

depends, to a great extent, on its supporting tissue(s).

The Tooth Supported RPD

Tooth supported RPDs receive all their support from the abutment teeth (Fig. 2-1). Retention is derived from direct retainers on the abutment teeth and bracing is provided by contact of rigid components of the framework with natural teeth. Tooth supported RPDs do not move appreciably in function. Most tooth supported RPDs have a cast metal major connector, although sometimes it is possible to construct a tooth supported interim RPD with a plastic major connector and wrought wire rests and/or transocclusal clasps. The principles of design of tooth supported RPDs is relatively noncontroversial and similar in many respects to the principles of design of FPDs. In lay persons vocabulary the tooth supported RPD is referred to as a "REMOVABLE BRIDGE". This is a nonprofessional term which should be avoided.

The Tissue Supported RPD

Tissue supported RPDs are primarily supported by the tissues (mucosa overlying bone) of the denture foundation area. They may obtain some tooth support by contact of the denture above the height of contour of the natural teeth. Tissue supported RPDs usually have plastic major connectors and are, therefore, usually interim RPDs. Tissue supported RPDs will move in function because of the resiliency of the mucosa.

Retention for tissue supported RPDs is customarily provided by wrought wire retentive clasp arms on selected natural teeth, contact of the plastic denture below the height of contour of the natural teeth, and by those factors which provide retention of complete dentures, i.e gravity (for mandibular RPDs), interfacial surface

tension, neuromuscular control, etc. Bracing is provided by contact of the denture with the denture bearing tissues and the natural teeth, supplemented by contact of the tongue, checks and lips with the polished surface of the denture. The tissue supported RPD is essentially a complete denture with some remaining natural teeth. (Fig. 2-2). Tissue supported RPDs have the potential to cause soft tissue damage and periodontal attachment loss and accordingly should be used for only a short period of time (one year or less) while a FPD, definitive RPD or implant prosthesis is constructed.

The Tooth-Tissue Supported RPD

The tooth-tissue supported RPD is supported at one end by natural teeth, which essentially do not move, and at the other end by the denture bearing tissues (mucosa overlying bone) which moves because of the resiliency of the mucosa (Fig. 2-3). The design of the tooth-tissue supported RPD is one of the most controversial topics in prosthodontics. Several philosophies with specific RPD designs or construction techniques have been suggested to compensate for the difference in support provided by the natural teeth and denture foundation tissues. This topic is discussed in a later chapter.

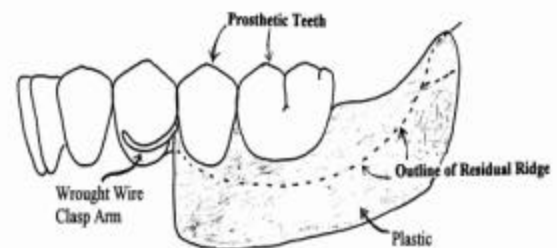


Fig. 2-3. A tooth-tissue supported RPD.

CLASSIFICATION BASED ON ARCH CONFIGURATION

The most widely accepted system of classification of RPDs and partially edentulous arches was proposed by Dr.

Edward Kennedy in 1923.³ It is based on the configuration of the remaining natural teeth and edentulous spaces. This system was further defined and expanded upon by Dr. O.C. Applegate² and Dr. Jacques Fiset²¹ and will be described in this chapter and used throughout these lecture notes.

The value of the Kennedy-Applegate-Fiset classification system is that it is relatively simple, easy to remember, extremely comprehensive and very practical. It permits visualization of the partially edentulous arch or RPD designed for that arch. It indicates the type of support for the RPD, which suggest certain physiologic and mechanical principles of treatment and RPD design. There is a correlation between the basic classes and the incidence of the partially edentulous arch configurations. It allows quick identification of the partially edentulous archs, which are difficult to treat, and that should be referred to a prosthodontist. This system, at least the first four classes, is widely taught and generally accepted and used. The system also simplifies communication.

THE KENNEDY-APPLEGATE-FISET CLASSIFICATION SYSTEM

The Basic Classes

Class I Bilateral posterior edentulous areas (Fig. 2-4a).

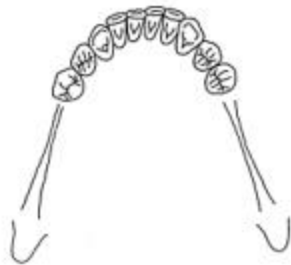


Fig. 2-4a. A Class I partially dentate arch.

INCIDENCE:	MAXILLARY	MANDIBULAR
Stratton ¹⁹	20%	50%
Ward ²⁰	12.2%	51.2%

Class II An unilateral posterior edentulous area (Fig. 2-4b).



Fig. 2-4b. A Class II partially dentate arch.

INCIDENCE:	MAXILLARY	MANDIBULAR
Stratton ¹⁹	30%	25%
Ward ²⁰	6.3%	18.5%

Class III A unilateral tooth bounded edentulous area (Fig 2-4c).

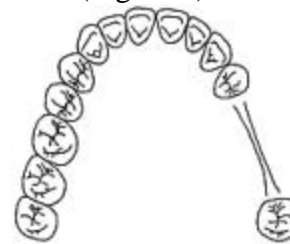


Fig. 2-4c. A Class III partially dentate arch.

INCIDENCE:	MAXILLARY	MANDIBULAR
Stratton ¹⁹	40%	>25 total
Ward ²⁰	4.9%	6.8%

Class IV An anterior tooth bounded edentulous area which crosses the midline (Fig. 2-4d).



Fig. 2-4d. A Class IV partially dentate arch.

INCIDENCE:	MAXILLARY	MANDIBULAR
Stratton ¹⁹	>5 total	>2 total
Ward ²⁰	0	0

Rules for Classification

Applegate² and Swenson and Terkla²⁰ have suggested rules to apply to the Kennedy Classification System to eliminate some uncertainties and to make the classification more descriptive. A simplification of these suggestions is:

1. Teeth which are to be extracted are considered as edentulous spaces when classifying the arch.
2. Edentulous spaces which are not going to be restored with the RPD are not considered in the classification of the arch.
3. The most posterior edentulous space determines the class of the arch for Classes I through IV. The length of the edentulous space, i.e. the number of missing teeth or the number of prosthetic teeth to be used on the denture, is not considered in the classification.
4. Edentulous areas in addition to those which determine the class for the arch are indicated as MODIFICATIONS of that CLASS and are designated by their FREQUENCY and whether they are ANTERIOR (A) or POSTERIOR (P). Only Class I, II and III may have modifications. The length of the modification edentulous space, i.e. the number of missing teeth or number of prosthetic teeth to be used on the denture, is not considered.

APPLEGATE'S ADDITIONS

Class V A unilateral tooth bounded edentulous area where the anterior tooth is weak and incapable of providing support for the RPD (Fig. 2-4e).

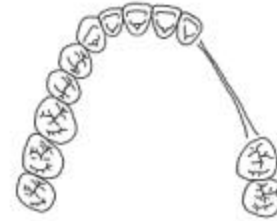


Fig. 2-4e. A Class V partially dentate arch.

INCIDENCE: Very rare.

Class VI A unilateral tooth bounded edentulous area which should be restored with a FPD (Fig. 2-4f).



Fig. 2-4f. A Class VI partially dentate arch.

INCIDENCE: Very Frequent.

FISET'S ADDITIONS

Class VII A partially edentulous situation in which all remaining natural teeth are located on one side of the arch, or of the median line (Fig 2-4g).



Fig. 2-4g. A Class VII partially dentate arch.

INCIDENCE: Very rare, usually hemimaxillectomy and hemimandibulectomy patients.

Class VIII A partially edentulous situation in which all remaining natural teeth are located in one anterior corner of the arch (Fig 2-4h).



Fig. 2-4h. A Class VIII partially dentate arch.

INCIDENCE: Rare. Usually maxillofacial surgery/trauma patients and patients with advanced periodontitis.

Class IX A partially edentulous situation in which functional and cosmetic requirements or the magnitude of the interocclusal distance require the use of a telescoped prosthesis (partial or complete). The remaining teeth are capable of total or partial support for the prosthesis (Fig. 2-4i).

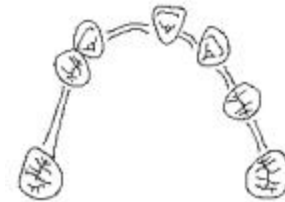


Fig. 2-4i. A Class IX partially dentate arch.

INCIDENCE: Very rare. Usually patients with partial anodontia and prognathic patients.

Class X A partially edentulous situation in which the remaining teeth are incapable of providing any support. If the teeth are kept to maintain alveolus integrity, the arch must be restored with an OVERDENTURE which is a complete denture supported primarily by the denture foundation area (Fig. 2-4j).



Fig. 2-4j. A Class X partially dentate arch.

INCIDENCE: Fairly frequent, complete overdenture patients.

APPLICATION

Figures 2-5a through 2-5f illustrates the use of the Kennedy-Applegate-Fiset classification. Note that the extent of the edentulous space has no bearing in the classification. The location and number of edentulous areas determine the classification. Note also that a Class IV partially edentulous arch can not have modification spaces because any additional edentulous area would be posterior to the anterior edentulous space and would determine the classification.

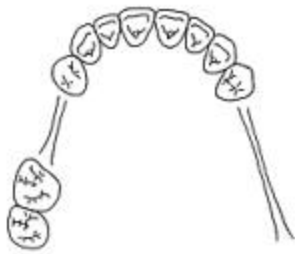


Fig. 2-5a. Class II Mod. 1P

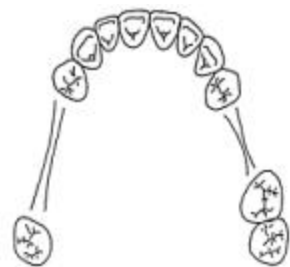


Fig. 2-5b. Class III Mod. 1P



Fig. 2-5c. Class I Mod. 1A



Fig. 2-5d. Class II Mod. 1A

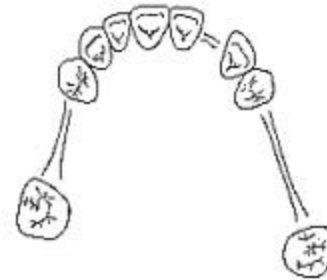


Fig. 2-5e. Class III Mod. 1A, 1P

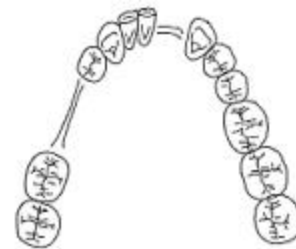


Fig. 2-5e. Class III Mod. 1A

REFERENCES

1. Cummer W E. Partial Denture Service, in the American Textbook of Prosthetic Dentistry. edited by L. Pierce Anthony, Lee and Febiger, Philadelphia, 1942, p. 79.

2. Applegate, O.C.: Essentials of Removable Partial Denture Prosthesis, 1st ed. St. Louis, 1954. The C.V. Mosby Company, p. 5.
3. Cummer, W.E.: Possible combinations of Teeth Present and Missing in Partial Restorations, Oral Health, 10:421-430, 1920.
4. Baylin, C.M.: Tissue Support in Partial Denture Construction, Dent. Cosmos 70:988-997, 1928.
5. Neurohr, F.G.: Partial Denture: A System of Functional Restoration ed. 1, Philadelphia, 1939; Lea and Febiger.
6. Mauk, E.H.: Classification of Mutilated Dental Arches Requiring Treatment by Removable Partial Denture, J.Am. Dent. Assoc., 29:2121-2131, 1942.
7. Godfrey, R.J.: A Classification of Removable Partial Dentures, J.Am. Coll. Dent. 18:5-13, 1951.
8. Kennedy, E.: Partial Dental Construction, ed. 2, Brooklyn, 1951, Dental Items of Interest Publishing Company.
9. Beckett, L.S.: The Influence of Saddle Construction on the Design of Partial Removable Restoration, J. Prosthet. Dent. 3:506-516, 1953.
10. Friedman, J.: The ABC Classification of Partial Denture Segments, J. Prosthet. Dent. 3:517-524, 1953.
11. Terkla, G.L. and Laney, W.R.: Partial Dentures, ed. 3, St. Louis, 1963, The C.V. Mosby Company, pp. 40-50.
12. Austin, K. and Lidge, E.: Partial Dentures, St. Louis, 1957, The C.V. Mosby Company.
13. Gaurilor, E.I. and Oksman, I.M.: Ortopedicheskaia Stomatologiya, Moscow, 1968, Meditsina.
14. Skinner, C.: A Classification of Removable Partial Dentures Based on the Principles of Anatomy and Physiology, J. Prosthet. Dent. 9:240-246, 1959.
15. Poldvari, I. and Husaar, G.: A Fosptlas Technologiaja, ed. 2, Budapest, 1965, Medicina Konyukiado, pp. 250-253.
16. Avant, W.E.: A Universal Classification for Removable Partial Denture Situations, J. Prosthet. Dent. 16:553-539, 1966.
17. Miller, E.L.: Systems for Classifying partially edentulous arches, J. Prosthet. Dent., 24:25-40, 1970.
18. Costa, E.: A Simplified System for Identifying Partially Edentulous Arches J. Prosthet. Dent., 32:639-645, 1974.
19. Stratton, R.S., Wiebelt, F.J.: An atlas of removable partial denture design. Chicago: Quintessence, 1988, pp. 9b, 135, 175, 197, 207, 243, 273, 313.
20. Ward J.E.: Incidence of Kennedy classes of RPDs constructed at VCU School of Dentistry from September 4, 1986 to May 26, 1987.