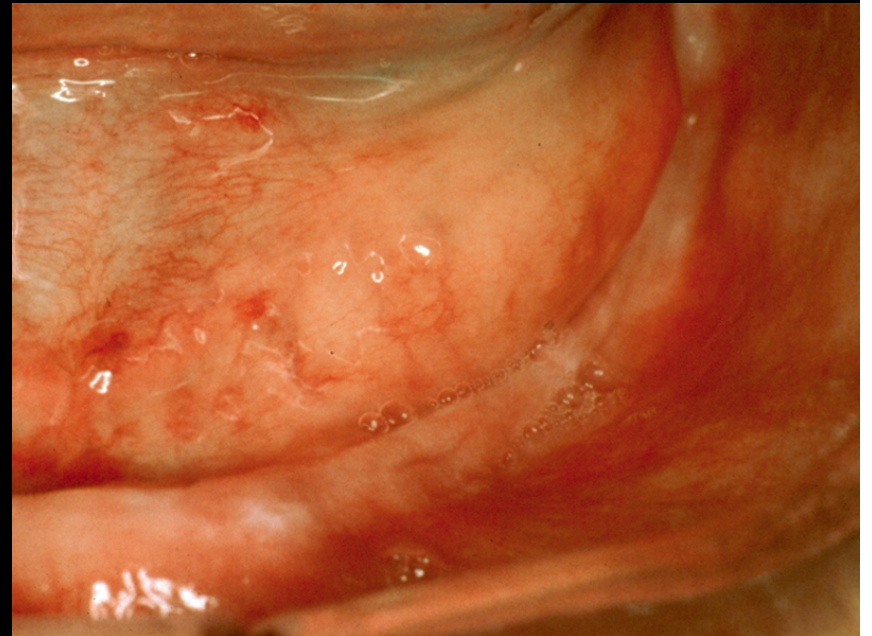
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- Location of muscle attachments with moderate influence on denture base stability and retention—Type C--Mandible



Class III

- Residual bone height of 11-15 mm measured at the least vertical height of the mandible
- Class I, II and III maxillomandibular relationship
- Residual ridge morphology has minimum influence to resist horizontal or vertical movement of the denture base—Type C—Maxilla
- Location of muscle attachments with moderate influence on denture base stability and retention—Type C--Mandible



Conditions requiring preprosthetic surgery:

- Minor soft tissue procedures
- Minor hard tissue procedures
- Implant placement (simple)--no augmentation required
- Multiple extractions leading to complete edentulism for immediate denture placement
- Limited interarch space—18-20 mm
- Moderate psychosocial considerations and/or moderate oral manifestations of systemic diseases or localized soft tissue conditions
- TMD symptoms present
- Large tongue with or without hyperactivity
- Hyperactive gag reflex

Class IV

This classification level depicts the most debilitated edentulous condition.

Surgical reconstruction is almost always indicated but can not always be accomplished due to the patient's health, desires, past dental history and financial considerations.

When surgical revision is not selected, prosthodontic techniques of a specialized nature must be used in order to achieve an adequate treatment outcome.

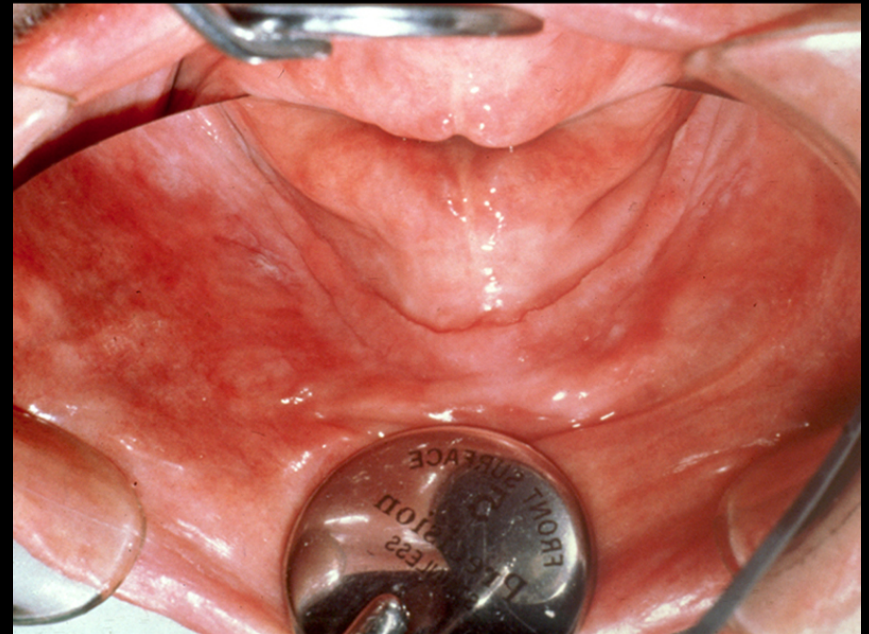
Class IV

- Residual bone height of least vertical height of the mandible
- Class I, II and III maxillomandibular relationships
- Residual ridge offers no resistance to horizontal or vertical movement —
Type D—Maxilla
- Location of muscle attachments with significant influence on denture base stability and retention—
Type D and E--Mandible



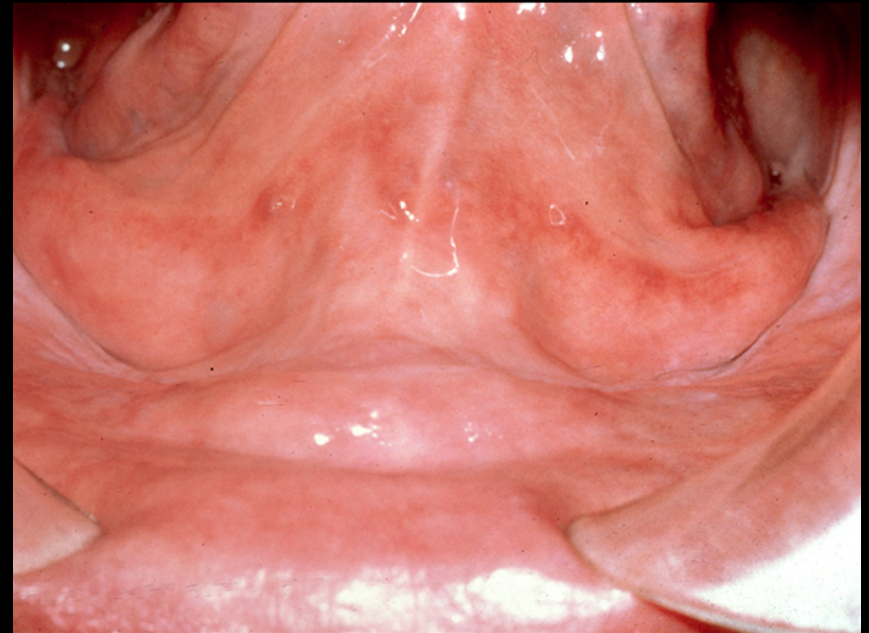
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Type D—Maxilla
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Type D and E--Mandible



Class IV

- Residual bone height of least vertical height of the mandible
- Class I, II and III maxillomandibular relationships
- Residual ridge offers no resistance to horizontal or vertical movement —
Type D—Maxilla
- Location of muscle attachments with significant influence on denture base stability and retention—
Type D and E--Mandible



Class IV

- Residual bone height of least vertical height of the mandible
- Class I, II and III maxillomandibular relationships
- Residual ridge offers no resistance to horizontal or vertical movement —
Type D—Maxilla
- Location of muscle attachments with significant influence on denture base stability and retention—
Type D and E--Mandible



Major conditions which require preprosthetic surgery

- Implant placement (complex)—augmentation required
- Surgical correction of dentofacial deformities
- Hard tissue augmentation
- Major soft tissue revision, i.e., vestibular extensions with or without soft tissue grafting
- History of paresthesia or dysensthesia
- Insufficient interarch space with surgical correction required
- Acquired or congenital maxillofacial defects

- Severe oral manifestation of systemic disease or conditions including sequelae from oncologic treatment
- Maxillomandibular ataxia (incoordination)
- Hyperactivity of tongue that can be associated with a retracted tongue position and/or its associated morphology
- Hyperactive gag reflex managed with medication
- Psychosocial conditions warranting professional intervention

- **Refractory patient** (a patient who has chronic complaints following appropriate therapy). These patients continue to have difficulty in achieving their treatment expectations despite the thoroughness or frequency of the treatment provided.



Guidelines for use of the Complete Edentulism Classification System

- In those instances when a patient's diagnostic criteria are mixed between two classes, any single criteria of a more complex class will move the patient into that respective class.
- Utilization of this system is indicated for pre-treatment evaluation and classification of patients. Retrospective analysis on a post-treatment basis may alter a patient's final classification

Recognition by third-party payers of these special procedures and techniques

- Establish codes for procedures
- Establish codes for groups of procedures
- Establish that prosthodontists are the most common users of these codes/procedures

Target Audiences for this Edentulous Classification System

- Prosthodontic Educators
- Prosthodontic Researchers
- Prosthodontic Clinicians
- General Practitioners
- Oral & Maxillofacial Surgeons
- Third Party Payers
- Closed Panel Administrators

Improve Communication within Specialty

- Common language
- Standardize research
- Standardize terminology

Specialties with Classifications Systems

- Orthodontics
- Periodontics
- Oral and Maxillofacial Surgery
- Endodontics

Prosthodontic Classification System

- Being developed by the ACP for edentulous, partially edentulous and dentate patients
- Based upon diagnostic findings rather than treatment methods
- Education will decide what level is appropriate for the new dentist

The Next Step?

- Implementation of the Prosthodontic Classification System
- Outcome assessment measures for procedures at the competency skill level

Objective Criteria for Treatment Difficulty

What makes a difficult patient?

- Measurable criteria
 - Hard tissue
 - Soft tissue
 - Maxillomandibular relationship