

Full Length Research Paper

Types of removable prostheses requested by patients who were presented to the University of Benin Teaching Hospital Dental Clinic

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To determine the most frequent type of removable prostheses requested by patients who presented to the University of Benin Teaching Hospital outpatient clinic a descriptive retrospective study was carried out for all patients attending the Prosthodontic out patient clinic, who requested for removable prostheses from January 2004 - October 2008. The source of data was the clinic's log book and patients' case notes. Exclusion criteria are; request for obturators, mouth guard and palatal feeding plates for cleft lip and palate patients. Data of interest were: sex, age, edentulous space to be restored and reason for restoration. Data was analyzed using statistical package for social sciences version 13.0 and presented as a simple frequency table. A total of 351 cases were seen during the study period. This was made up of 188 (53.6%) males and 163 (46.4%) females. The age ranges were < 20 years (1.4%), 21 - 40 years (68.9%), 41 - 60years (19.9%) and 61 - 80years (9.8%). Edentulous spaces restored in these patients were Kennedy's class III (57.3%), Kennedy's class IV (26.2%), Kennedy's class I and II (0.9%), Kennedy's class III with modifications (5.7%), Kennedy's class II with modifications (1.4%), Kennedy's class I with modifications (1.7%) and complete dentures (6.0%). The main reason for seeking replacement was aesthetics (89.2%). The most common removable prostheses requested by patients who attend the University of Benin outpatient clinic was Kennedy's class III, with aesthetics being the main reason for restoration of edentulous space.

Key words: Edentulous, Kennedy, aesthetics.

INTRODUCTION

An edentulous space is a gap in the dental arch normally occupied by one tooth or more. It could be partial or complete. Among the causes of tooth loss are caries, periodontal diseases, trauma, orthodontic treatment, tooth impaction, hypoplasia, supernumerary teeth, attrition, supra-eruptions, neoplastic and cystic lesions (Okosioe, 1977; Odusanya, 1987; Kaimenyi et al., 1988). A positive relationship between tooth loss and age has been documented (Agagnon-Varelzides et al., 1986; Loe,

1987; Carr et al., 2005). The correlation between the pattern of tooth loss and socio-economic status has also been established (Esan et al., 2004; Hunter and Arbona, 1995). Literature review revealed that tooth loss differs by arch (Carr et al., 2005; Sadig and Idowu, 2002), with tooth loss being more common in maxilla than in the mandible, and posterior tooth loss usually preceding anterior tooth loss (Carr et al., 2005). Frequently, the last remaining teeth in the mouth are the mandibular anterior teeth especially the mandibular canines and it is common to find an edentulous maxilla opposing mandibular anterior teeth (Carr et al., 2005).

Various ways of restoring missing teeth include fixed

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partial prostheses, removable partial or complete prostheses and dental implants. A fixed partial prosthesis is a partial denture that is luted or otherwise securely retained to natural tooth, tooth roots, and/or dental implants abutment that furnish the primary support for the prostheses (Nallaswamy, 2007). A removable partial or complete denture replaces some or all teeth and contiguous structures for edentulous or partially edentulous patients by artificial substitutes that are removable from the mouth (Nallaswamy, 2007). The last restorative option, the dental implant, is a prosthetic device of alloplastic material implanted in the oral tissues beneath the mucosa and/or periosteal layer and on/or within the bone to provide retention and support for a fixed or removable prostheses (Nallaswamy, 2007). The choice of use of any of these prostheses will depend upon meeting the objective of prosthodontic treatment which includes: elimination of oral disease to the greatest extent possible, preservation of the health and relationship of the teeth, oral and perioral structures, restoration of oral function that are comfortable, aesthetically pleasing (Carr et al., 2005; Krol et al., 1990; Ohkubo et al., 1997), and do not interfere with patients speech (Carr et al., 2005).

During the past few decades, reports have shown a decline in the prevalence of tooth loss in developed countries while the reverse is the case in developing countries (Okosioe, 1977; Odusanya, 1987; Kaimenyi et al., 1988). There still remains a significant variation in tooth loss distribution (Sadig and Idowu 2002). It will be helpful to know the most common distribution of tooth loss to assist in the management of partially edentulous patients. Several classification of partial edentulism has been proposed. The most familiar classifications are those originally proposed by Kennedy, (Carr et al., 2005; Skinner, 1959) Cummer (Carr et al., 2005), Bailyn (Carr et al., 2005), Beckett (Carr et al., 2005), Swenson (Carr et al., 2005), Avent (Carr et al., 2005) etc. An attempt should be made to combine classifications, so that, a universal classification can be adopted. A recent classification has been proposed for partial edentulism that is based on diagnostic criteria. The proposed system of classification is to facilitate communication and treatment decision based on treatment complexity.

This is determined from four broad diagnostic categories; location and extent of edentulous space, occlusal characteristics and requirement, condition of the abutment teeth and residual ridge characteristics (Carr et al., 2005). This classification is also similar to the numerical system proposed by Arbabi et al. (2007). The advantage of these classification systems over the other systems has yet to be demonstrated (Carr et al., 2005). Kennedy's classification is probably the most common in use today. Kennedy classified partial edentulism into four basic groups (Skinner, 1959; McGarry et al., 2002).

Class I: Bilateral edentulous areas located posterior to the natural teeth (Nallaswamy, 2007).

Class II: Unilateral edentulous areas located posterior the natural teeth (Nallaswamy, 2007).

Class III: Unilateral edentulous area located both anterior and posterior to it (Nallaswamy, 2007).

Class IV: A single bilateral (crossing the midline) edentulous area located anterior to the remaining natural teeth (Nallaswamy, 2007).

Little is known of the most common removable prostheses requested by patients in Benin City metropolis. Most of the available literature quotes Caucasian values, which reports that the most common removable prostheses is Kennedy class I and II (Enoki et al., 2007; Curtis et al., 1992). The aim of this study is to identify the most frequently restored edentulous space amongst patients who visited the outpatient Prosthodontics clinic of the University of Benin Teaching Hospital during the study period.

MATERIALS AND METHODS

This was a descriptive retrospective study from January 2004 - October 2008. All patients attending the Prosthodontics outpatient clinic, of the University of Benin Teaching Hospital who requested for removable prostheses during this period, were identified from the clinic's log book and the case notes subsequently retrieved. The Prosthodontic clinic is a unit under the Restorative department of the University of Benin Teaching Hospital, a tertiary health institution located in the South- South region of Nigeria. It has a patient turnover of about 5 patients daily.

The inclusion criteria were; voluntary request for restoration of edentulous space by patient, edentulous spaces that was to be restored inclusive of tooth that was yet to be extracted but will make up part of the restored edentulous space. Exclusion criteria: request for obturators, mouth guard and palatal feeding plates for cleft lip and palate patients. Patients were examined by final year dental students or house officers and diagnosis reconfirmed by two senior registrars in the department. The data collected included patients demographics: age range (< 20 - 80 years), sex (188 males and 163 females), number of subjects, reasons for replacement and type of the edentulous area (Kennedy's classification) restored. Data was collected and analyzed using SPSS 13.0 Chi-square test was used. The level of statistical significance was at $p < 0.05$. Data was presented as a simple frequency table.

RESULTS

The analyses of the results showed that 351 patients received dentures during the study period of which 188 (53.6%) were males and 163 (46.4%) were females. The age of the patients ranged from less than 20 (1.4%), 21 - 40 years (68.9%), 41 - 60 years (19.9%) and 61 - 80 years (9.8%) (Table 1). The most commonly restored edentulous area was Kennedy's class III (57.3%) followed by Kennedy's class IV (26.2%) while Kennedy's classes I and II were both (0.9%). However, the modifications were as follows, class I with modification 1.7%,

Table 1. Age distribution.

Age (Years)	Frequency	Gender		Percentage
		Males	Females	
20 and less	5	5	0	1.4
21 - 40	242	148	104	68.9
41 - 60	70	32	38	19.9
61 - 80	34	13	21	9.8
Total	351	188	163	100

Table 2. Restored edentulous spaces and their frequency.

Edentulous space	Modification	Frequency	Percentage
Class I	0	3	0.9
	1	6	1.7
Class II	0	3	0.9
	1	5	1.4
Class III	0	201	57.3
	1	20	5.7
Class IV	0	92	26.2
Complete edentulism	0	21	6.0
Total		351	100

class II with modification 1.4%, class III with modification 5.7% and complete dentures 6.0%, as shown in Table 2. The most frequent edentulous area in both sexes was Kennedy's class III (109 males and 92 females). Of the patients with complete edentulism (21), 72.2% ranged between ages 41 and 80. The most common reason for replacement was aesthetics 89.2% (313).

DISCUSSION

The choice to restore an edentulous space is mainly for aesthetic and restoration of function. Kennedy's class III (57.3%) and Kennedy's class IV (26.2%) were the most frequently restored edentulous areas in our environment; this finding is in line with studies done on 200 Jordanians (AL-Dwairi, 2006) and on 650 Saudi patients (Sadiq and Idowu, 2002). This, however is in contrast to other studies in which the most frequent edentulous areas were class I and II (Enoki et al., 2007; Curtis et al., 1992; Keyf, 2001). A study done on 1553 Turkish patients from 1974 - 1977 found that the commonest classes were class I (36%) and class III (30%) while another study done in 2000 revealed also that class I and II were still the most common (Keyf, 2001). Other studies done in America (Curtis et al., 1992) and Japan (Enoki et al., 2007), have also supported these results. However, class IV was not seen at all in the Turkish studies and was the least common among the Saudis. This is in contrast to our

study where class IV was the second most common edentulous space restored.

Kennedy class III and IV were the most commonly restored edentulous space amongst all the age groups in our study, this was not supported by other researches. The Saudi (Sadiq and Idowu, 2002), work showed that class III and class IV dentures were mostly requested by the younger age group (< 50 years), while the older age group (> 50 years) requested for predominantly class I and II partial dentures. The pattern of tooth loss from this study is in disparity with the pattern seen in other studies. Most of the saddle areas were anterior bounded saddle, which is in contrast to the findings of other workers such as Sanya et al. (2004); Matthew et al. (2001) whose work has reflected that posterior tooth loss was more common than anterior. Sanya et al. (2004) in his work in Kenya found that molars were the most common tooth lost as a result of caries 52.6%. Although, Matthew agrees in his work about the tooth type, he however disagrees as to the most common etiology of tooth lost. In his report, periodontal disease had the highest incidence of 61.8%, while dental caries was 24.8% and other causes 13.2% (Matthew et al., 2001).

In this environment the most common reason for replacement is for aesthetics (89.2%). This could also account for the fact that most of the patients who presented in dental clinic were in the age range of 20 - 40 years and the predominant saddle area was Kennedy's class III. Since, aesthetics is the main reason for seeking restoration in this environment, patients with saddle areas not involving the anterior segment of the dental arch may not present in the dental clinic for treatment. This may either be for reasons of finance or lack of proper knowledge of the need to replace all edentulous spaces. This supposition is in line with other studies done in Nigeria in which the prevalence pattern and rate of dental disease is related to the social demographic factor (Brekhus, 1929; MacGregor, 1972). Esan et al. (2004) in their work showed a significant relationship between edentulism, social demographic factors and demand for dentures (Esan et al., 2004).

This study also shows that only 21 patients (6%) requested for complete dentures. Of the 6.0% that requested for complete dentures, 16 (76.2%) were within the age range of 41 - 60 and 61 - 80 years, this finding is in line with previous studies (Esan et al., 2004; Marcus et

al., 1996). There were more males (188) than females (163) seeking replacements. This finding was also presented by other workers, who claimed that males being busier than females have less time for oral health care (Hoover and McDermott, 1989; Suominen-Taipale et al., 1999). They generally neglect their oral care until it's too late to have any form of conservative treatment. The difference in variation of the saddle area requested by both genders was statistically significant ($p = 000$). This finding is in conformity with the findings of previous studies.

Conclusion

The most common removable prostheses requested by patients who attended the University of Benin outpatient clinic is Kennedy's class III. Aesthetics is the main reason for replacement of edentulous space; this is to be expected since most of the patients who request for restoration are of the younger age group. Dentists who work in this environment should be aware of this trend so as to provide the best removable prostheses they can for their patients, for oral health contributes greatly to the total well being of any individual. It cannot be overemphasized that aesthetics is a very important part of oral health especially when it comes to the highly visible anterior teeth.

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