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Review article

A SIMPLIFIED CLASSIFICATION SYSTEM FOR PARTIALLY EDENTULOUS SPACES

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ABSTRACT

Background: There is no single universally employed classification system that will specify the exact edentulous situation. Several classification systems exist to group the situation and avoid confusion. Classifications based on edentulous areas, finished restored prostheses, type of direct retainers or fulcrum lines are there. Some are based depending on the placement of the implants. Widely accepted Kennedy Applegate classification does not give any idea about length, span or number of teeth missing. Rule 6 governing the application of Kennedy method states that additional edentulous areas are referred as modification number 1,2 etc. Rule 7 states that extent of the modification is not considered; only the number of edentulous areas is considered. Hence there is a need to modify the Kennedy –Applegate System. **Aims:** This new classification system is an attempt to modify Kennedy –Applegate System so as to give the exact idea about missing teeth, space, span, side and areas of partially edentulous arches. **Methods and Material:** This system will provide the information regarding Maxillary or Mandibular partially edentulous arches, Left or Right side, length of the edentulous space, number of teeth missing and whether there will be tooth borne or tooth – tissue borne prosthesis. **Conclusions:** This classification is easy for application, communication and will also help to design the removable cast partial denture in a better logical and systematic way. Also, this system will give the idea of the edentulous status and the number of missing teeth in fixed, hybrid or implant prosthesis.

Key words: Partially edentulous spaces, Classification System, Edentulism, Removable Partial Denture

INTRODUCTION

Various types of edentulous situation or partial edentulism is seen. Edentulism means state of being without teeth or lacking teeth.[1] There may be loss of one or more teeth but not all the teeth in partially edentulous or semi edentulous situation. Unless and until actual case or a cast is seen, one will not know exactly how many teeth and also which teeth are missing. These various partially edentulous situations are difficult for remembering and memorization. Therefore a system of classification is required[2]

Which will help to group or specify the situation and design them in such a way, so as to give the exact idea of the missing tooth. For any type of situation, the requirements of an acceptable method of classification include the following criteria.[3,4]

- Classification should permit immediate visualization of the type of partially edentulous arch being considered.
- Classification should permit immediate differentiation between the tooth-borne and the tooth-tissue supported removable partial denture.

- It should be universally acceptable.
- It should serve as a guide to the type of design to be used.

Several classification systems have been designed till date[5] but perhaps the best known and commonly used is the classification of the partially edentulous dental arch proposed by Edward Kennedy of New York in 1923 which is based on the relationship of the edentulous areas with the remaining natural teeth[6]. Widely accepted Kennedy Applegate classification does not give the idea of missing number of teeth and the extent of the modification. Situations like Kennedy Class I, II, III or IV will not mention about the number and type of teeth missing on one or both sides. Also Kennedy Class II modification 2 will not give any idea about the side and number of the missing teeth and where the edentulous areas are located. Rule 6 governing the application of the Kennedy method states, that additional edentulous areas other than those determining the classification are referred as modifications and designated by their number as 1,2 etc. Also Rule 7 states that extent of the modification is not considered only the numbers of edentulous areas are considered.[7]

This new classification system will provide the exact information regarding Maxillary or Mandibular partially edentulous arches, Left or Right side, length of the edentulous space, number of teeth missing and whether there will be tooth borne or tooth – tissue borne prosthesis.

Abbreviations used:

Maxillary (Mx), Mandibular (Md), Left Side (L), Right Side ®, CI (Central Incisor), LI (Lateral Incisor), C (Canine), P (Premolar) and M (Molar)

Rules governing the classification:

1. The posterior most edentulous area will govern the classification.
2. 3rd molars will not be included in the classification because most of the times it is not replaced.
3. Classification system follows the extraction.
4. Missing teeth will be considered as Type.
5. Classification System will have Class I, II, III and IV with Type 1, 2, 3, 4, 5, 6, or 7.
6. Maxillary and Mandibular arch will be considered as Mx. and Md. respectively.
7. Additional missing teeth other than the Type will be denoted by FDI System [8]. [World Dental Federation Notation]
8. Side determination included will be L for Left and R for Right side.
9. Classification system will be applicable only for permanent dentition.

New Classification System for Partially Edentulous Arches:-

Class-I

Type 1. Bilateral 2nd molars missing. (M_2)

Type 2. All bilateral molars missing. (M_2, M_1)

Type 3. All bilateral molars and 2nd pre-molar missing. (M_2, M_1, P_2)

Type 4. All bilateral posterior teeth missing. (M_2, M_1, P_2, P_1)

Type 5. All bilateral posterior teeth & canines missing. (M_2, M_1, P_2, P_1, C,)

Type 6. All bilateral posterior teeth, canines and lateral incisor missing. (M_2, M_1, P_2, P_1, C, LI)

L & R: - If missing teeth are on either left (L) or right (R) side.

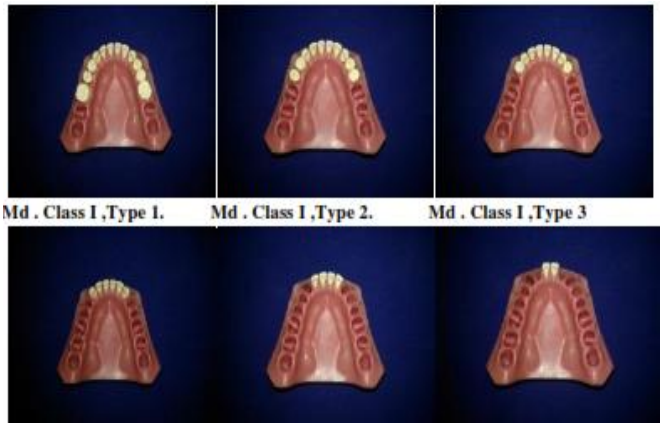

Fig 1: CLASS – I

Class -II

Type 1. Unilateral 2nd molar missing. (M_2)

Type 2. Unilateral both molars missing. (M_2, M_1)

Type 3. Unilateral both molars and 2nd pre-molar missing. (M_2, M_1, P_2)

Type 4. Unilateral all posterior teeth missing (M_2, M_1, P_2, P_1)

Type 5. Unilateral all posterior teeth and canine missing. (M_2, M_1, P_2, P_1,C.)

Type 6. Unilateral all posterior teeth , canine and lateral incisor missing. (M_2, M_1, P_2, P_1, C, LI.)

Type 7. Unilateral all posterior teeth , canine, lateral incisor and central incisor missing. (M_2, M_1, P_2, P_1, C, LI, CI.)

L & R :– If missing teeth is on either left (L) or right (R) side.

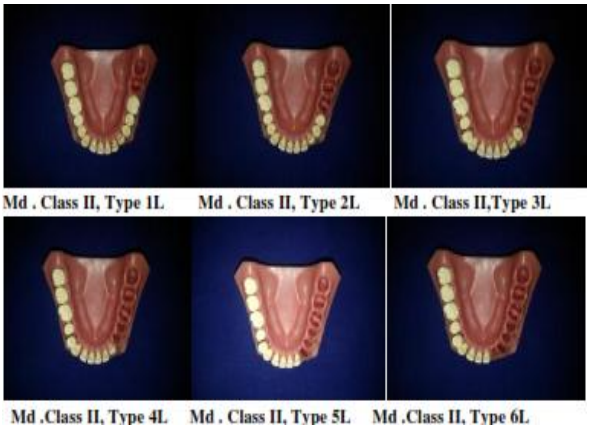

Fig 2: CLASS – II

Class-III

Type 1. Unilateral 1st molar missing. (M_1)

Type 2. Unilateral 1st molar and 2nd pre-molar missing. (M_1, P_2)

Type 3. Unilateral 1st molar and both pre-molars missing. (M_1, P_2, P_1)

Type 4. Unilateral 1st molar, both pre-molars and canine missing. (M_1, P_2, P_1, C)

Type 5. Unilateral 1st molar, both pre-molars, canine and lateral incisor missing. (M_1, P_2, P_1,C, LI .)

Type 6 Unilateral 1st molar, both pre-molars, canine, lateral incisor and unilateral central incisor missing. (M_1, P_2, P_1, C, LI, CI)

L & R :- If missing teeth is on either left (L) or right (R) side

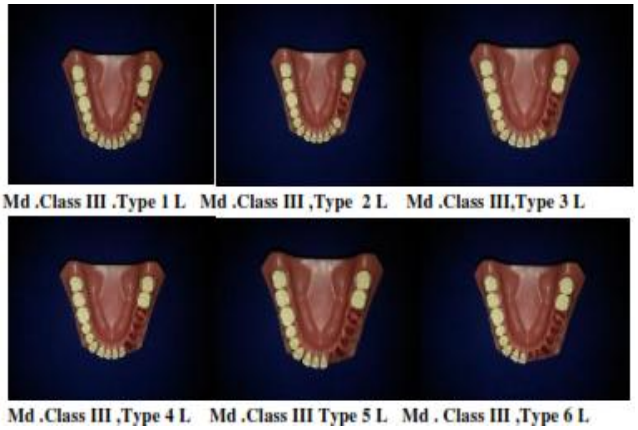

Fig 3: CLASS – III

Class-IV

Type 1. Bilateral central incisor missing. (CI)

Type 2. Bilateral central and lateral incisors missing. (CI, LI)

Type 3. Bilateral anterior teeth missing. (CI, LI, C)

Type 4. Bilateral anterior teeth and both 1st pre-molars missing. (CI, LI, C, P_1)

Type 5. Bilateral anterior teeth and both pre-molars missing. (CI, LI, C, P_1, P_2)

Type 6. Bilateral anterior teeth, both pre-molars and both 1st molars missing. (CI, LI, C, P_1, P_2, M_1)

L & R :– If missing teeth is on either left (L) or right (R) side.

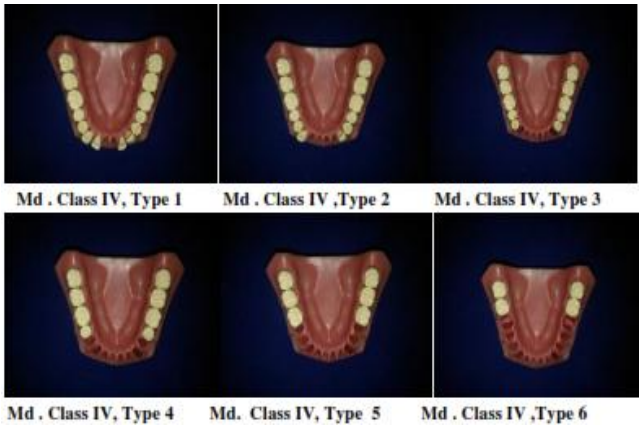

Fig 4: Class-IV

Modification examples: Additional missing tooth, teeth or edentulous spaces will be demarked by FDI System [Federation Dentaire Internationale (1971).

In case if there are situations where teeth lost are not uniform e.g.

- If in maxillary arch on left side two molars and on right side two molar teeth and in addition two right premolar teeth are missing then it will be written as Mx. Class I, Type 2, 14,15.
- If in maxillary arch if two teeth one premolar and one molar of right side are missing and in addition there are two additional teeth like right lateral incisor and left first premolar is missing then it will be written as Mx. Class III, Type 2R, 12, 24.
- If in maxillary arch posterior two teeth on right side are missing and one left first premolar is missing then it will be denoted as Mx. Class II, Type 2R, 24.
- If in mandibular arch canine to canine teeth are missing and in addition right side, both premolars and one molar are missing, it will be denoted as Md. Class IV, Type 3, 44,45,46.
- If mandibular bilateral first molars are missing, then it can be denoted as Md. Class I, Type 1R,36 or Md. Class I, Type 1L,46.

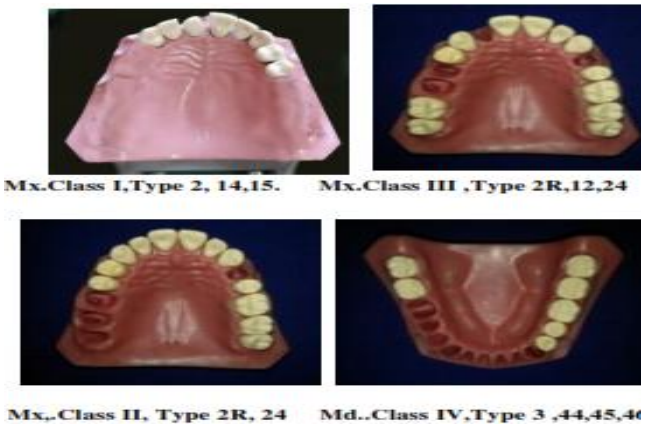

Fig 5: **Modification examples:**

DISCUSSION

Different types of partially edentulous arches seen in our day to day practice. Several classification systems exist to group the situation and avoid confusion. Classifications based on edentulous areas, finished restored prostheses, type of direct retainers or fulcrum lines are there. There is no single universally accepted classification system that gives the exact idea about length, span, side or number of teeth missing. Dental literature abounds with proposed classification systems beginning with Cummer's System that is earliest on record till date. Although many classification systems have merits, but none has been without critics and has unanimous acceptance.

Perhaps the best known and widely accepted is the Kennedy - Applegate classification based on the relationship of the edentulous areas with the remaining natural teeth[9.] The main drawback of Kennedy's classification is that it does not give any information regarding missing teeth and the length of edentulous area. In 1928 Bailyn introduced a classification system based on whether the prosthesis is tooth borne, tissue borne or both. Friedman in 1953 introduced an ABC system based on three essential segment types like A for anterior space, B for bounded posterior and C for canty lever or posterior free end space. ICK or Implant corrected Kennedy classification is based on the number and position of implants to be placed. [10] Some classification systems are based on the types of the Fulcrum lines[11] or on the diagnostic criterias[12]

Each classification gives some information about the edentulous situation of the patient or the type of the prosthesis. But for proper understanding and treatment planning it is better to know the exact situation of the edentulous arch.

This new classification system will specify the actual clinical condition and just by reading will give an exact idea of missing teeth in the following respect:-

1 Maxillary or Mandibular partial edentulous arch.
2 Left or Right side of the arch can be understood.
3 Length of the edentulous space can be determined.
4 Number of teeth missing can be determined.
5 Immediate visualization of the type of missing teeth.
6 Tooth borne or Tooth -Tissue borne can be determined.

The primary purpose of a classification for RPD designing is to simplify the description of potential combination of teeth to ridges so that communication to colleague, students and laboratory technique is improved [13.] This will simplify the identification of the edentulous arches and will help to enhance in teaching. Exact partially edentulous status will help to design the prosthesis by knowing the forces exerted on the remaining abutment teeth of a removable partial denture, as it plays a critical role in determining the prognosis of the remaining teeth.[14] This will help to design the removable cast partial denture in a better logical and systematic process[15] in relation to:-

a. Selection of abutment, b. Location of rest, c. Location of guide planes, d. Selection of major connector, e. Placement of minor connector, f: Selection of retentive, bracing and reciprocal elements g: Placement of denture base retentive elements, h. Selection of replacement teeth.

LIMITATIONS

1. Mobility status of the remaining teeth is not considered.
2. Abutment status is not considered.
3. Oral health status is not considered.
4. System does not denote the span which gets changed with drifting or bodily shifting of abutment teeth.

CONCLUSION

Various types of partially edentulous situations are seen which create confusion for remembering, designing and memorization. There is no single

universally employed classification system that will specify the exact partially edentulous situation. This new classification system will provide the exact information regarding Maxillary or Mandibular partially edentulous arches, Left or Right side, length of the edentulous space, number of teeth missing and whether there will be tooth borne or tooth – tissue borne prosthesis. This classification is easy for application, communication and will also help to design the removable cast partial denture in a better logical and systematic way. Also, this system will give the idea of the edentulous status and the number of missing teeth in fixed, hybrid or implant prosthesis.

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