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The incidence of frequency of a various removable partial edentulism cases

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Abstract

The purpose of this study is to determine the frequency of incidence of various removable partial denture classes among a selected sample of population.

The study population consisted from 362 patients (156 men and 206 women) were selected from prosthodontics department, college of dentistry, Baghdad university. Intraoral examination of each patient has been done to determine the Kennedy classification for each patient. Categorization of modification areas for the Kennedy partial edentulous cases has been done, also categorization of partially edentulous cases according to age and gender has been done. The results indicated that mandibular removable partial edentulism are more common than the maxillary cases, and the class I mandibular cases are the most commonly incident and the class IV partially edentulous cases were the least common cases.

The distribution of partially edentuluosness revealed the influences of the general pattern of tooth loss, which could be modified by patients' demands and socioeconomic status.

Key words: partial edentulism, Kennedy classification.

Introduction

Removable partial prosthodontics is a versatile, cost effective, and reversible treatment method for partially edentulous patients at any age. Even thought, recent reports have shown a consistent decline in the prevalence of tooth loss during the past few decades, the remain significant variation in tooth loss distribution (1). It would be most helpful to consider which combinations of tooth loss are most common and to classify these for the purpose of assisting our management of partially edentulous patients (2).

The objectives of RPD design have been well established, they include the restoration of function, enhancement of esthetic and most importantly, the preservation of the remaining teeth and periodontal structures(6). Several methods have been proposed to classify the partially edentulous arches on the basis of the potential combinations of teeth and ridges (4).

The primary purpose for the classification of partially edentulous arches is to identify potential combinations of teeth to edentulous ridges in order to facilitate communications among dental colleagues, students and technicians (5). Such classification should allow longitudinal comparison of the incidence of the various classes of RPDs, moreover, the trends in the incidence of the various classes of RPDs being fabricated should be reviewed periodically to serve as teaching guidelines (4,9). At present,

the Kennedy's classification is probably the most widely accepted one. In Kennedy classification, edentulous areas other than those determining the main type were designated as a modification spaces in an attempt to simplify the problems and encourage more universal use of a classification and in interest of adequate communication (11). Although classifications are actually descriptive of partially edentulous arches, the removable partial dentures restoring a particular class of arch is described as a denture of that class as in saying a class II partial denture is simpler than in saying a partial denture restoring a class II partially edentulous arch (7).

The objective of this study is to determine the patterns and frequencies of partial edentulism for patients who attending the prosthodontic department at college of dentistry, Baghdad University to establish databases for trend comparison of frequencies of cases of partially edentulism among Iraqi population.

Materials and method

Patients undergoing routine prosthodontic treatment were drawn from the clinics of prosthodontic department college of dentistry, Baghdad University, for the period of six months duration. Only the partially edentulous patients were invited to participate in this study.

The study population consisted from 362 patients (156men and 206 women). The mean age of the patients was 48 years (range 29-67). Of total, 171 having both maxillary and mandibular partially edentulous arches, while 186 patients having single partially edentulous arches either maxilla or mandible.

An intra oral examination of each patient has been done to determine the

Kennedy classification for each patient. The Kennedy classification with the guidelines advocated by Applegate for each partially edentulous arch was recorded. Categorization of the modification areas for the Kennedy removable partial denture classes were expanded to three categories:
1. Anterior modification area.
2. Posterior modification area.
3. Combined modification area.

Another categorization of the partially edentulous patients depending on age and gender to determine the distribution of the sample population. The percentage of the distribution of partially edentulous arches by Kennedy classification, the percentage distribution of the modification areas and the percentage of age and gender were obtained.

The age, gender and types of modification areas that have been obtained from dental records and their relationship with various Kennedy classifications were determined.

Results

A total 528 partially edentulous arches were examined. Of 528, 233 were for maxilla and 295 were for the mandible. The distribution and percentage of partially edentulous arches according to Kennedy classification is delineated in table (1), the class I partially edentulous cases were the most frequently examined cases and it constitutes 43.3% of the whole examined cases, while the class IV partially edentulous cases were the least in frequency and it constitutes 0.02% of the whole examined cases, in addition the results indicated that mandibular class I, class II and class IV were more common than their maxillary counterparts, whereas the maxillary class III partially edentulous cases were more found than the mandibular respective cases. Among

the removable partial edentulous arches without modification areas, mandibular class I cases (32.9%) were the most common cases while the mandibular class III cases were the least in frequency and constitute 3.1% of the examined cases. For the modification areas related to each class of Kennedy classification, the class I, class II, and class III partially edentulous cases for both maxillary and mandibular arches were showed the higher percentage in modification 1,while in class I cases the least frequent modification area is the class I mod.3,that constituted 2.02% in mandibular arches and 0.8% in maxillary arches, for class II and III cases the least frequent modification areas were maxillary class II and class III mod.5 that were constituted 0.4% and 0.8% respectively. For the distribution of the modification areas for partially edentulous cases, table (2, 3, and4), the results indicated that the posterior modification areas were more common in frequency in all of the examined cases for mandibular and maxillary arches, followed by anterior modification areas and the least frequent cases is the combination of anterior and posterior modification areas. The relationship between the age and gender, the distribution of removable partial edentulous cases are demonstrated in table (5). The results indicate a high differences between male and female patients, were the female showed the higher frequent examined cases in this study than the male patients. The results also indicated a high percentage of partial edentulous cases at age ranging from 46 to51 years for male patients (48%) and female patients (31%), on the other hand, the distribution of the removable partial edentulous cases were the least in frequency at age (25-30) years and at age (64-69) years for both male and female patients.

Discussion

The primary purpose in using a classification for removable partial edentulous cases is to simplify the description of potential combinations of teeth to ridges. In the present study, the Kennedy classification was preferred to fulfill this purpose (7). One of the principles advantages of the Kennedy classification is that it permits the immediate visualization of the partially edentulous arch, and enables a logical approach to the problems of design, and is therefore a logical method of classification (1, 10) and the most widely accepted classification of partially edentulous arches. The results of the present study indicated that the greater frequency of removable partial edentulous cases is the class I partially edentulous cases which are the most frequent cases, while the class IV partially edentulous cases were these least frequent cases. This is may be attributed to the less care to be applied to the posterior teeth make them more susceptible to dental caries and loss these teeth by extraction , while the patients applied more care to their anterior teeth and this will be reflected in our study in more frequent cases with the loss of molars than with the cases of loss of anterior teeth, also the results indicated higher percentage of mandibular class I and II cases than the maxillary respective cases, this is explained by higher rate of mandibular molar loss compared to maxillary examined cases ,while for class III partially edentulous cases the maxillary arches are more frequent than the mandibular arches. These finding are being in line with Keyf et al (2) findings. Class I made up to 43.3% of the study sample, the present study revealed an increased in the incidence of class II patients compared with the incidence of class III partially

edentulous arches, this rise in the frequencies of class II patients consistence with the trends of prevention of tooth loss, whereas the frequencies of class III was less than class I and class II due to the fixed prosthodontic approach. The incidence of class I partially edentulous cases showed a rather small rise in comparison to class II cases while class IV cases was the least seen at all. These finding being in agreement with Ueno et al (9) and Sadig et al (1). The incidence of posterior modification areas is high for both of maxilla and mandible arches in all of the examined cases except in mandibular class III cases ,the anterior modification areas is greater than the posterior modification areas. These finding could be explain on the basis of greater loss of the posterior teeth and due to low dental education among our society, most patients prefer to do extraction of posterior teeth rather than making a restorative treatment but they restore the anterior teeth for esthetic reason, this in addition the restoration of anterior teeth by fixed partial dentures make the incidence of class IV cases is the least compared to the other partial edentulous cases. These finding supported by Sagid et al (1), Curtis et al (3) and Arbabi et al (5). For age and gender, the results indicated a higher percentage of female patients than the male patients, that is logic since the female taking care themselves than the male patients, in addition, the age ranging between 30-57 years showed higher frequencies in partially edentulous female patients, while for male patients, the age ranging between 45-57 years showed the higher incidence of frequency of male patients and this may be attributed to greater increase in taking care of their teeth at that age.

Conclusion

From the result of the present study, we can conclude the following

1. The incidence of various classes of partial edentulism cases may not be a reflection of the pattern of teeth loss but also patients demand and affordability of alternative prosthetic treatments.
2. Kennedy class I are the most frequently examined cases while class IV are the least examined partially edentulous cases.
3. The mandibular arches are more partially edentulous than the maxillary arches.
4. The high frequency of posterior modification areas are examined to all partially edentulous arches than the anterior modification areas.
5. The results indicated a higher female patients seeking for prosthodontic treatment than the male patients.

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Table (1) Distribution and percentage of partially edentulous arches by Kennedy classification

Arch	CL.I Total	CL.I Without modification	CL.I Mod.1	CL.I Mod.2	CL.I Mod.3	CL.I Mod.4	CL.I Mod.5
Mandible	148	97	40	10	3	-	-
%	50.2	32.9	13.6	6.7	2.02	-	-
Maxilla	81	44	26	9	2	-	-
%	34.8	18.9	11.2	3.8	0.8	-	-
Arch	CL.II Total	CL.II Without modification	CL.II Mod.1	CL.II Mod.2	CL.II Mod.3	CL.II Mod.4	CL.II Mod.5
Mandible	109	42	41	25	1	-	-
%	36.9	14.2	13.9	8.5	0.3	-	-
Maxilla	94	28	31	23	9	2	1
%	40.3	12.0	13.3	9.8	3.9	0.8	0.4
Arch	CL.III Total	CL.III Without modification	CL.III Mod.1	CL.III Mod.2	CL.III Mod.3	CL.III Mod.4	CL.III Mod.5
Mandible	31	9	12	7	2	1	-
%	10.5	3.1	4.1	2.4	0.7	0.3	-
Maxilla	54	15	21	5	6	5	2
%	23.2	6.4	9.1	2.1	2.6	2.1	0.8
Arch	CL.IV Total						
Mandible	7						
%	3.0						
Maxilla	4						
%	1.7						

Table (2) Distribution and percentage of partially edentulous arches by Modification areas in CL.I Kennedy classification

Arch	Anterior Modification area	Posterior Modification	Modification area combination
Mandible	11(3.7)	29(9.8%)	11(3.7%)
Maxilla	13(5.6)	16(6.9%)	8(3.4%)

Table (3) Distribution and percentage of partially edentulous arches by Modification areas in CL.II Kennedy classification

Arch	Anterior Modification area	Posterior Modification	Modification area combination
Mandible	19(6.4%)	32(10.8%)	16(3.7%)
Maxilla	21(9.0%)	29(12.4%)	16(6.9%)

Table (4) Distribution and percentage of partially edentulous arches by Modification areas in CL.III Kennedy classification

Arch	Anterior Modification area	Posterior Modification	Modification area combination
Mandible	11(3.7%)	8(2.7%)	3(1.1%)
Maxilla	10(4.3%)	25(10.7%)	4(1.7%)

Table (5) Age and sex distribution and percentage of the sample population

Age (years)	Male	%	Female	%
25-30	4	2.6	14	6.8
31-45	17	11.0	51	25.0
46-51	75	48.0	64	31.0
52-57	38	24.0	49	24.0
58-63	15	9.6	17	8.3
64-69	7	4.5	11	5.3
Total	156	100	206	100