Original Article

Pattern of Tooth Loss in Patients with Partial Edentulism

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ABSTRACT

Objective: To determine the prevalence and pattern of partial edentulism among dental patients attending the Dental OPD, Sharif Medical & Dental College, Lahore.

Methodology: It was a cross-sectional epidemiological survey conducted at Dental OPD, Sharif Medical & Dental College (SMDC), Lahore. The study was approved by the ethical committee of the hospital. Two hundred and forty eight patients were enrolled in the study by consecutive sampling technique. Data was collected by intraoral examination of the patients for missing teeth. The frequencies of missing teeth were measured by gender and location in the arch. The causes of tooth loss were documented according to the history given by the patients. The data was analyzed using the SPSS version 22.

Results: The results of this study reveal that the incidence of partial edentulism in the maxillary and mandibular arches was 54% in Kennedy's class III, 25.9% in class II, 11.2% in class I and 8.9% in class IV. Dental caries was the most common reason for tooth loss in class I, II and III whereas in class IV, trauma was the most common cause.

Conclusion: Edentulism is more prevalent in mandibular arches. Kennedy's class III dental arch is the most common pattern both in the maxillary and mandibular arches. Dental caries is the most common reason of tooth loss.

Keywords: *Partial edentulism. Kennedy's class. Dental caries.*

INTRODUCTION

Edentulous state means the tooth loss which is a gap in the dental arch normally occupied by one tooth or more. Edentulism could be partial or complete. A person may lack a few teeth (partially edentulous) or all the teeth in one or both maxillary and mandibular jaws (completely edentulous) for various reasons.[1] The tooth loss or edentulism leads to inability to chew and improper food digestion. It has serious social, physiological, psychological and emotional concerns impacting the quality of life and self-esteem.[2]

The prevalence of edentulism has decreased in many countries in last decades due to improvement in the oral health measures of the population.[3-6] The recent trends in clinical dentistry favours preservation of natural dentition with a consequent decrease in edentulous patients.[7-9] The partial edentulism has been observed in all ages. The main causes of tooth loss are dental caries, periodontal disease and trauma.[1]

Many classifications have been proposed and used to identify the possible combinations of available teeth to ridges for partially edentulous arches. The Kennedy's classification is the most widely accepted classification for partially edentulous arches. The essential features of Kennedy's classification are instant visualization, type of the support for prosthesis and evaluation of removable partial denture design features.[10,11]

There are several problems associated with partial edentulism which may lead to clinically challenging situations and compromised conditions. The complications observed in partial edentulism could be the drifting and tilting of adjacent teeth, supra-eruption of opposing teeth, speech difficulties, compromised facial appearance and temporomandibular joint disorders.[3,4,9] Additionally, the damage and continuing degradation of the alveolar bone, the adjacent teeth and the supporting structures will affect the effort to achieve a suitable restoration in a partially edentulous patient.[12] The dietary options are limited in the patients with partial edentulism which is associated with health issues like weight loss. It also leads to lack of confidence, psychological issues and negatively affects the quality of the life of an individual.[3]

The incidence of the various Kennedy's classes of removable partial dentures in a population should be revised regularly.[9] It is essential to document the prevalence and pattern of partial edentulism to find the prosthodontics requirements of the study population. It will also be helpful to provide guidelines for educational planning for the upcoming practitioners of the community. The evidence developed from such type of study will facilitate the community dentistry workers for the designing of the preventive measures appropriate for that particular community.[9,12,13]

METHODOLOGY

It was a cross-sectional epidemiological survey carried out from January to March 2018 in the dental outpatient department of SMDC, Lahore. The study was approved by the ethical committee of the hospital. Two hundred

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and forty eight patients were enrolled in the study by consecutive sampling technique. Data was collected by intraoral examination of the patients for missing teeth. The frequencies of missing teeth were measured by gender and location in the arch. The causes of tooth loss were documented according to the history given by the patients. All adult patients with permanent dentition and partially edentulous were included. Patients with wisdom tooth loss, teeth removed for orthodontic treatment and impacted 3rd molar were excluded from the study.

STATISTICAL ANALYSIS

The data analysis was done using Statistical Package for Social Sciences (SPSS) version 22. Frequencies and percentages were calculated for the study variables. A p-value of 0.05 was considered significant.

RESULTS

The age range of study population was 14-66 years. One hundred thirty two (53.2%) patients were females and 116(46.8%) were males. Patients with partial edentulism in both maxillary and mandibular arches were 100(100x2=200). The rest of the 148 patients had partial edentulism in only one arch. So, the total number of edentulous arches was 348. Partial edentulism was more common in the mandibular arch as compared to maxillary arch. Out of 148 cases, 42 patients were with only one missing tooth and the commonly missing tooth was the mandibular 1st molar. Kennedy's class III was the most common (54%) pattern in both the maxillary and mandibular arches followed by class 11(25.9%). These results are shown in table 1.

According to the patient's history, the most common cause of tooth loss was dental caries (67.3%). The second most common cause was the periodontal disease (17.3%). Both periodontal disease & dental caries was reported in 6.9% and trauma in 8.5% of cases. Dental caries was the most common cause in Kennedy's class I, II and III whereas in class IV, trauma was the most common cause.

DISCUSSION

Edentulism is a common manifestation of patients attending the dental departments. It has a major impact on health and quality of life. The Kennedy classification for removable partial dentures (RPDs) is used in the current study for its simplicity of the interpretation and it is widely accepted.[11] In the present study, the prevalence and pattern of partial edentulism was seen among dental patients attending the dental OPD. It was revealed that the partial edentulism in the

Table 1: Distribution of patients according to Kennedy's classification

Kennedy's class	Maxillary arches	Mandibular arches	Total arches (Percentage)
Class I	16	23	39(11.2%)
Class II	38	52	90(25.9%)
Class III	79	109	188(54%)
Class IV	21	10	31(8.9%)
Total arches	154	194	348 (100%)

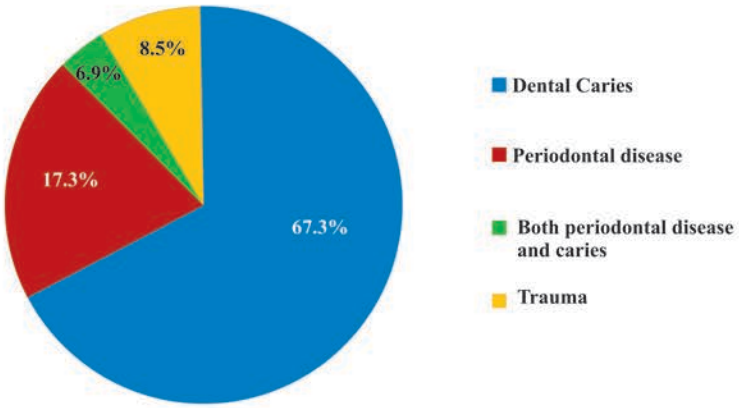

Figure 1: Causes of tooth loss in patients

mandibular arch was higher than the partial maxillary edentulism. Similar results has also been reported in other studies.[12,14]

The study showed that the most common reason of edentulism was the dental caries. The second most common reason was periodontal disease. Bruce also reported the dental caries as the most common cause of edentulism (83%) and periodontal disease in 17% of cases.[1] According to a study conducted in Nigeria, the periodontal disease and dental caries accounted for 46.5% and 43.9% cases of tooth loss respectively. Other causes of tooth loss were trauma (4.5%), tooth impaction (2.5%) and orthodontic problem (1.6%).[15]

The Kennedy's class III pattern was found to be the most common pattern of partial edentulism in the maxillary and mandibular arches (54%). The Class II was the second predominant pattern and was observed in 90(25.9%) patients. The class 1 pattern was seen in 39(11.2%) patients. The class IV pattern was reported in 31(8.9 %) cases. It was observed that Kennedy's class I, ll and lll patterns were more common in mandibular arches and class IV was common in maxillary arches. The most common cause of tooth loss in class IV was trauma. Out of 21 cases of trauma, 18 reported trauma in the maxillary anterior teeth. The main cause of trauma is the due to increase in road accidents, sporting activities and clashes with others of the same age group. The traffic accidents are the most common and physical fights, sporting injuries are the other causes of anterior dental trauma.[16]

Comparable results were found in a study carried out in India. The study sample was 1420 partially dentate arches. Kennedy's class III was the most common pattern (62%). Class I, II and III were present in 18%, 11% and 9% cases respectively.[11] Another study was conducted at Lahore Medical and Dental College in which 367 study participants were included. Kennedy's class III was reported in 44.4% and 49% of the maxillary and mandibular arches.[17] Our study results are also in accordance to the study of Madhankumar et al. He reported class III in 54.4% of the maxillary arches and 47.2% of the mandibular arches.[3] According to a study done in San Francisco, Kennedy's class III was only common in the maxillary arches, whereas in the mandibular arches, Kennedy's class I was the most dominant pattern.[12] In contrast, Pun et al. studied the patterns of tooth loss in patients receiving removable partial dentures in Eastern Wisconsin. According to his study, Kennedy class I was the most common removable partial denture (38.4%).[18]

The results obtained from present study on the pattern and etiology of tooth loss are very important to provide the information to dental health professionals, to address the multiple factors implicated in tooth loss. It is also helpful to educate and motivate patients about importance of saving tooth. At the national level, such data may also propose that preventive strategies intended at minimizing the tooth loss required to be reinforced.

CONCLUSION

Edentulism is more prevalent in mandibular arches. Kennedy's class III dental arch is the most common pattern both in the maxillary and mandibular arches. Dental caries is the most common reason of tooth loss.

LIMITATIONS OF STUDY

- The literacy level and the socioeconomic status were not evaluated to identify the cause of tooth loss.
- Radiographs were not used to identify congenitally missing and impacted teeth.
- The small sample size limits this study, additional studies with larger sample size are recommended.

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