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Research Article

Indications and pattern of periodontal surgical treatment at the University of Port Harcourt Teaching Hospital, River States, Nigeria. A 5-year review

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ABSTRACT

Background: Only a few studies have reported the pattern of surgical periodontal procedures performed in Nigeria. Hence, this study aimed to determine the indications and pattern of periodontal surgical treatment at the University of Port Harcourt Teaching Hospital (UPTH), River States, Nigeria

Materials and Methods: The study is a descriptive retrospective review of all perio-surgical cases done at the periodontology clinic of UPTH over five years (January 2015-2019). The data retrieved from the patients' logbook included age, gender, clinical diagnosis, and type of perio-surgery done. The data were subsequently analysed and presented as frequency and percentages. Test for significance was done using Chi-square statistics, and the level of statistical significance was set at $P < 0.05$.

Results: A total of 68 patients out of 4986 patients that presented for periodontal treatment had periodontal surgeries over the study period giving a prevalence of 1.4%. Their age ranges from 17 to 75 years, with a mean age of 39.22 ± 17.43 years. The major indications for surgical periodontal treatment among the patients were recurrent pericoronitis 21(30.9%) and severe chronic periodontitis 17(25.0%) while the least was perio-endo lesion 1(1.5%). There was no statistically significant difference between gender and indications for periodontal surgery among the patients. Operculectomy 21(30.9%) and gingivectomy 17(25.0%) constituted the main surgical periodontal treatments among the patients in this study.

Conclusion: Recurrent pericoronitis and chronic periodontitis are the main indications for periodontal surgical treatment while operculectomy and gingivectomy constituted the predominant surgical periodontal procedures performed in this study.

INTRODUCTION

Periodontal disease is an oral disease that involves tooth-supporting structures.[1] It usually progresses from the gingiva and spreads to the periodontal ligament, cementum and alveolar bone resulting in tooth mobility and tooth loss if not managed adequately. It is a disease of global impact affecting dentate individuals irrespective of socio-demographic factors.[1] Severe periodontitis is the 6th most prevalent disease with an overall prevalence of 11.2%.[2] Periodontal diseases/conditions are more prevalent in developing countries, disadvantaged groups and old people.[3,4] The WHO estimates that severe periodontal disease, is found in 5-20% of middle-aged adults globally.[4] Multiple tooth loss from severe periodontal disease can affect nutrition, self-esteem, and quality of life of the affected individuals.[5] Also studies have reported a possible relationship between the presence of untreated periodontitis and systemic conditions such as; stroke, chronic obstructive pulmonary diseases, cardiovascular diseases, and pre-term low-birth-weight babies.[5-7]

Periodontal diseases are staged into mild, moderate, severe, and very severe based on the measurement of periodontal pocket depth and clinical attachment loss.[7] While mild periodontitis responds to modification/elimination of predisposing factors and non-surgical periodontal treatment such as oral hygiene maintenance, scaling of plaque and calculus, and subgingival root planing; the management of moderate to severe periodontitis usually requires periodontal surgery in addition to non-surgical periodontal treatment and chemotherapeutics.

Periodontal surgical treatment is the definitive management of periodontal diseases that do not respond to non-surgical therapy. There are different types of periodontal surgery. Examples are access surgeries for open debridement, osseous surgeries and regenerative procedures.[8] These procedures help in eliminating persistent periodontal pockets and in stimulating the regenerative capability of the periodontium. Other procedures are also used electively for the correction of mucogingival defects, high frenal attachments, gingival overgrowth, and other aesthetic periodontal problems.[8,9] Many factors which could originate from the practitioners and/or patients, determine if patients receive surgical periodontal treatment or not. Previous Nigerian studies[1,8] on the pattern of periodontal

treatments showed that only 0.7 to 1.0% of patients attending periodontology clinics had surgical periodontal therapy. The lack of dental insurance coverage, high cost of treatment, and scarcity of human resources are some of the identified limiting factors.[8]

Only a few studies have reported the pattern of surgical periodontal procedures performed in Nigeria. To the authors' knowledge, only the pattern of procedures in Lagos University Teaching Hospital [8,9] and University of Benin Teaching Hospital [1] have been reported. Therefore, this study aimed to determine the indications and pattern of periodontal surgical treatment at the University of Port Harcourt Teaching Hospital, River States, Nigeria. Evaluation of the pattern of surgical periodontal procedures is essential in providing a useful database for proper planning and budgeting for dental health service by oral health policymakers.

METHODOLOGY

The study is a descriptive retrospective review of all perio-surgical cases done at the periodontology clinic of University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt, Rivers State over five years (January 2015-2019). The procedures were performed by the periodontists assisted by residents in training. All procedures were done under local anaesthesia. Ethical approval for the study was obtained from the Research and Ethics committee of UPTH. The data retrieved from the patients' logbook included age, gender, clinical diagnosis, and type of perio-surgery done. The patients' age was grouped into young adults (17-40 years), middle-aged adults (41-64 years) and elderly (>65).[1] The data were subsequently analysed using SPSS version 20 (IBM SPSS Armonk, New York) and presented as frequency and percentages. Test for significance was done using Chi-square statistics, and the level of statistical significance was set at $P < 0.05$.

RESULTS

The record showed that a total of 68 patients out of 4986 patients that presented for periodontal treatment had periodontal surgeries over the study period giving a prevalence of 1.4%. Their age ranges from 17 to 75 years, with a mean age of 39.22 ± 17.43 years. Most 40(58.8%) of the patients were female, while 28(41.2%) were male (Table 1), giving a male to female ratio of 1:1.4. Majority of the patients were young adults 37(54.4%) followed by the middle-aged adults 26(38.2%) and the elderly 5(7.4%). The major indications for surgical periodontal treatment among the patients were recurrent pericoronitis 21(30.9%) and severe chronic periodontitis 17(25.0%) while the least was perio-endo lesion 1(1.5%). There was no statistically significant difference between gender and indications for periodontal surgery among the patients (Table 2).

Recurrent pericoronitis 20(54.1%) was the most indication for periodontal surgery in young adults, followed by localised gingival enlargement 8(21.6%). Chronic periodontitis 11(42.3%) accounted for most of the indication for periodontal surgery in middle-aged patients, followed by localised gingival enlargement 7(26.9%). Forty per cent of the elderly patients had periodontal surgery (crown lengthening) due to shortened tooth as a result of fracture. Age was significantly associated with the indications for periodontal surgical treatments (Table 3).

The periodontal surgical procedures done among the patients in this study were operculectomy 21(30.9%), gingivectomy 17(25.0%), open flap root planing 11(16.2%), frenectomy 6(8.9%) and crown lengthening 4(5.9%). Regenerative procedures were bone grafting 6(8.9%) and guided tissue regeneration with bone graft 1(1.5%) as shown in Table 4.

Table 1: Age and sex distribution of the study participants

	Frequency	%
Age group		
0-9	1	1.5
10-19	9	13.2
20-29	17	25.0
30-39	7	10.3
40-49	11	16.2
50-59	10	14.7
60 above	13	19.1
Sex		
Female	40	58.8
Male	28	41.2
Total	**68**	**100.0**

Table 2: Indications for surgical periodontal treatment between the gender

Indications	Gender			Chi square, p-value
	Female N (%)	Male N (%)	Total N (%)	
Chronic Periodontitis	9(22.5)	8(28.6)	17(25.0)	
Generalised Gingival Enlargement	0(0.0)	1(2.5)	1(2.9)	
Localised Gingival Enlargement	8(20.0)	8(28.6)	16(22.1)	3.989, 0.781
Localized Gingival Recession	1(2.5)	1(3.6)	2(2.9)	
Marginal Labial Frenal Attachment	3(7.5)	3(10.7)	6(8.8)	
Peri-Endo Lesion	0(0.0)	1(3.6)1	(1.5)	
Recurrent Pericoronitis	15(37.5)	6(21.4)	21(30.9)	
Tooth Fracture	3(7.5)	1(3.6)	4(5.9)	
Total	**40(100.0)**	**28(100.0)**	**68(100.0)**	

Table 3: Indications for surgical periodontal treatment across the patients' age class

Indications	Young adults N (%)	Middle-age adults N (%)	Elderly N (%)	Chi-square, P-value
Chronic Periodontitis	5(13.5)	11(42.3)	1(20.0)	
Generalised Gingival Enlargement	1(2.7)	0(0.0)	0(0.0)	
Localised Gingival Enlargement	8(21.6)	7(26.9)	1(20.0)	37.329, 0.001
Localized Gingival Recession	0(0.0)	2(7.7)	0(0.0)	
Marginal Labial Frenal Attachment	3(8.1)	2(7.7)	1(20.0)	
Peri-Endo Lesion	0(0.0)	1(3.8)	0(0.0)	
Recurrent Pericoronitis	20(54.1)	1(3.8)	0(0.0)	
Tooth Fracture	0(0.0)	2(7.7)	2(40.0)	
Total	**37(54.4)**	**26(38.2)**	**5(7.4)**	

Table 4: The pattern of surgical periodontal treatment among the patients

Treatment	Frequency	%
Operculectomy	21	30.9
Gingivectomy	17	25.0
Open flap root planing	11	16.2
Frenectomy	6	8.9
Coronal advancement flap and bone graft	6	8.9
Crown lengthening	4	5.9
Double papilla flap	1	1.5
Connective tissue graft and coronal advancement flap	1	1.5
Guided tissue regeneration and bone grafting	1	1.5
Total	**68**	**100.0**

DISCUSSION

The age and sex distribution in this study are like the previous Nigerian studies.[1,8,9] Likewise the patients were young adults as reported in other studies.[1,8] The was a high number of young patients seeking treatment for recurrent pericoronitis in this study. The predominance of females in the utilisation of dental services has been linked to their quest for aesthetics and tendency to seek care for their oral health compared to males readily.[8] Also, males have a higher tendency to endure pain compared to females and not readily seek dental treatment.[1,9,10] The highest indication for periodontal surgery in this study was recurrent pericoronitis, followed by chronic periodontitis and localised gingival enlargement. This is similar to the two studies[8,9] done at the Lagos University Teaching Hospital but is in contrast to that reported by Azodo et al.[1] where periodontal abscess and gingival enlargement constituted the major indications for periodontal surgeries.

The pattern of surgical periodontal procedures varied and reflects the different indications for periodontal surgery in this study. Operculectomy (also known as pericoronal flap gingivectomy)[8] was the major surgical treatment. It was done on 30.9% of this study participants compared to 35.6%[8] and 5.8%[1] in previous studies. The young adults and females who presented with recurrent pericoronitis were the major recipients of operculectomy in this study, similar to the research done at the University of Benin Teaching Hospital[1]. Operculectomy is a minor surgical procedure done to remove a flap of gingival tissue over a partially erupted tooth, thereby creating a clear path of eruption.[10] This will prevent plaque accumulation and subsequent inflammation. Though operculectomy as a form of treatment is controversial due to the high rate of recurrence; some experts[8] still prefer it to the extraction of opposing third molar tooth except in cases complicated by a malocclusion. Nwhator et al.[8] reported a favourable outcome of 94% among patients that had operculectomy. Also," patients who underwent operculectomy had a better quality of life postoperatively when compared with patients who underwent removal of third molar".[10]

Like the previous studies[1,8] gingivectomy was the second most performed surgical treatment in this study. Middle-age adults and males were the highest recipients of gingivectomy in contrast to young adults and females reported by Azodo et al.[1] The indications for gingivectomy in this study included pyogenic granuloma 14(82.3%), amlodipine induced gingival hyperplasia 2(11.8%) and a case of hereditary gingival fibromatosis. The presence of dental calculus due to poor oral hygiene may be responsible for the high prevalence of localised gingival enlargement in males since females are known to maintain good oral hygiene compared to males.[11] However, there was no significant association in the prevalence of gingival enlargement between male and female. Surgical gingivectomy was used for patients in this study, however, the use of electrosurgical and laser gingivectomies are common in the developed countries.

Open flap debridement is the third most common procedures performed on the patients during the period of study. About one-fourth (16.2%) received open flap debridement compared to 3.8% reported by Azodo et al.[1] The primary recipients were males and middle-age adults. This is in tandem with an increase in the prevalence of periodontitis in males and older adults.[11] Apart from ensuring direct access for thorough root planing, open flap debridement ensures pocket reduction and provide an increased opportunity for new attachments. This procedure is preferred for patients with a pocket depth of 5-7mm[12]; it also has an advantage of lack of post-operative discomfort and low cost. However, the combination of open flap debridement with enamel matrix derivative has been reported to achieve a better result than open flap debridement alone.[12]

Only a few periodontal plastic surgeries (frenectomies and crown lengthening) and regenerative procedures were done among the patients in this study. This was also observed in previous studies.[1,8,9] The low number of periodontal plastic surgery and regenerative procedures in Nigeria has

been attributed to scarcity and high cost of materials [1,8] Patients often prefer to extract some teeth that could have been saved by these procedures in our environment due to high cost of treatment and non-coverage by the health insurance scheme.

CONCLUSION

Recurrent pericoronitis and chronic periodontitis are the main indications for periodontal surgical treatment while operculectomy and gingivectomy constituted the predominant surgical periodontal procedures performed in this study. We recommend dental awareness campaign to encourage patients to benefit from the various types of periodontal surgeries and the inclusion of periodontal surgical procedures in the National Health Insurance Scheme.

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Conflicts of interest

There are no conflicts of interest.

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