

## CHAPTER 2

### CLASSIFICATION OF RPDs AND PARTIALLY EDENTULOUS ARCHES

#### INTRODUCTION

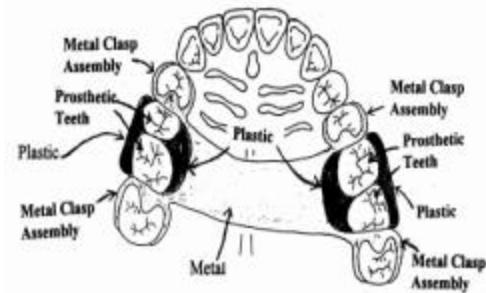
The classification of RPDs and partially edentulous arches simplifies communication and discussions. Many systems of classification have been suggested.<sup>1-18</sup> In this chapter three general and widely accepted systems of classifying RPDs and partially edentulous arches will be described.

#### CLASSIFICATION BASED ON MAJOR CONNECTOR MATERIAL

The major connector is that part of a RPD which connects components on one side of the arch to those on the other side. If the major connector is constructed of a cast metal alloy the RPD is termed DEFINITIVE (Fig. 2-1). If the major connector is plastic, the RPD is termed INTERIM (Fig. 2-2).

#### The Definitive RPD

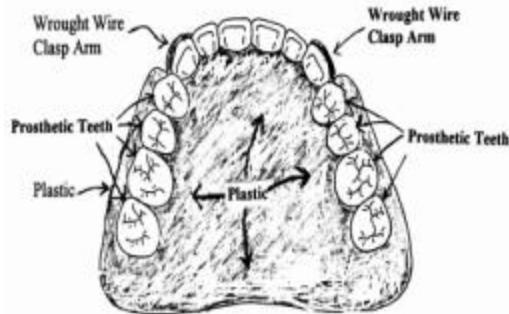
Definitive RPDs (Fig. 2-1) are constructed after extensive diagnosis, treatment planning, and thorough preparation of the teeth and tissues for the prosthesis. The length of service of definitive RPDs is intended to be many years (customarily 5-10 years).



**Fig. 2-1.** A definitive (tooth supported) RPD.

#### The Interim RPD

Interim RPDs (Fig. 2-2) are usually constructed as part of the preparation of the mouth for definitive RPD, FPD or implant treatment. The length of service of interim RPDs is generally planned to be a year or less. They are frequently referred to as TEMPORARY RPDs. Temporary is not an appropriate term to use for dentures since no dentures are permanent.



**Fig. 2-2.** An interim (tissue Supported) RPD.

#### CLASSIFICATION BASED ON SUPPORT

There are three types of RPDs or partially edentulous arches based on the tissue(s) which provide support. Support is the resistance to movement of the denture toward the edentulous ridge. RPDs maybe tooth supported, tissue supported, and tooth-tissue supported. This is a simple classification system and very meaningful because the principles of RPD design

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.

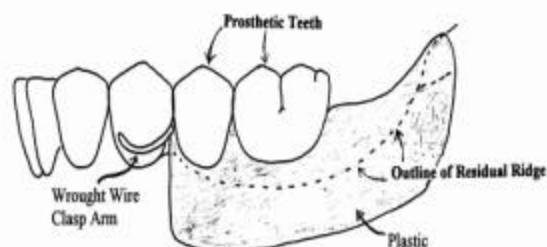
Retention for tissue supported RPDs is customarily provided by wrought wire retentive clasp arms on selected natural teeth, contact of the plastic denture below the height of contour of the natural teeth, and by those factors which provide retention of complete dentures, i.e gravity (for mandibular RPDs),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

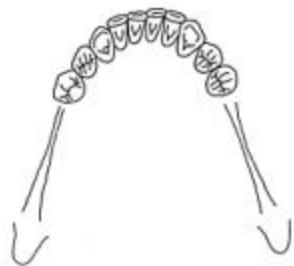
Edward Kennedy in 1923.<sup>3</sup> It is based on the configuration of the remaining natural teeth and edentulous spaces. This system was further defined and expanded upon by Dr. O.C. Applegate<sup>2</sup> and Dr. Jacques Fiset<sup>21</sup> and will be described in this chapter and used throughout these 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

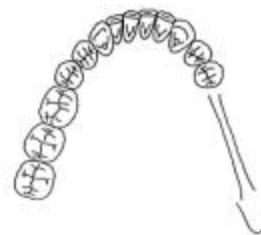
**Class I** Bilateral posterior edentulous areas (Fig. 2-4a).



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

**INCIDENCE:** **MAXILLARY** **MANDIBULAR**  
 Stratton<sup>19</sup> 20% 50%  
 Ward<sup>20</sup> 12.2% 51.2%

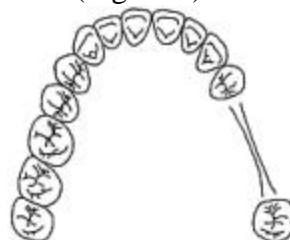
**Class II** An unilateral posterior edentulous area (Fig. 2-4b).



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

**INCIDENCE:** **MAXILLARY** **MANDIBULAR**  
 Stratton<sup>19</sup> 30% 25%  
 Ward<sup>20</sup> 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<sup>19</sup> 40% >25 total  
 Ward<sup>20</sup> 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<sup>19</sup> >5 total >2 total  
 Ward<sup>20</sup> 0 0

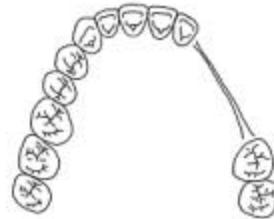
## Rules for Classification

Applegate<sup>2</sup> and Swenson and Terkla<sup>20</sup> 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).

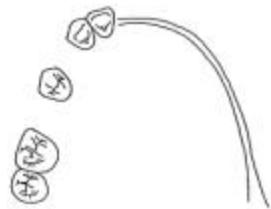


**Fig. 2-4f.** A Class VI partially dentate arch.

**INCIDENCE:** Very Frequent.

## FISSET'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.

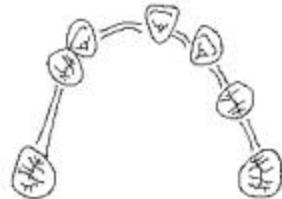
**Class VIII** A partially edentulous situation in which all remaining natural teeth are located in one anterior corner of the arch (Fig 2-4h).



**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).

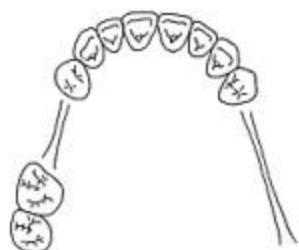


**Fig. 2-4j.** A Class X partially dentate arch.

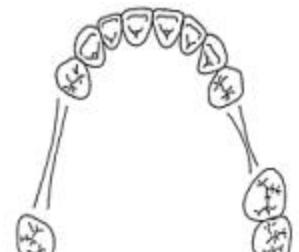
**INCIDENCE:** Fairly frequent, complete overdenture patients.

## 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



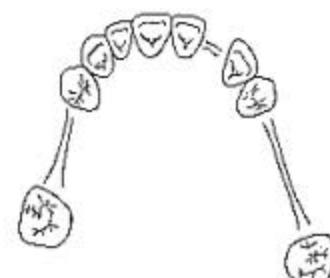
**Fig. 2-5b.** Class III Mod. 1P



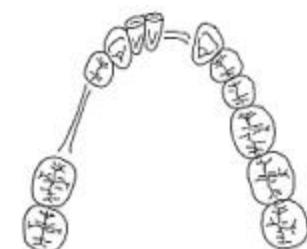
**Fig. 2-5c.** Class I Mod. 1A



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



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



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

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