

A RETROSPECTIVE STUDY OF PARTIAL EDENTULISM AND ITS REHABILITATION AT A TERTIARY CARE CENTRE AT ISLAMABAD

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ABSTRACT

The aim of present study was to figure out the frequency of partial dentulism, its association with age and gender and different modes of rehabilitation.

The study was carried out in the Prosthodontic Department of Rawal Institute of Health Sciences Islamabad. A retrospective study comprised of 751 individuals, utilizing convenience sampling technique. Data was collected from patient record files from August 2015 to February 2017 to record age, gender, and Kennedy's class modified by Applegate's rules in both the arches followed by the treatment prescribed. The data was analyzed by SPSS version 17.0. Chi-square test was applied to evaluate significant findings. Out of the total 751 patients, 308(41.0%) were males and 443(59.0%) were females. Above 50 year age group was mainly affected by partial dentulism. Kennedy's class III was the most common pattern of partial dentulism in maxilla 285(37.9%) and in mandibular arch 231(30.7%). Kennedy's class IV had the lowest frequency i.e 22 (2.9%) in maxilla and 28(3.8%) in mandible. The maximally affected age groups with Kennedy class III and class IV condition were 20- <30 year and below 20 year respectively. Acrylic partial denture was the first choice of treatment for partial dentulism. Mostly females 374(49.70%) demanded acrylic removable prosthesis for managing their missing teeth.

Hence the current study concludes the base line data to depict the frequency of partial dentulism and frequently chosen treatment modality in context to our local population of Islamabad and highlights the oral health care system and rationale behind prosthodontics.

Key Words: Kennedy's classification, Applegate's rule, Prosthodontics, Acrylic partial denture.

INTRODUCTION

Tooth is a vital tissue of the oral cavity.¹ To the majority of people tooth loss is a matter of great concern, and their replacement by artificial substitutes is essential for normal life.² Oral health related quality of biological, psychological and social life is affected³. Loss of teeth adversely affects appearance, mastication

and speech efficiency.¹ Space created by loss of tooth or teeth is called edentulous space.³ If one or more teeth are missing in either maxillary or mandibular arch that is partial edentulism.³ The most common cause of tooth loss is periodontal disease followed by caries, traumatic dental injuries and cystic lesions especially in early childhood and adolescence.⁴

The edentulous space differs a lot in location and number. It also varies in respect to remaining natural dentition so that is why classification of partial edentulous space is very much necessary. The simplicity of this classification helps a lot in efficient communication between dental surgeons, dental students and technicians for effective planning and designing of partial denture. It is very useful in forecasting the problems that can be encountered in designing of partial denture.⁵

Various methods have been devised to classify partially edentulous space having their own advantages and disadvantages. Kennedy classification has most diverse acceptance because of strong evidence supporting the classification. Another valid reason of its wide applicability is that it has clear demarcation between tissue supported and tooth supported denture.⁵

Need determined by dental surgeon during routine dental checkup is treatment need. It does not depend on the fact that whether patient has the demand for

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Received for Publication: May 11, 2017
First Revised: July 18, 2017
Second Revised: December 7, 2017
Approved: December 8, 2017

the particular treatment determined by dental health professional. Like any other preventive or curative treatment demanded by patient, prosthodontics treatment is also reasonable demand.²

In modern era different treatment options are available worldwide for partial edentulous space like heat cure acrylic partial denture, fixed partial denture, and implant supported prosthesis. Partial prosthesis that is cemented or retained on natural dentition and patient cannot remove it from his oral cavity on his own is called fixed partial prosthesis. Similarly any partial prosthesis that replaces one or more teeth in any arch but is not firmly attached to abudment teeth and patient can remove it from oral cavity without consulting the dental specialist is removable prosthesis. The recent and most widely accepted treatment option for edentulous space is the use of dental implants that is alloplastic material inserted in bone that is retained and supported by bone and it does not require any support from abudment teeth. Removable/acrylic partial dentures are most widely used treatment modality because of its cost effectiveness.¹

The aim of our study was to find out the frequency of partial edentulous spaces based on Kennedy's classification and modes of rehabilitation provided to the patient to manage their missing teeth and to find their relationship with age and gender.

METHODOLOGY

The retrospective study design in which 751 dental records of the patients from August 2015 to February 2017 attending Prosthodontic Department at Rawal College of Dental Surgery, Rawal Institute of Health

Sciences Islamabad were selected. The sample size was taken utilizing convenience sampling technique. The inclusion criteria encompassed subjects from both genders, permanent dentition, partially dentulous arch (either maxillary/mandibular or both) with age above 15 years. Edentulous arches, patients who requested for obturators, mouth guard and palatal feeding plates for cleft lip and palate, physically or mentally handicapped and patients who have lost third molars were excluded from the study. The collected data was compiled on specialized performa which composed of demographic details, Applegate's modified form of Kennedy's classification encoded various types of partial dentulism in context to the arch and rehabilitation provided to encounter the given condition. The anonymity and confidentiality of the employed dental charts used for the study were maintained. Statistical package for social sciences version 18.0 was utilized to statistically analyze the data. Chi-square test was employed to determine the level of significance. The statistical significance was set at $p < 0.05$. Data is represented in the form of tables.

RESULTS

The sample comprised of total 751 dental records with 443 female (59.0%) and 308 (41.0%) male records. Regarding age evaluation of the results showed that the most affected age group was above 50 years which represented partial dentulism in both the arches. In correspondence to the arch, isolated maxillary 184(24.55%) and mandibular 220(29.27%) cases were observed while in 347(46.17%) various partially dentulous configurations were noted in both the arches which were highly significant findings. ($p=0.00$) (Table 1).

Further analysis of the results showed that Kennedy's class III without modification span, maxillary

TABLE 1: FREQUENCY AND PERCENTAGE OF ARCH WISE PARTIAL DENTULISM IN VARIOUS AGE GROUPS

		Age										Total	
		<20		20- <30		30- <40		40- <50		>50		n	%
		n	%	n	%	n	%	n	%	n	%		
Partial Dentulism	Maxilla	10	1.33	34	4.52	55	7.32	44	5.85	42	5.59	185	24.55
	Mandible	05	0.66	33	4.39	67	8.92	54	7.19	60	7.98	219	29.16
	Combination	02	0.26	28	3.72	101	13.44	88	11.71	128	17.04	347	46.20
	Total	17	2.19	95	12.64	223	31.00	186	24.76	230	30.62	751	100

TABLE 2: FREQUENCY OF VARIOUS PATTERNS OF MAXILLARY KENNEDY'S CLASSIFICATION IN DIFFERENT AGE GROUPS

		Age					Total
		>20	20-<30	30-<40	40-<50	>50	
Maxillary Kennedy's Classification	Kennedy's Class-1	8	15	23	52		98
	Kennedy's Class-2	1	7	36	32	58	137
	Kennedy's Class-3	10	41	102	74	57	284
	Kennedy's Class-4	3	7	4	5	3	3
	Total	22	70	165	163	118	538

TABLE 3: FREQUENCY OF VARIOUS PATTERNS OF MANDIBULAR KENNEDY'S CLASSIFICATION IN DIFFERENT AGE GROUP

		Age					Total
		>20	20-<30	30-<40	40-<50	>50	
Mandibular Kennedy's Classi- fication	Kennedy's Class-1	6	33	35	75		149
	Kennedy's Class-2	1	15	50	34	63	163
	Kennedy's Class-3	4	35	86	60	46	231
	Kennedy's Class-4	1	5	4	7	7	29
	Total	12	88	175	181	116	572

TABLE 4: FREQUENCY AND PERCENTAGE OF PROVIDED TREATMENT MODALITIES WITH RESPECT TO GENDER

Rehabilitation of Partially Edentulous Patients		Gender					
		Male		Female		Total	
		n	%	n	%	n	%
	RPD	243	32.35	374	49.66	617	82.03
	FPD	61	8.12	66	8.78	127	17.03
	Cast Partial Denture	4	0.53	3	0.39	7	0.93
	Total	308	41.01	443	58.98	751	100

284(37.9%) and mandibular 231(30.7%), was most frequently tabulated pattern of partial dentulism while Kennedy's class IV being the rare finding of the present study in context to both the arches with 21(2.9%) in maxilla and 28(3.8%) in mandible. The frame of reference in maxilla and mandible, the utmost affected age group from Kennedy's class III was 20-<30 and below 20 years respectively. The results were highly significant. (p=0.00). (Table 2 & 3)

On the subject of prosthetic rehabilitation, the results inspection highlighted that the acrylic partial denture was the first line of treatment 616(82.03%) provided to 373 female(49.70%) and 243 male(32.33%) patients followed by fixed partial dentures 128(17.03%) while cast partial denture, that is, 6(0.93%) was rarely opted treatment for partial dentulism which were statistically significant findings. (p=0.01) (Table 4)."

DISCUSSION

Removable partial denture is a widely accepted, affordable and reversible treatment method for partially edentulous patients across all the age groups. There are many factors affecting the prevalence of edentulism, such as education, occupation, personal economic situation, attitude toward dental care, and life style. Preventive strategies to decrease the burden of tooth loss are of great importance. It is highly suggested that population based studies to be conducted to investigate the epidemiology and risk factors of edentulism and tooth loss in Pakistan. It is also important to evaluate the effect of tooth loss on the quality of life.

Dr Arivan Mahmood Hama et al¹² conducted a study that revealed the frequency of mandibular partial edentulism (64.8%) was higher than maxilla (60.5%)

among their study population. Kennedy's class III partial edentulism for both arches found to be most common class of partial edentulism. The results of this study was quite similar to our study that also showed that prevalence of partial edentulism is more common in mandibular arch than maxillary arch and Kennedy class III is most common. Acrylic RPD was found in 57.77% of the patients, Fixed partial dentures was found in 35.55%, Cast RPD was found in 4.44% and dental implant was found in 2.22%.

Kennedy's Class III was the most prevalent among all the patients in a study carried out by Seenivasan Madhankumar et al¹⁰ (55%). It was also found that Kennedy's Class III was founded more in the age group of 30-<40 years with 54.4% in the maxillary arch and 47.2% in the mandibular arch. The results of this study coincides with our study but it showed slight differences as Kennedy's class III without modification span, maxillary 284(37.9%) and mandibular 231(30.7%), was most frequently tabulated pattern of partial dentulism in our study. Furthermore, the frame of reference in maxilla and mandible, the utmost affected age group from Kennedy's class III was 21-30 years.

In another study conducted by Muhammad Tauqeer Ehsan et al¹⁴ it was found that most frequent pattern in maxillary arch was class III while class IV was least frequently observed in that research. Class I and Class II dental arch frequencies are directly proportional to the age and Class III and class IV are inversely proportional to the age in both mandibular and maxillary arches. Another study carried out by Javid Yunus Patel et al⁵ observed the frequency of edentulous partial spaces in adult patients having age above 20 years. The estimated sample size of their study was 100 participants. Both

maxillary and mandibular arches were examined to know the type of Kennedy's classification and frequency partial edentulous spaces. 73% maxillary arches were edentulous and 77% mandibular arches were edentulous, thus indicating a higher frequency of edentulism in the mandibular arch than in the maxillary arch. Kennedy's Class III was found to be the most common pattern of partial edentulism in both maxilla 40% and mandible 43% in this study. Kennedy's Class IV was the least common pattern of edentulism.

A study conducted by Vadavadagi SV et al¹⁰ had a population comprised of 384 individuals between the age group of 18 and 35 years with 53.12% males and 46.88% females. Prevalence of partial edentulism was found to be 75%. Periodontal disease was the most common cause of loss of teeth in the above said study. Social status was not statistically significantly associated with frequency of partial edentulism. 45.8% had a fair oral hygiene status. Kennedy's class III was the most frequent type of partial edentulism in upper and lower jaw.

Pournasrollah et al¹³ study had results that showed some differences from our study. It showed that In all treated patients, class I partial prosthesis was the most frequent class (40.6%) and class II mod IV were the least ones (0.4%). Pearson correlation test displayed that there is no significant association between the classification of partial prosthesis and the age, gender, and educational level variables (P>0.05).

In correspondence to our research outcomes, acrylic partial dentures are the most frequently prescribed prosthesis followed by fixed partial dentures while cast partial dentures are rarely opted treatment modality regarding partial dentulism. This is similar to a research work by Charyeva OO et al⁹ that most frequent type of partial edentulism in this patient sample was Kennedy type III, in both the maxilla (50.0%) and the mandible (41.1%). Partial edentulism was most frequently managed by fixed partial dentures (FPDs) in both jaws. Kennedy IV was the least prevalent (7.1% in the maxilla, 5.6% in the mandible) and in most cases treated with removable partial dentures (RPDs) in both jaws.

CONCLUSION

The current study provides an apparent outlook form of partial dentulism in relation to Prosthodontic Department at Rawal College of Dental Surgery, Rawal Institute of Health Sciences, Islamabad. To sum up, Kennedy's class III in both the arches with age group of 30-<40 of female gender dominates while acrylic partial denture is the preferable treatment choice. It

also highlights the status of oral health care system as well as the rationale behind the prosthodontics.

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