Original Article

PATTERNS OF PARTIAL EDENTULISM AMONG PATIENTS REPORTING TO DEPARTMENT OF PROSTHODONTICS, KHYBER COLLEGE OF DENTISRTY, PESHAWAR

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ABSTRACT

***Objective**: The aim of this study was to determine the frequency of occurrence of various patterns of partial edentulism in patients reporting to the Department of Prosthodontics, Khyber College of Dentistry.*

***Materials and Methods**: One hundred and fifteen patients were recruited in this study from 23rd February 2013 to 7th May 2013. Kennedy's Classification was utilized after applying Applegate's rules to record the patterns of partial edentulism on specially designed proforma.*

***Results**: Sixty eight males and 47 females participated in this study. The age ranged from 15 to 80 years. Partial edentulism in maxillary arch was found in 20.8% patients, while 26.9% patients had partial edentulism in mandibular arch. The remaining 52.17% of samples had missing teeth in both arches. Kennedy's class I was found to be most common in mandible while Kennedy's class IV in maxilla.*

***Conclusion**: A higher frequency of partial edentulism among younger age groups in this study was alarming and is suggestive of need to create awareness among health care system for timely prevention of diseases causing tooth loss.*

***Key Words**: Partial Edentulism, Missing, Dental arch, Kennedy's class, Applegate's rules*

INTRODUCTION

Teeth are the key entities of somatognathic system for mastication, phonation and aesthetics[1,2]. Many options are available for replacing missing teeth like removable partial dentures, fixed partial dentures and implant-supported prosthesis[3]. The design of prosthetic replacement depends upon the patterns of partial edentulism. In absence of a classification system, the number of possible combinations of remaining teeth, from the absence of only one tooth in one arch to the loss of all but one tooth in both arches is very difficult to comprehend[4]. The of aim of classification of partially edentulous arches is to facilitate the communication of prosthesis designs and treatment options among professional colleagues, students and technicians. The classification is also helpful in recording history of patients[5].

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Thousands of combinations of teeth and edentulous spaces in opposing arches are possible. Many classification systems had been proposed by different Prosthodontists[6]. Each classification system is associated with its own merits and demerits. Kennedy system of classification is most widely used[7]. Recently a classification system for partially edentulous arches had been developed by American College of Prosthodontists (ACP), which is based on diagnostics findings[8].

There are many instances, in which Kennedy's classification is difficult to apply. For such special situations Applegate's rules are applied[9].

The objective of this study was to determine the frequency of occurrence of various patterns of partial edentulism reporting to Khyber College of Dentistry.

MATERIALS AND METHODS

This cross-sectional study was undertaken in the Department of Prosthodontics at Khyber College of

Dentistry, Peshawar from 23rd February 2013 to 7th May 2013. Convenience sampling technique was utilized for sample collection of 115 patients. The inclusion criteria consisted of patients from both genders, above the age of 15 years, having partially edentulous areas in either or both jaws, having any educational levels, socio-economic status and cause of tooth loss (caries, periodontal disease, trauma and surgical lesions). Completely edentulous patients, those with only missing maxillary and mandibular third molars and patients undergoing extractions before radiotherapy were excluded from the study.

After approval from institutional ethical review committee, the data for this study was compiled from the patients fulfilling the inclusion criteria visiting the Department of Prosthodontics, Khyber College of Dentistry, Peshawar. Name, age, gender, socio-economic status, educational level, cause of tooth loss, periodontal health and Kennedy's class along with modification spaces were recorded. Informed consent was taken from all patients on a specifically designed proforma. History was taken, which was followed by detailed clinical examination for partial edentulism. Kennedy's classification system modified by Applegate was used in this study.

The systemic diseases like diabetes, steroid therapy and osteoporosis though responsible for tooth loss but they constitute only 1% of the collected sample so excluded from the study for controlling confounding variables. The collected data was analyzed by SPSS version 17.0.

RESULTS

A total of 115 patients with partial edentulism in either one or both arches were included in this study. Forty seven patients (40.9%) were females and 68 were males (59.1%). The male to female ratio was 1.4:1. Their ages ranged from 15 to 80 years with a mean age of 43.61±15.41 years. The most common age group was 50 to 80 years (34.5%) The details of age distribution are given in Table 1.

Combined maxillary and mandibular edentulous was found to be the highest (n=60, 52.17%) followed by isolated mandibular (n=31, 26.96%) and maxillary (n=24, 20.87%).

Class IV (54.2%) and Class III (25%) were more common in maxillary arch in isolated edentulism, while Class I and Class III Modification I were most com-

Table 1: Age Distribution

Age(years)	N	%
15-20	11	9.5
21-30	17	14.8
31-40	24	20.6
41-50	24	20.6
50-80	40	34.5
Total	**115**	**100**

TABLE 2: DISTRIBUTION OF PARTIAL EDENTULISM IN GROUP 1,2 AND 3.

Type of partial edentulism	Maxillary arch only		Mandibular arch only		Both arches	
	n	%	n	%	n	%
Class I	0	0.00	6	19.35	11	18.33
Class II	0	0.00	2	6.45	3	5.00
Class III	6	25.00	0	0.00	5	8.33
Class IV	13	54.20	1	3.23	4	6.67
Class I modification I	1	4.16	1	3.23	5	8.33
Class I modification 2	1	4.16	1	3.23	1	1.67
Class I modification 3	0	0.00	0	0.00	2	3.33
Class II modification 1	0	0.00	4	12.90	7	11.66
Class II modification 2	0	0.00	0	0.00	4	6.67
Class II modification 3	0	0.00	0	0.00	1	1.67
Class II modification 4	0	0.00	1	3.23	1	1.67
Class III modification 1	1	4.16	6	19.35	12	20
Class III modification 2	1	4.16	1	3.23	3	5.00
Class III modification 3	1	4.16	8	25.8	1	1.67
Total	**24**	**100**	**31**	**100**	**60**	**100**

mon in mandibular arch (19.35%) in isolated edentulism. In combination, Class I was the most common pattern observed (18.33%). The details are given in Table 2.

Frequency of partial edentulism was higher in mandibular arch being 56.4% as compared to 43.6% in maxillary arch.

On the basis of the results, patients were divided into three groups, according to arch partial edentulism, for convenience. Partial edentulism among these groups is shown in the table 2. Kennedy's class I was found to be most common in mandible while Kennedy's class IV in maxilla as shown in Table 3.

There were 12 different combinations of various Kennedy's classes in maxillary and mandibular arches, of patients in group 3. Different causes of tooth loss are shown in fig 1, caries being the most common cause. The numbers of cases of various combinations in three groups are shown in Fig 2.

Caries are found to be the most common cause of tooth loss in patients with edentulism (62%) followed by periodontal diseases (19%). The distribution is given in Fig. I.

The educational level of patients with partial edentulism was such that 47.82% (n=55) were illiterate, followed by 19.13% with secondary level education. The details are given in Fig. 2.

The socioeconomic conditions of these patients were such that majority were poor (n=66, 57.39%), followed by medium SES (n=43, 37.39%). The least common category was high SES level, comprising 5.22% (n=6).

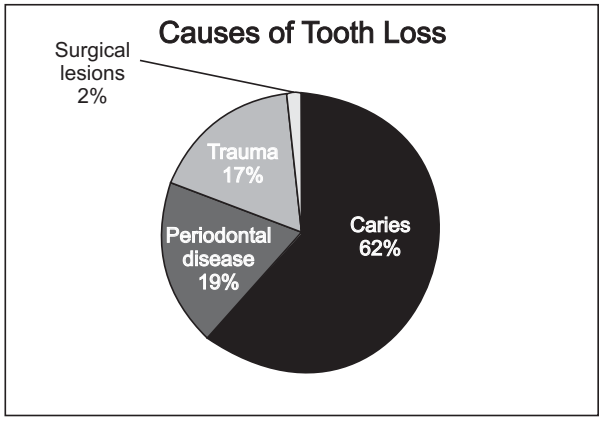

Fig 1:

DISCUSSION

The results of this study showed that the frequency of partial edentulism is higher in mandible than maxilla in our population. This is in concordance with the study carried out by Curtis et al[10], at University of California, school of dentistry. A minor disparity between the two studies is the age factor, as the age group of Curtis study was averaging 55 years whereas in our study average age of patient was 43.6 years. Kennedy's class I was found to be most common pattern of partial edentulism in mandible and Kennedy's class IV in maxilla in our study, whereas Curtis[10] found Kennedy's class III to be predominant in maxilla.

Maqsood[11] in study of partial edentulism based on Kennedy's classification carried out on 395 patients in Isra Dental College OPD in Hyderabad, showed that Kennedy's class IV was most prevalent in both arches. This study is in agreement with our study in the maxillary arch. In another study, Stratton and Wiebelt[2] concluded that Kennedy's class I was common in mandible while Kennedy's class III was preponderant in maxilla. This study report similar results in mandibular arch with our study.

In contrast to our study, Lana A. Shinawi[12] investigated the frequency of different pattern of partial edentulism in 200 patients in King Abdul-Aziz University, showed that Kenney's class III was most predominant.

Al-Dawairi[13] in a study investigated the frequency of different pattern of partial edentulism of 200 patients in Jordan. In this study Kennedy's class III pattern of partial edentulism was most commonly encountered in both maxilla (47%) and mandible (45%). Sadig and Idowu[14] carried out a study in Saudi population on 422 partially dentate patients. They concluded that Kennedy's class III in both arches with a com-

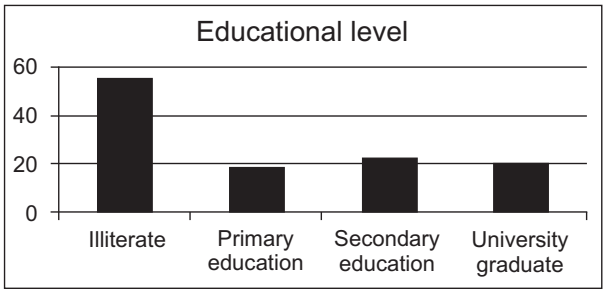

Fig 2:

mon frequency of 20.3%. The results of these studies are totally different from our present study. The reason for this difference maybe a different sample size, sampling technique and socio-demographic variations.

A study carried by Hassan[4] at Armed Forces Institute of Dentistry, Pakistan on 1000 partially edentulous patients showed that Kennedy's class III was most common in maxilla (60.9%) and mandible (46.8%) .[4] This study also shows contrast results with present study, suggesting the need for a large sample size to evaluate the pattern of edentulism in a better manner.

The predominance of Kennedy's class IV (68.33%) in maxillary arch of our study may indicate high aesthetic concern and extensive trauma rate of patients whereas high frequency of class I in mandibular arch (42.68%) may represent high caries rate in mandibular posterior teeth. This fact is also reflected in the present study.

The major disagreement of our study with other studies may due to our small sample size of only 115 patients; therefore it cannot be considered representative of Peshawar population. More studies are required to generalized database of partial edentulism patterns, which will help us in identification of causes such tooth loss and their prevention.

CONCLUSION

This study was carried out in a limited population of Peshawar at Khyber College of Dentistry in patients of poor families. The higher frequency of Kennedy's class I in mandibular arch is suggestive of a greater need to create awareness in patients about oral hygiene and early restorative management of carious lesions. The higher frequency of class IV in maxilla requires emphasis on safety measures for trauma prevention and advances in aesthetic dentistry.

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