Removable Partial Dentures

Removable Partial Dentures:

Their Diagnosis, Design and Fabrication

By

Robert L. Schneider

Cambridge
Scholars
Publishing

Removable Partial Dentures:
Their Diagnosis, Design and Fabrication

By Robert L. Schneider

This book first published 2023

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-5275-9193-X
ISBN (13): 978-1-5275-9193-6

TABLE OF CONTENTS

Preface viii

Chapter One 1
Introduction

Chapter Two 4
Examination, Diagnosis and Treatment Planning

Chapter Three 10
Articulating Diagnostic Casts

Chapter Four 16
Classifying Partially Edentulous Arches

Chapter Five 23
Surveying

Chapter Six 36
Components of a Removable Partial Denture

Chapter Seven 40
Rests and Rest Preparations

Chapter Eight 49
Major and Minor Connectors

Chapter Nine 64
Direct Retainers (Clasps)

Chapter Ten 84
Indirect Retainers

Chapter Eleven 94
Denture Bases

Chapter Twelve 100
Basic Principles of RPD Design

Chapter Thirteen 108
Mouth Preparation for RPDs

Chapter Fourteen 111
Accurate Impressions and Casts for RPDs

Chapter Fifteen 113
Metals Used in the Fabrication of RPDs

Chapter Sixteen 150
Work Authorizations

Chapter Seventeen 154
LAB Procedures for Framework Fabrication

Chapter Eighteen 159
RPD Framework Try-In and Adjustment

Chapter Nineteen 167
Corrected or Altered Cast Procedures

Chapter Twenty 175
Articulating the Master Cast

Chapter Twenty-One 180
Developing RPD Occlusion

Chapter Twenty-Two 183
Prosthetic Tooth Selection and Arrangement

Chapter Twenty-Three 199
Wax-Up and Try-In

Chapter Twenty-Four 205
Insertion, Patient Instructions and Recall Exam

Chapter Twenty-Five 215
Interim Removable Partial Dentures

Chapter Twenty-Six 219
Reline/Rebase Indications and Procedures

Chapter Twenty-Seven 222
Repair of Clasp Arms, Rests and Base Material

Chapter Twenty-Eight 226
Restoration of an Abutment Under an RPD Clasp

Chapter Twenty-Nine 235
Surveyed Fixed Restorations for RPD Abutments

Chapter Thirty 242
Alternative RPD Design Concepts

Appendix I 260
Clinical Steps in the Construction of RPDs

Appendix II 270
Principles, Concepts, and Practices in Prosthodontics - 1994

References 283

PREFACE

This manual is dedicated to the students of dentistry, and will serve as a clinical guide for treatment of the partially edentulous patient with removable partial dentures, and also provide the practitioner with a reference when treating patients in their practice. I sincerely hope this information will be a benefit to the student the practitioner and technologist in delivering quality removable partial denture care to their patients. The basic information for the technique of fabricating a clinically acceptable prosthesis is provided in this text. Other qualities such as common sense, planning ahead, and compassion for your patient is to be provided by you.

I am very grateful for the opportunity to provide the student and practitioner of dentistry with some of the information I have been able to compile from my experience as a dental technician, general dental practitioner, prosthodontic practitioner and teacher.

The basic removable partial denture information is provided in this text, however, there are many variations to each technique and the student must master one technique before moving on to another. Prosthetic dentistry is a demanding discipline which requires the student and practitioner must always be well prepared for the challenges that are presented by the partially edentulous patient. I hope the reader finds many items of interest contained within these pages.

A special "thanks" is also due to all of the people that gave me advice and encouragement during the development of this clinical guide and reference manual. I would specifically like to acknowledge the support I have received from Dr. Forrest R. Scandrett, Professor and Head, Department of Prosthodontics, The University of lowa, College of Dentistry and also Dr. John Ward, Associate Professor, Medical College of Virginia/ Virginia Commonwealth University, whose encouragement and influence early in my prosthodontic career will not be forgotten.

The author drew most of the line drawings the in this text and takes full responsibility for their accuracy and content I hope they helped the reader more easily understand the text content.

Robert L. Schneider, D.D.S., M.S., F.A.C.P.

CHAPTER ONE

INTRODUCTION

Prosthodontics is the branch of dentistry pertaining to the restoration and maintenance of oral function, comfort, appearance, and health of the patient by the restoration of the natural teeth and/or replacement of missing teeth and contiguous oral and maxillofacial tissues with artificial substitutes

Prosthodontics has four major divisions:

- Removable prosthodontics
- Fixed prosthodontics
- Maxillofacial prosthodontics
- Implant prosthodontics

All divisions deal with the replacement of an absent part of the oral and/or perioral structure with an artificial prosthesis.

- A *complete denture* is a prosthesis for replacing all missing natural teeth and associated structures of the mandible or maxilla.

- *A fixed partial denture* is a restoration replacing one or more teeth which is not readily removed by the dentist or patient. It is fixed to natural teeth, roots or implants which serve as the primary support apparatus.

- A *removable partial denture* is a dental prosthesis which replaces teeth and associated structures in a partially edentulous dental arch. It can be removed from the mouth easily by the dentist and the patient. It can be supported by natural teeth and/or mucosa.

Maxillofacial prosthetics is the art and science of anatomic, functional, or cosmetic reconstruction by means of non-living substitutes of those regions in the maxilla, mandible and face that are missing or defective because of surgery, trauma, pathosis, developmental or congenital malformation.

Implant prosthodontics is the phase of dentistry concerning the planning, restoration and maintenance of dental implants.

RPDs Chapter One

Removable partial denture prosthodontics includes:

1. Evaluation of the patient's medical and dental history.
2. A thorough clinical examination of the patient to accurately determine their dental needs.
3. Preparation of the oral soft and hard tissues and the patient for a removable partial denture (RPD)
4. Fabrication, fitting and adjusting the RPD to the patient’s oral structures.
5. Education and training of the patient in proper home care of the RPD, and maintenance of the RPD to continue to provide the patient with optimal oral health.

The objectives of removable partial denture treatment are:

1. To preserve the hard and soft tissues of the dental arch that are remaining.
2. To provide the patient dental comfort.
3. To restore and preserve masticatory function.
4. To contribute to the restoration and maintenance of the physical and mental health of the patient.
5. To restore and preserve phonetic and esthetic functions for the patient.

Treatment of the partially edentulous patient requires knowledge of all areas of dentistry and is usually very complex. Occlusal forces transmitted by the RPD to the supporting structures must not exceed the tolerance limit of the supporting hard and soft tissues. Limitations in the materials used in the fabrication of RPD, and patient acceptance of a prosthesis are some of

the factors to be considered. This information will be covered in later chapters. Plan ahead and read the appropriate chapter(s) ***before*** your patient's appointment if you are unsure of any step.

CHAPTER TWO

EXAMINATION, DIAGNOSIS AND TREATMENT PLANNING

When a removable partial denture no longer functions satisfactorily for a patient or causes iatrogenic damage, it is considered a failure. This failure can be attributed to many factors. Usually there are deficiencies in the basic design of the RPD, changes in the supporting tissues following fabrication of the prosthesis, or the result of inadequate data collection before fabrication of the prosthesis. Most of the causes of RPD failure can be listed under poor or improper diagnosis and treatment planning, inadequate preparation of the mouth to receive the RPD, or inadequate communication with the patient and/or laboratory technician.

Many RPDs are designed without the use of a dental surveyor. It cannot be emphasized too much that the use of a dental surveyor is critical in the design and analysis of an RPD. Surveying identifies those areas of the mouth that do or do not need to be modified or changed to facilitate the RPD to optimally promote and maintain oral health. Surveying will be covered in detail in a later chapter.

Failures of the prosthesis or supporting mechanism also result when the dentist or the technician improperly contour the place a clasp assembly fits on a tooth that is not capable of providing optimal support under the given conditions. Inability to provide occlusal harmony of the natural dentition before the fabrication of the RPD may lead to failure of the prosthesis.

Communication is also very important, not only with the patient for education, motivation, and maintenance of the oral tissues and prosthesis, but also with the dental technician. The dentist must provide the laboratory technician with detailed information regarding the fabrication of the RPD utilizing a written description (work authorization) and accurate master casts that duplicate the patient's oral condition.

Examination

The examination appointment consists of the initial patient interview and data collection. Much information can be gathered at this appointment. The things that should be considered at this appointment are the patient's health history, past denture and dental history, recent radiographs, and financial capabilities of the individual. Also a very important consideration is discussing with the patient their expectations of your treatment and the prosthesis you will fabricate for them. Unrealistic patient expectations of a new prosthesis should be addressed as soon as possible in the treatment.

Accurate diagnostic impressions, face-bow transfer and when possible, interocclusal records should be made so the mounted diagnostic casts can be completed and examined before the patient's next appointment. If this is not possible, due to many reasons, a second appointment will be necessary for interocclusal records for accurate mounting of the diagnostic casts. The procedure for articulating diagnostic casts will be explained in the next chapter.

If the patient has not previously worn an RPD, the initial appointment is the ideal time to begin psychologically preparing them for the advantages and potential disadvantages of wearing a removable prosthesis. Pre-printed literature is available for patient education and reference from many sources in dentistry and should be utilized. Also included should be information regarding prosthesis limitation and home care.

Many clinical judgment factors are involved in the diagnosis and treatment planning for removable partial dentures. These judgment factors are based on the information and data collected during the examination appointment. It is apparent that the more data the clinician can collect during this appointment, the higher chance of success you will have in treating the patient with a removable partial denture.

Some of the clinical judgment factors involved in examination, diagnosis and treatment planning include:

1. Age, health, past dental history, and patient expectations.

2. Radiographic analysis of the patient's existing dental condition, which will include recent periapical radiographs of the remaining teeth and a panoramic radiograph to evaluate the edentulous areas.

3. Evaluation of accurate mounted diagnostic casts to evaluate occlusion, survey lines, etc.

4. Financial capabilities of the patient.

5. Can the remaining teeth manage the stress to be applied with the anticipated design? This not only includes the primary abutment teeth but also the indirect retention teeth and all of the other teeth maintaining guidance and occlusion.

6. The restorability of the remaining teeth, un-restorable caries, extruded teeth, etc.

7. What is the capacity of the supporting osseous structures and soft tissues to withstand the anticipated forces?

8. The need for periodontal therapy.

9. The need for surgical corrections such as tori removal, frenectomy, gingival grafting orextractions.

10. The need for endodontic therapy.

11. The need for orthodontic therapy.

12. The number of teeth to be retained, and their position in the dental arch.

13. How much interocclusal clearance is present?

14. Do centric relation and centric occlusion coincide? If this is important can the occlusion be managed to achieve this? The occlusion needs to exert only vertical forces on a distal extension RPD opposing natural teeth. Horizontal forces should be avoided as they are the most damaging to the abutment teeth, can cause residual ridge irritation under the prosthesis. The stresses created by horizontal occlusal or parafunctional movements may cause accelerated residual ridge reduction and eventual loss of the abutment teeth.

15. Do we restore or modify the remaining teeth to achieve:
    a. re-contouring to facilitate better clasp design.
    b. improve stability of the abutments by splinting.
    c. provide adequate rest seats to improve support of the RPD.
    d. improve crown/root ratio.
    e. improve contour of teeth modified by caries, abrasion, attrition, fracture or previous restorative dentistry.
    f. restore proper occlusion.

16. Esthetic concerns or problems such as tooth position and soft tissue contours.

17. Ideally there should be tooth to tooth contact somewhere in the arch, preferably bilaterally to:
    a. maintain vertical dimension of occlusion.
    b. maintain a repeatable occlusal position.
    c. minimize the occlusal forces on the osseous and soft tissue in the edentulous areas supporting the distal extensions.

18. Can the patient adequately place and remove the removable partial denture? Does the patient have sufficient neuromuscular coordination to function with the RPD?

19. Can the patient perform the necessary oral hygiene procedures to prevent further oral disease?

The clinician must ask themselves several questions in order to perform an acceptable diagnosis. One of the major questions to be answered is whether a removable partial denture is desirable for the patient over that of a fixed partial denture? The indications and contraindications for each are presented next.

Indications for Fixed Partial Dentures

1. ***Tooth bounded posterior edentulous regions***. Usually unilateral posterior edentulous spaces bounded by abutments relatively parallel and of short to moderate span. The abutment teeth should also have good periodontal support.

2. ***Modification spaces***. Isolated or pier abutments are candidates for restoration with a fixed partial denture, eliminating part of the edentulous space. Isolated abutments are poor candidates to support an RPD due to the potential in increased torque action around the long axis of the tooth. This is more critical in the mandible than the maxilla due to the availability of the palate as a potential support area, which significantly decreases the anterior-posterior movement of the RPD, compared to the mandible.

3. ***Anterior modification spaces.*** Frequently, missing anterior teeth are best replaced by the use of a fixed restoration, provided periodontal

support is adequate and the residual ridge is close to normal contour. The elimination of the anterior modification space helps simplify the RPD design.

Indications for Removable Partial Dentures

1. Replacement of teeth in distal extension situations.

2. Following recent extractions as an interim basis during healing.

3. On a long edentulous span where Ante's Rule cannot be satisfied.

4. Where cross-arch bilateral bracing is needed. This may be indicated in a dental arch weakened by periodontal disease.

5. Esthetics in the anterior region. Sometimes a better esthetic result can be obtained using an RPD over a fixed restoration, especially when there is loss of soft/hard tissues surrounding the abutment teeth.

6. Excessive loss of the residual ridge is more easily compensated for and more esthetic with replacement by an RPD with an acrylic resin base.

7. Economic considerations of the patient. Most often it is least costly to the patient to restore many missing teeth with a removable partial denture than with fixed restorations. The patient's financial status and desires must be considered.

Frequently the treatment plan is not satisfactorily presented to the patient. Our professional obligation is to present the facts to the patient and then to do the best in accordance with the patient's desires, where possible. The patients desires are occasionally not within the realm of the dentist's capabilities or knowledge, and sometimes, not realistic.

At the time of the presentation of the treatment plan the dentist should explain the patient's problem in as straight forward, simple terms as possible. The diagnostic casts, radiographs, and other visual aids are quite helpful, such as a previously fabricated RPD**,** so the patient can see what you are talking about.

Explain to the patient your suggestion for the solution to their dental problems, and why. An alternate treatment plan should always be presented.

The alternate treatment plan may deviate from the ideal due to financial and other considerations of the patient. Always be prepared to present an alternate treatment plan if the patient is unable/unwilling to accept the first suggestion. Remember there are many acceptable ways to treat the same patient!

Advise the patient what they may expect from your proposed treatment, such as the prognosis, expected duration of treatment, cost and financial responsibilities, and what ***YOU*** expect of the patient. Not only does the patient expect the dentist to cure their dental ills, but the dentist should expect the patient to take the responsibility for care and proper maintenance of their oral health and any prosthesis. This responsibility should be placed with the patient, and followed carefully by the clinician. If the patient refuses to accept this responsibility, then treatment is doomed to failure, and in most instances, the patient is better off not treated.

An explanation should be given to the patient as to the procedures to be followed in preparation of the mouth to facilitate placement of the RPD. Are teeth to be restored with fixed restorations, and why, is surgery required, and why, will enamelplasty be necessary when placing rests, and why, etc.

Answer the questions the patient may have and obtain their informed consent to proceed with treatment. In private practice a written letter of confirmation may be indicated for the patient's information and as a part of your patient treatment record. The confirmation (informed consent) will verify that this is the treatment the patient agrees to, they will accept the responsibility in the care of their mouth, and that they will pay for the treatment, including the method of payment you both have agreed upon.

Obviously much information is gathered during the examination, diagnosis and treatment planning phase of removable partial dentures. The information in the following chapters will help provide many of the basics necessary for the clinician to make an informed decision as to the treatment of their patient with a removable partial denture.

CHAPTER THREE

ARTICULATING DIAGNOSTIC CASTS

It is essential that accurate diagnostic casts of the dental arches be made at the examination appointment. They must be mounted in centric relation using a face-bow transfer on a semi-adjustable articulator.

Accurate diagnostic casts are made using modified stock trays, either perforated metal or disposable plastic, and irreversible hydrocolloid (alginate). Most frequently the selected impression trays require modification for support of the impression material and proper extension into areas not easily accessible, such as the retromylohyoid fossa and tuberosity areas. The trays are modified with wax (compound or periphery wax) and alginate tray adhesive is used on the wax and disposable tray to secure the alginate to it. Tray adhesive is not necessary on the metal part of the trays. The diagnostic casts are used for the following:

1. Diagnosis for use in patient evaluation, diagnostic waxing, pretreatment records and treatment presentation.

2. Preliminary casts for the construction of custom impression trays.

3. Evaluation casts to determine the adequacy of existing mouth preparations.

4. Master casts for the construction of interim or acrylic resin removable partial dentures.

5. Mandibular master casts for the construction of the RPD metal framework.

The mandibular tray is extended to cover the retromolar pads and fully extend into the retromylohyoid fossa. Compound or periphery wax can be added to the tray in these areas. The maxillary tray will require build-up in the palate to keep the alginate from sagging, also some extension in the tuberosity and vibrating line area may be required. To help insure proper

extension the added compound or periphery wax can be heated by dipping the tray with the added wax in a water bath set at 140 degrees F, then placing the tray in the patients mouth and having the patient perform border molding movements such as having them lick their upper lip for the molding of the lingual flange area.

After the clinician makes an acceptable alginate impression they should immediately go into the laboratory and double pour the impression using vacuum mixed dental stone (yellow) for the first pour. The second pour or base can be made 15 minutes after the first, again using vacuum mixed dental stone. The stone should set at least 45 minutes and a maximum of one hour before the cast is removed from the impression, and trimmed using the model trimmer.

A properly extended stock metal or disposable plastic tray will save the practitioner significant amounts of time in the laboratory and provide them with an accurate diagnostic or master cast. ***You will be basing your treatment on much of the information gathered from the diagnostic casts, therefore, they should be of the highest diagnostic quality possible.*** Criteria for the acceptability of diagnostic casts include the following:

1. Anatomic details of the dental arches will be accurately reproduced, including the teeth, gingival tissues, frenum attachments, and the residual ridges.

2. There should be no dental stone nodules, voids or artifacts in critical anatomic areas of the casts.

3. The bases of the casts should be parallel to the occlusal plane of the dental arch.

4. The bases of the casts should be 15 mm thick at the thinnest area.

5. The tongue space of the mandibular cast should be clear of unnecessary dental stone.

6. The sides of the casts should be neatly trimmed to include a land area outside the vestibular depth.

Record bases and occlusion rims are required for mounting partially edentulous casts when there are too few remaining teeth or if the position or distribution of the teeth is such that the casts cannot be properly oriented to each other. If the casts are not stable when oriented, then a stabilized record

base must be fabricated to insure stabilization for mounting. Stabilized record bases can occasionally be made from light polymerized material, however, they can most often made using sprinkle-on autopolymerizing acrylic resin.

Technique for Fabricating Trial Bases

Outline the border extensions for the record base with an indelible pencil. Paint the cast with tin-foil substitute and let it dry. Block out large undercuts on the cast with base plate wax. Other minor block-out can be accomplished with Durabase™ Soft. Block-out should be minimal, and allow easy removal of the trial base from the cast without fracturing or damaging the cast. The most frequent under cut areas are:

1. Retromylohyoid fossa.
2. Infrabulge areas of the teeth.
3. Rugae areas of the anterior palate.
4. Lingual cervical embrasures.
5. Undercuts in the vestibule land areas.
6. Lateral tuberosity undercuts.

Occasionally additional stabilization of the record base is necessary, so it may be necessary to bend wrought wire clasps to incorporate into the record base.

When using autopolymerizing acrylic resin, and to facilitate trimming the record base and minimize the chance of fracture of the cast, damming should be used (please note the spelling [not damn]). Damming consists of placing a rope wax wall or dam at the facial proximal of all abutment teeth and around the edentulous areas to contain the material during polymerization. Confining the fluid acrylic resin during polymerization will keep the trimming to a minimum. Damming isn't necessary when using light polymerizing material (VLC).

Use the sprinkle-on method to form the base and place the model with the acrylic resin into the pressure pot for 20 minutes using 15-20 psi. Polymerize the light polymerizing material for 5 minutes before attempting to remove it from the cast. After processing remove the trial base from the

cast without fracturing the cast or the base.

Trim the record base with the lab lathe and handpiece. A properly trimmed record base extends to areas marked on the cast, with a uniform thickness of 2-3 mm, facial and lingual borders in the edentulous areas fill the vestibule. The polished surface of the base is smooth and free of bur marks, and the borders feel smooth and not sharp or rough.

The record base is polished with wet pumice and a rag wheel on the lathe on slow speed. Be especially careful if the record base has wrought wire clasps, because the rag wheel can grab the clasps and destroy the base and worse, cause serious injury to the operator. Also the record base should not be flexible. If it is flexible, determine where more materials should be added and do so. When the base is acceptable add a wax occlusion rim if necessary.

The record base and occlusion rim should be smooth, clean and polished. There should be no wax on the tissue surface of the base. There should be no wax or acrylic resin on the diagnostic cast. The record base should be stable (no rocking) on the diagnostic cast. ***If you wouldn't put the base in your mouth, don't even think about putting it in your patient's mouth, until it is satisfactory.***

Why Articulate Diagnostic Casts?

If properly articulated, the casts can demonstrate occlusal relationships which are impossible to determine from a visual examination. You can see the relationships from the facial and lingual. The interocclusal and inter-ridge relationships can be visualized.

Modification of one set of casts will verify the possibility of a treatment plan. The articulated casts can also be used to fabricate interim and immediate interim partial dentures. The articulated casts are of great value in presenting the treatment plan to the patient.

Occasionally it is not necessary to mount diagnostic casts when a maxillary complete denture is opposed by a distal extension RPD. If there is a question as to placement of the occlusal plane, esthetics, interarch space at the proper vertical dimension of occlusion, etc., then the casts should be mounted.

Making Diagnostic Jaw Relation Records

Adjust the wax rims so that when placed in the patient's mouth there is natural tooth contact and the patient can be guided into centric relation with *no interferences from the trial base or wax occlusion rim.* When the maxillary occlusal plane is approximated, a face-bow transfer can then be

made. If the maxilla has a large posterior or anterior edentulous space, place two non-parallel indexes in the wax rim in this area to facilitate orientation and stabilization of the face-bow. When the maxillary cast is properly mounted the centric relation record can be made. Be sure to index the base of the cast before adding the mounting plaster.

If foil reinforced baseplate wax or Aluwax™ is used on the rim, the record should be as thin as possible with no perforations. The opposing teeth should be just out of contact. **NO NATURAL TOOTH CONTACT IS ACCEPTABLE IN A CENTRIC RELATION RECORD.** Check the wax record on the casts one at a time. The record should fit the cusp tips perfectly with no rock or distortion. If the casts do not fit together in the wax record check the posterior areas for interferences. The most common areas for this interference is the posterior land areas or overextensions of the casts, usually the mandibular cast. Trim the land areas to remove the overextensions. DO NOT remove desired anatomic landmarks, such as the maxillary tuberosity and the retromolar pads.

Mount the mandibular cast in relation to the maxillary cast using the wax centric relation record. Be sure to index the base of the mandibular cast before mounting. The centric relation interocclusal records will be made using Aluwax™, green or red compound, ZOE (zinc oxide-eugenol), foil reinforced baseplate wax or a poly vinylsiloxane -PVS). The material is placed onto the occlusal wax rim and centric relation recorded.

Now that the casts are mounted you can begin a definitive diagnosis and removable partial denture design sequence for your patient.

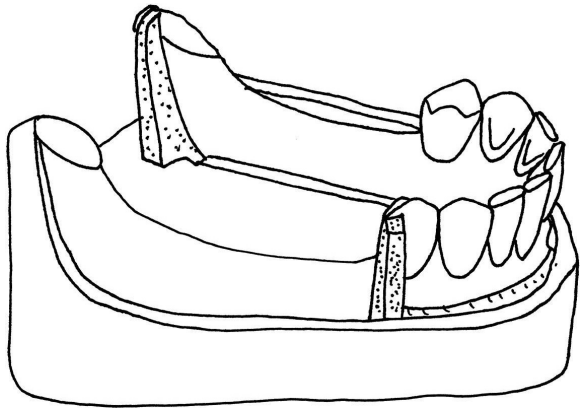

Figure 1
A dam is placed at the proximal of all abutment teeth, in the retromylohyoid space and in other areas to confine the fluid acrylic resin to the area of the base

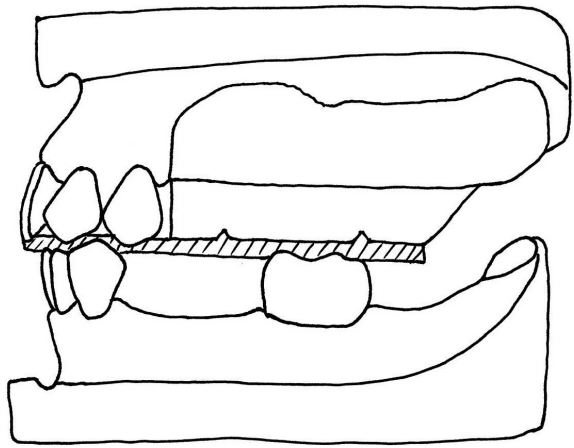

Figure 2
The record is trimmed so that only ½ - 1 mm of cusp depth remains and from the facial to expose the facial cusp tips. When a sufficient number of natural teeth remain in the opposing arch a trial base and occlusion rim may only be necessary in one arch, usually the arch with the fewest number of teeth.

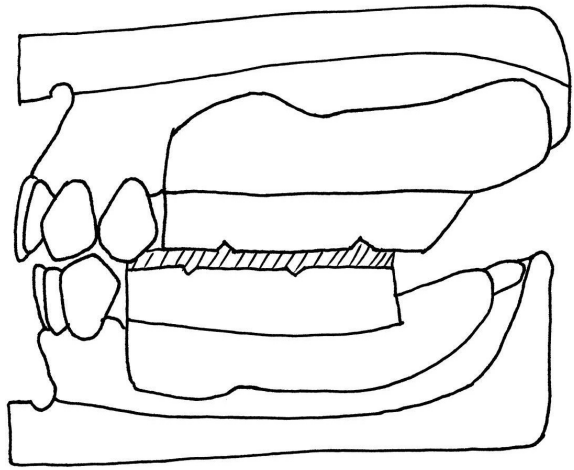

Figure 3
When no posterior teeth remain it is necessary to fabricate trial bases and occlusion rims for both arches. Note the natural teeth are not in contact when the centric relation record is made.

CHAPTER FOUR

CLASSIFYING PARTIALLY EDENTULOUS ARCHES

An accepted classification system makes it easier for dentists to communicate among themselves and dental technicians. It also helps you visualize the teeth that need to be replaced in the arch. Classifications can also serve as a guide to the types of designs that may be possible for that arch. There have been numerous classification systems proposed by Kennedy, Neurohr, Skinner, Applegate, Swenson and many others.

The classification most often taught in American dental schools is the Kennedy series. However, many dentists place too much emphasis on the relationship between the classification of the partially edentulous arches and the application of the RPD design.

The classification does not indicate the amount of support, retention or stability available for the RPD, and this is one reason why many RPD's fail. A classification is only a guide and communication aid, not necessarily a definitive diagnostic tool.

In the U.S. the **Kennedy** classification system with **Applegate's** rules for modification is frequently utilized. The following will describe this classification and its modification rules.

Kennedy Classification

Class I: Class II: Class III:

Class IV:
Bilateral posterior edentulous ridges (Figure 1). Unilateral posterior edentulous ridge (Figures 3 & 4).
Unilateral edentulous ridge with natural teeth remaining anterior and posterior to it (Figure 6).

Anterior edentulous ridge crossing the midline (Figures 9 & 10).

Applegate's Rules for Modification of the Kennedy Classification

Rule 1: Classification should follow mouth preparation, since extractions would or could modify the classification.

Rule 2: If the third molar is missing, that edentulous area is ***not*** considered in making the classification.

Rule 3: Present third molars that are to be used as abutments ***are*** considered in the classification.

Rule 4: Missing second molars occasionally are not replaced. If the occluding second molar is also not present, and is not to be replaced, this edentulous area
is not considered in the classification.

Rule 5: When there is more than one edentulous area in the same dental arch, the most posterior area (except third molars) determines the classification.

Rule 6: The other edentulous areas in the arch, other than the one that determines classification, are indicated as modifications in that arch, and are designated by their number, Class I Modification II, etc. (Figures 2, 5, 7 & 8)

Rule 7: The number of missing teeth in the modification area is not important. The number of modification spaces is important.

Rule 8: Only Classes I, II, and III have modification spaces. Any additional edentulous areas must lie posterior to the single, bilateral edentulous area of the Class IV and would therefore determine the classification.

Being able to use this classification and modification system for partially edentulous arches will help in your communications with other dental professionals and also help you plan for possible designs, and contingencies, depending on the configuration of the dental arch.

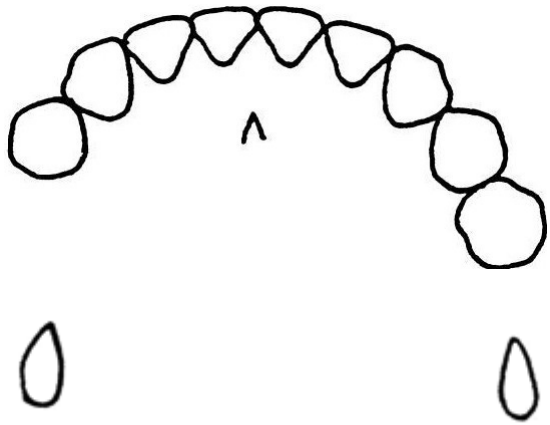

Figure 1
Kennedy Class I

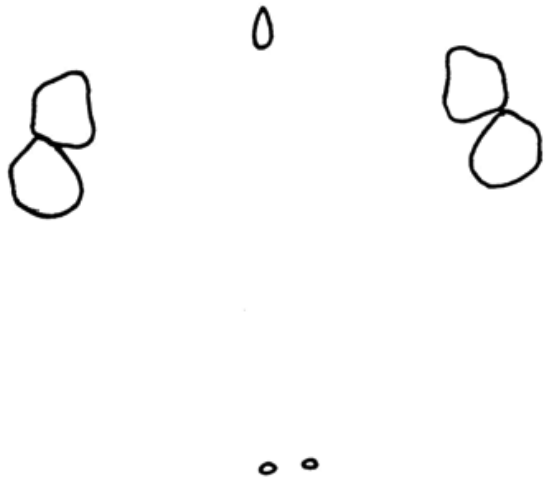

Figure 2
Kennedy Class I, Modification I

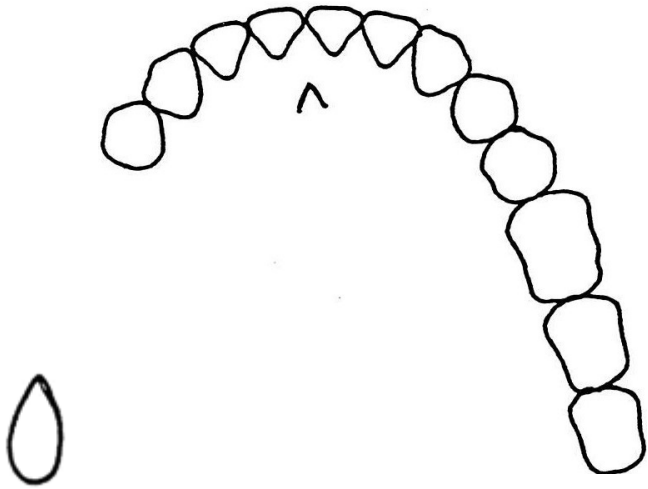

Figure 3
Kennedy Class II

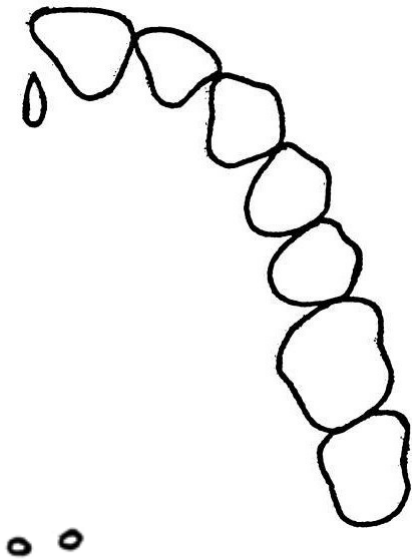

Figure 4
Kennedy Class II

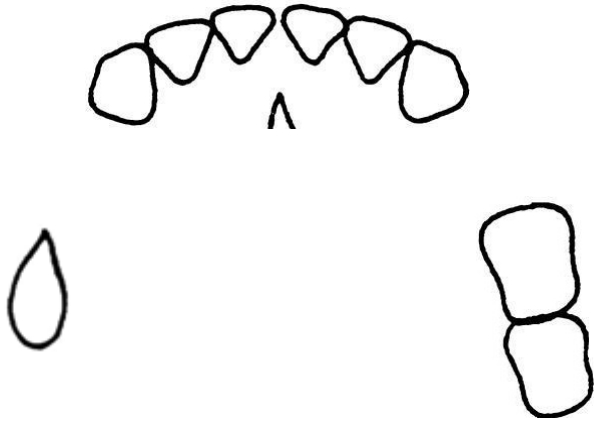

Figure 5
Kennedy Class II, Modification I

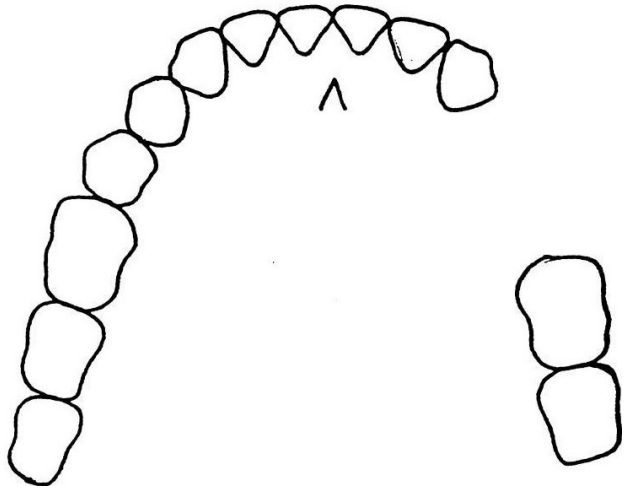

Figure 6
Kennedy Class III

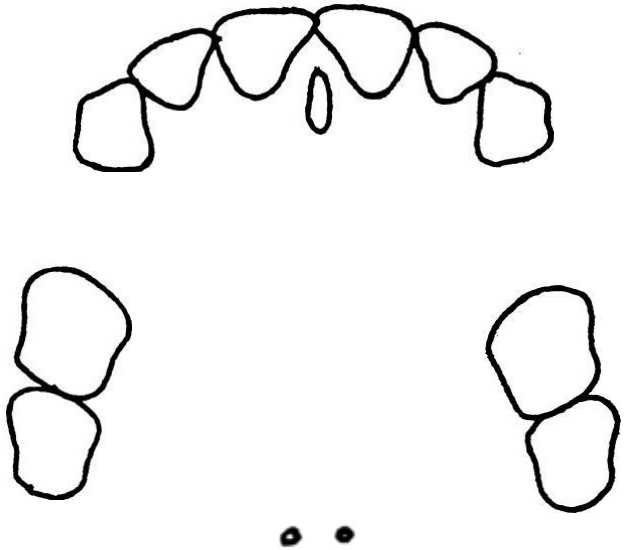

Figure 7
Kennedy Class III, Modification I

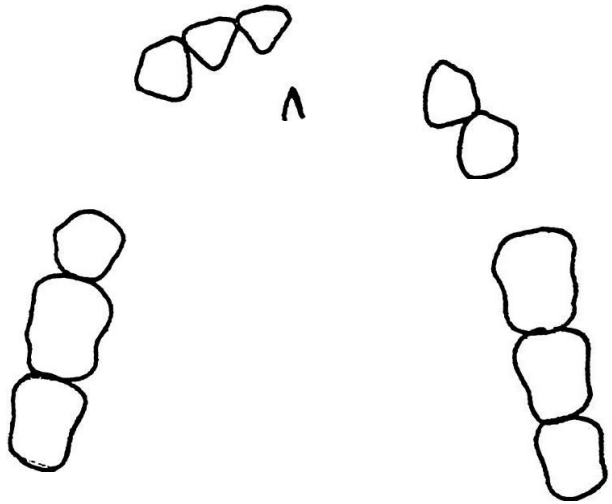

Figure Figure 8
KenneKennedy Class III, Modification II

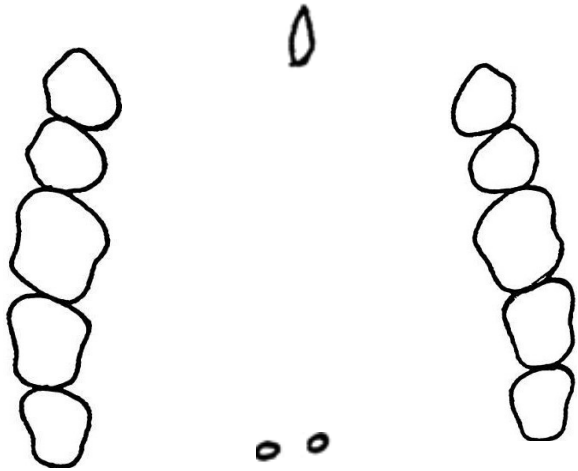

Figure 9
Kennedy Class IV

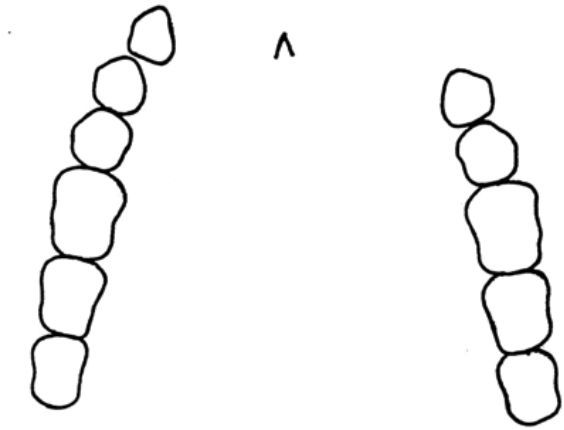

Figure 10
Kennedy C[ass IV