INTRODUCTION & CLASSIFICATION OF REMOVABLE PARTIAL DENTURE
DEFINITION- PROSTHODONTICS

• Defined as the “branch of dentistry pertaining to the restoration and maintainence of oral function, comfort, appearance and health of the patient by restoration of natural teeth or the replacement of missing teeth and contiguous oral and maxillogfacial tissues with the artificial substitution.
BRANCHES

3 major divisions:
- fixed prosthodontics
- maxillofacial prosthethics
- removable prosthodontics

complete partial
extracoronal intracoronal
REMOVABLE PROSTHODONTICS

• It is devoted to replacement of missing teeth & contiguous tissues with prosthesis designed to be removed by the wearer. It includes two disciplines:
  1) Removable complete denture prosthodontics
  2) Removable partial denture prosthodontics

• A RPD may be extracoronal or intracoronal depending on what type of retention is used to keep it in the mouth.
COMMON TERMINOLOGIES USED IN RPD

**Abutment**
“A tooth, a portion of a tooth, or that portion of a dental implant that serves to support & retain a prosthesis.”

**Retainer**
The fixation device, or any form of attachment applied directly to an abutment tooth & used for the fixation of a prosthesis, is called retainer.
Tooth supported RPD

A partial denture that receives support from the natural teeth at each end of the edentulous space or spaces.

Tooth tissue supported RPD

The denture base that extends anteriorly/posteriorly and is supported by teeth at one end and tissue on the other end – distal extension partial dentures.
**Temporary removable partial denture**

They are used in patients where tissue changes are expected, where a permanent prosthesis cannot be fabricated till the tissues stabilize.

**Interim denture**

It is a temporary partial denture used for a short period to fulfill aesthetics, mastication or convenience until a more definite form of treatment can be rendered.
**Transitional denture**

May be used when loss of *additional* teeth is inevitable but immediate extraction is not advisable or desirable. Artificial teeth may be added to the transitional denture as and when the natural teeth are extracted.

**Treatment denture**

It is used as a carrier for treatment material. It is used when the soft tissues have been abused by ill fitting prosthetic devices.
Indications for RPD

- **Long edentulous span:** RPD preferred for longer edentulous arches.
- **No posterior abutment:** When there is no tooth posterior to the edentulous space to act as an abutment, a RPD is preferred.
- **Weak Periodontal support of remaining teeth:** When it is poor RPD is preferred because it requires less support from the abutment teeth.
- **Cross arch stabilization:** When a remaining teeth have to be stabilized against lateral and anterior-posterior forces, a RPD is indicated.

❌ **Presence of multiple edentulous spaces.**
**Excessive bone loss:** In RPD, the artificial tooth can be positioned as per the operators preferences and the denture base can be fabricated to provide required support and aesthetics.

**Immediate tooth replacement after extraction**

**Emotional problems:** The appointment for removable partial denture is shorter and less demanding to patient

**Young patients under the age of 17:** This is because of high pulp horns and lack of clinical crown height.

**Patient’s preference**
• Insufficient number of abutments
• Tilted abutments
Classification of removable partial denture

- Enables the dentist to clearly communicate to the listener to anticipate the difficulties common to occur for a particular design.

- Design denture According to occlusal load expected for a patient group formulate a good treatment plan for patient.
• Allow visualization of type of partially edentulous arches that is being considered.

• Allow differentiation between tooth supported and tooth-tissue supported partial dentures.

• Serve as a guide to the type of design to be used.

• Be universally accepted.
There are many classifications available for classifying edentulous arches. The most common ones are:

- Cummer
- Kennedy’s
- Applegate-Kennedy
- Bailyn
- Friedman
- Godfrey
- Skinner
- Beckett & Wilson
- Swenson
- ACP Classification
Cummer’s classification system

CUMMER

professionally recognised classification system

• Cummer stated “for working purposes all the cases may be made to fall into 4 simple classes, which have as their basis the choice of number and position of the direct retainer”.
Class I – DIAGONAL: 2 diagonally opposite teeth are

Class II – DIAMETRIC: 2 diametrically opposite teeth are
Class III – UNILATERAL: one or more teeth on the same side are chosen as abutment teeth for the attachment of the direct retainers.

Class IV – MULTILATERAL: three or more teeth are chosen as abutment teeth for the attachment of the direct retainers. The teeth are disposed in a triangular or quadrilateral relationship.
Kennedy’s classification:

- Most widely used method of classification

- Proposed in 1923 by Dr. Edward Kennedy of New York.

- It is based on the relationship of the edentulous spaces to the abutment teeth.
Class I- Bilateral edentulous areas located posterior to the remaining natural teeth.

Class II- Unilateral edentulous area located posterior to the remaining natural teeth.

Class III- Unilateral edentulous area with natural teeth both anterior and posterior to it.

Class IV- Single, bilateral edentulous area
Applegate Kennedy’s system:

• It is a modification of the Kennedy’s system.

• It is based less on the number and location of the remaining teeth and edentulous spaces.

• It takes into consideration the capabilities of the teeth, which bound the spaces to serve as abutments for the prosthesis.
**DR. O.C APPLEGATE (1960)**

**Class V:** Edentulous area bounded anteriorly and posteriorly by the natural teeth but in which

**Class VI:** an edentulous situation in which the teeth adjacent to the space are capable of total
Applegate’s Rules:
Applegate also provided the following 8 rules to govern the application of the Kennedy system:

**Rule 1:** Classification should follow rather than precede extractions that might alter the original classification.

**Rule 2:**
If the third molar is missing and not to be replaced it is not considered in the classification.

**Rule 3:**
If the third molar is present and is to be used as an abutment, it is considered in the classification.
Rule 4:
If the second molar is missing not to be replaced that is the opposing second molar is also missing and is not considered in the classification.

Rule 5 –
The most posterior edentulous area or areas always determines the classification.

Rule 6 –
Edentulous areas other than those determining the classification are referred to as the modification
Rule 7 –
The extent of the modification is not considered, only the number of additional edentulous areas.

Rule 8 –
There can be no modification areas in class IV arches. Because any edentulous area lying posterior to the single bilateral area determines the classification.
Bailyn’s system (1928):

• Based on whether the prosthesis is tooth borne, tissue borne or a combination of the two:

• Bailyn divided all R.P.Ds into-

• **A**: Anterior restorations: saddle area anterior to the 1st bicuspid
• **P**: Posterior restorations: saddle area posterior to the cuspid.
Subdivided as:

**Class I:** Bounded saddle (not more than 3 teeth missing)  
Eg: P.I

**Class II:** Free end saddle (no distal abutment)  
Eg: P.II

**Class III:** Bounded saddle (more than 3 teeth missing)
Class A.III:
• Edentulous space anterior to the 1st bicuspids
• Bounded saddle (more than three teeth missing)

Class A.I. P.II –
• Edentulous area anterior to the first bicuspids and not more than 3 teeth missing
• Other edentulous space being posterior to the cuspid with only one tooth available as an abutment.
• Based on the location and the extent of the edentulous spaces.

- **Class A** – Class A has tooth borne denture bases in the anterior part of the mouth.
**Class B** – MUCOSA BORNE denture base area in anterior of the mouth. Unbroken six tooth space; an unbroken 5-tooth space; a broken 5-tooth space.

**Class C** – TOOTH BORNE denture base in the posterior part of the mouth. Unbroken 3-tooth space; a broken 3-tooth space; an unbroken 2-tooth space; a broken 2-tooth space.
Class D – Class D has mucosa borne denture bases in the posterior part of the mouth.

It may be an unbroken 4-tooth space or a 3 tooth;
Introduced ‘ABC’ classification in 1953. According to this classification-

- **A**: Anterior
- **B**: Bounded posterior
Beckett (1953) and Wilson (1957) based their ideas on Bailyn’s classification (1928).

Based on proportionate amount of support provided by the teeth and tissues.
Class I : BOUNDED SADDLE. Abutment teeth qualified to support the denture. Mucosa is not used for support.

Class II : FREE END
a. Tooth and tissue borne
b. Tissue borne
Class III: BOUNDED SADDLE. Abutment teeth not so qualified to support the denture as described in class I.

Wilson in 1957 elaborated the classification as follows:

• Mandibular Kennedy’s class III should be treated as class I
• Maxillary Kennedy’s class III should be treated as class I or III
SWENSON’S CLASSIFICATION (1957)

- The 4 primary classes represent only slight modification of the Kennedy’s system
- **Class I** – It's an arch with one free end denture base
Class II – It is an arch with 2 free end denture base.

Class III – It is an arch with edentulous space posteriorly on one or both the sides but with teeth present anteriorly and posteriorly to each space.

Class IV – It is an arch with anteriorly edentulous space and with 5 or more anterior teeth missing.
Subdivision – the 4 more major classes are subdivided without denoting which tooth is missing.

- **A**: ANTERIOR
- **P**: POSTERIOR
- **AP**: ANTERIOR AND POSTERIOR

**e.g.** Class II A – It is basic class II with an anterior space.
SKINNER’S SYSTEM: (1959)

• This system was based on the relationship of the edentulous arches to the abutment teeth.
• His classification was influenced by Cummer classification. His classification have five classes of which few were similar to Cummer classification.
Class I – Abutment teeth are located both anterior and posterior to the edentulous space, spaces may be unilateral or bilateral.

Class II – All teeth are posterior to the edentulous space, which function as partial denture unit. It may be unilateral or bilateral.
**Class III** – All the abutment teeth are anterior to edentulous space which functions as partial denture base and may occur unilaterally or bilaterally.

**Class IV** – Edentulous space are located both anterior and posterior to the remaining teeth. They may be unilateral or bilateral.

**Class V** – Abutment teeth are unilateral in relation to denture base and may be unilateral
Prosthodontic diagnostic index

The American College of Prosthodontists (ACP) has developed a classification system for partial edentulism based on diagnostic findings.

J Prosthodont 2002
Classification System for the Partially Edentulous Patient

DIAGNOSTIC CRITERIA

1. Location and extent of the edentulous area(s)
2. Condition of the abutment teeth
3. Occlusal scheme
4. Residual ridge
Location and extent of edentulous area(s)
Ideal or Minimally Compromised Edentulous Area

- The edentulous span is confined to a single arch and one of the following:
  - Any anterior maxillary span that does not exceed 2 missing incisors
  - Any anterior mandibular span that does not exceed 4 missing incisors
  - Any posterior maxillary or mandibular span that does not exceed 2 premolars or 1 premolar and 1 molar
Moderately Compromised Edentulous Area

The edentulous span is in both arches and one of the following:

- Any anterior maxillary span that does not exceed 2 missing incisors
- Any anterior mandibular span that does not exceed 4 missing incisors
- Any posterior maxillary or mandibular span that does not exceed 2 premolars or 1 premolar and 1 molar
- The maxillary or mandibular canine is missing
Substantially Compromised Edentulous Area

• Any posterior maxillary or mandibular span that is greater than 3 missing teeth or 2 molars.

• Any edentulous span including anterior and posterior areas of 3 or more missing teeth
Severely Compromised Edentulous Area

• Any edentulous area or combination of edentulous areas requiring a high level of patient compliance.
Criteria 2

Abutment Teeth Condition
Ideal or Minimally Compromised Abutment Teeth Condition

preprosthetic therapy is indicated
Moderately Compromised Abutment Teeth Condition

Abutment Condition:
Insufficient tooth structure to retain or support intracoronal restorations – in one or two sextants.

Abutments require localized adjunctive therapy, i.e., periodontal, endodontic or orthodontic procedures in one or two sextants.
Substantially Compromised Abutment Teeth Condition

Abutment condition:
Insufficient tooth structure to retain or support intra coronal or extra coronal restorations - IN THREE or more sextants.

Abutments require extensive adjunctive therapy, i.e., periodontal, endodontic or orthodontic procedures.
Severely Compromised Abutment Teeth Condition

Abutment condition:

Insufficient tooth structure to retain or support intra coronal or extra coronal restorations- IN FOUR or more sextants.

Abutments require extensive adjunctive therapy, i.e., periodontal, endodontic or orthodontic procedures- in FOUR or more sextants.
Criteria 3

Occlusal Scheme
Ideal or Minimally Compromised Occlusal Scheme

- No preprosthetic therapy required.
- Class I molar and jaw relationships
Moderately Compromised Occlusal Scheme

- Occlusal scheme requires localized adjunctive therapy (e.g. enameloplasty on premature occlusal contacts).

- Class I molar and jaw relationships.
Substantially Compromised Occlusal Scheme

• Entire occlusal scheme requires reestablishment but without any change in the vertical dimension of occlusion.

• Class II molar and jaw relationships.
Severely Compromised Occlusal Scheme

- Entire occlusal scheme requires reestablishment with changes in the vertical dimension of occlusion.
- Class II Division 2 and Class III molar and jaw relationships.
Criteria 4

Residual Ridge
The criteria published for the Classification System for Complete Edentulism are used to categorize any edentulous span present in the partially edentulous patient.
Classification System for the Completely Edentulous Patient

Class I
- Ideal or minimally compromised

Class II
- Moderately compromised

Class III
- Substantially compromised

Class IV
- Severely compromised

Diagnostic Criteria
1. Bone height--mandibular
2. Maxillomandibular relationship
3. Residual ridge morphology--maxilla
4. Muscle attachments
Classification System for Partial Edentulism
Class I—*Criteria 1*

Location and extent of edentulous area(s)

- Ideal or minimally compromised.
- Edentulous areas are confined to a single arch.
- It does not compromise the physiologic support of the abutment.
- Includes any anterior maxillary span that does not exceed two incisors, any anterior mandibular span that does not exceed four missing incisors and any posterior span that does not exceed two premolars or one premolar and a molar.
Class I—*Criteria 2*

**Abutment condition**

- Abutment teeth condition is ideal or minimally compromised.
- No need for preprosthetic therapy
Class I—*Criteria 3*
Occlusal Scheme

• Occlusal scheme is ideal or minimally compromised.

• No need for preprosthetic therapy.

• Maxillomandibular relationship: Class I molar and jaw relationships.
Class I—*Criteria 4*

Residual ridge

- Residual ridge morphology is the Class I complete edentulism description.
Class II
Class II—*Criteria 1*

Location and extent of edentulous area(s)

- Moderately compromised
- Edentulous areas are confined to a single arch
- It does not compromise the physiologic support of the abutment teeth

- Includes:
  - any anterior maxillary span not exceeding two incisors
  - any anterior mandibular span not exceeding four missing incisors
  - any posterior span that does not exceed two premolars or one premolar and a molar or any missing canine (maxillary or mandibular
Class II—*Criteria 2*

**Abutment condition**

- Abutment teeth condition is moderately compromised.
- Abutments in one or two sextants have insufficient tooth structure to retain or support intracoronal or extracoronal restorations.
- Abutments in one or two sextants require localized adjunctive therapy.
Class II—*Criteria 3*

Occlusal Scheme

- Occlusal scheme is moderately compromised.
- Occlusal scheme requires localized adjunctive therapy.
- Maxillomandibular relationship: Class I molar and jaw relationships.
Class II—*Criteria 4*

Residual ridge

- Residual ridge morphology is the Class I complete edentulism description
Class III
Class III—*Criteria 1*
Location and extent of edentulous area(s)

- Substantially compromised.
- Edentulous areas may be in one or both arches.
- It does compromise the physiologic support of the abutment teeth.
Class III—*Criteria 2*

**Abutment condition**

- Abutment teeth condition is substantially compromised.

- Abutments in three sextants have insufficient tooth structure to retain or support intracoronal or extracoronal restorations.

- Abutments in three sextants require more substantial localized adjunctive therapy, i.e., periodontal, endodontic, or orthodontic procedures.

- Abutments have a fair prognosis.
Class III—*Criteria 3*
Occlusal Scheme

- Occlusal scheme is substantially compromised
- Requires reestablishment of the entire occlusal scheme without any change in the vertical dimension of occlusion
- Maxillomandibular relationship: Class II molar and jaw relationships
Class III—*Criteria 4*

Residual ridge

- Residual ridge morphology is the Class I complete edentulism description
Class IV
Class IV—*Criteria 1*

Location and extent of edentulous area

- Severely compromised
- It can be extensive and in multiple areas in opposing arches
- It does compromise the physiologic support of the abutment teeth to create a guarded prognosis
- It includes acquired or congenital maxillofacial defects
- At least one edentulous area has a guarded prognosis
Class IV—*Criteria 2*

**Abutment condition**

- Abutment teeth condition is severely compromised.
- Abutments in four or more sextants have insufficient tooth structure to retain or support intracoronal or extracoronal restorations.
- Abutments in four or more sextants require extensive localized adjunctive therapy, i.e., periodontal, endodontic, or orthodontic procedures.
- Abutments have guarded prognosis.
Class IV—Criteria 3
Occlusal Scheme

- Occlusal scheme is severely compromised.

- Requires reestablishment of the entire occlusal scheme including changes in the vertical dimension of occlusion.

- Maxillomandibular relationship: Class II Division 2 and Class III molar and jaw relationships.
Class IV—*Criteria 4*

Residual ridge

- Residual ridge morphology is the Class I complete edentulism description
Class IV—Additional Criteria

• 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.

• Severe manifestations of local or systemic disease including sequelae from oncologic treatment.

• Maxillo-mandibular dyskinesia and/or ataxia.
Guidelines for the Use of the Classification System for Partial Edentulism
The following additional guidelines will assist in the consistent application of the classification:

• Consideration of future treatment procedures must not influence the decision as to which diagnostic level to place the patient in.

• Initial preprosthetic treatment and/or adjunctive therapy can change the initial classification level. The classification may need to be reassessed after the removal of existing prostheses.
Esthetic concerns or challenges raise the classification in complexity by one level in Class I and II patients.

Periodontal health is intimately related to the diagnosis and prognosis for partially edentulous patients. For the purpose of this system, it is assumed that patients will receive periodontal therapy to achieve and maintain periodontal health so that prosthodontic care can be accomplished.
In the situation where the patient presents with an edentulous maxilla opposing a partially edentulous mandible, each arch is diagnosed with the appropriate classification system.

In this situation, the maxilla would be classified according to the complete edentulism classification system and the mandible according to the partial edentulism classification system.
A single exception to this rule is when the patient presents with an edentulous mandible opposed by a partially edentulous or dentate maxilla.

This clinical situation presents significant complexity and long-term morbidity and as such, should be diagnosed as a Class IV in either system.
Conclusion

• If a single universally acceptable system of classification of partially dentulous arch could be taught and used. It would open avenues of communication throughout dentistry, which is not presently available.

• If any one system were to be accepted for wide professional use, it would either favour Kennedy or Applegate – Kennedy system or the recent ACP classification.
THANK YOU!!