

A clinicopathologic analysis of epulides from a subpopulation of Northern Nigeria

Abdul-Warith Olaitan Akinshipo, Abdurrazaq O. Taiwo¹, Adebayo A. Ibikunle¹, Ramat O. Braimah¹, Saheed A. Olatunji²

Department of Oral and Maxillofacial Pathology/Biology, Faculty of Dental Sciences, College of Medicine, University of Lagos, Lagos,

¹Department of Dental and Maxillofacial Surgery, Usmanu Danfodiyo University Teaching Hospital, Sokoto, ²Department of Oral and Maxillofacial Surgery/Pathology, Obafemi Awolowo University Teaching Hospital, Ife, Osun State, Nigeria

Abstract

Context: Epulides are common oral lesions of the gingivae. Descriptive studies on epulides from a previously unreported Nigerian population are desirable.

Aims: The aim of the study was to describe the characteristics of epulides from a subpopulation in the Northern Nigerian state of Sokoto.

Settings and Design: This is a retrospective study of patients histologically diagnosed with epulis and treated at the Department of Dental and Maxillofacial Surgery, Usmanu Danfodiyo University Teaching Hospital.

Methods: A 10-year (2007–2017) review of histologically diagnosed oral and maxillofacial lesion was used for this study. Data on age, gender, site and histological diagnosis were retrieved from the hospital records and classified into two groups: fibrous lesions and haemorrhagic lesions, reflecting their clinical presentations.

Statistical Analysis Done: Data were summarised using frequency distribution and mean and standard deviation (SD). Comparisons were done with Chi-square test and *t*-test. Statistical significance was set at $P \leq 0.05$.

Results: A total number of 28 gingival epulides out of a total of 644 lesions that were diagnosed were included in the study. Epulis consisted of 15 (53.6%) fibrous epulides and 13 (46.4%) vascular epulides. There were 20 (71.4%) females and 8 (28.6%) males (female:male = 2.5:1). The average age of study participants was 29.4 years \pm 16.4 SD. The mean age of fibrous epulides was 22.73 \pm 14.7 years, which was significantly lower than the mean age of vascular epulides (37.1 \pm 15.4) ($P = 0.018$). The most common epulides observed were pyogenic granuloma (PG), (35.7%) followed by fibroepithelial hyperplasia (14.3%) and peripheral ossifying fibroma (10.7%).

Conclusions: The most common epulis in this study was PG. It is desirable for the clinician to have a good knowledge of the frequency and distribution of epulides when establishing a diagnosis and formulating a treatment plan.

Keywords: Descriptive, epulides, Nigeria, pyogenic granuloma

Address for correspondence: Dr. Abdul-Warith Olaitan Akinshipo, Department of Oral and Maxillofacial Pathology/Biology, Faculty of Dental Sciences, College of Medicine, University of Lagos, Lagos, Nigeria.

E-mail: aakinshipo@unilag.edu.ng

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INTRODUCTION

An epulis is a benign tumour-like mass located on or near the gingival tissue.¹ These gingival lesions vary in size and

usually have similar colour to the oral mucosa [Figure 1]. They are non-neoplastic, asymptomatic, exophytic (sessile or pedunculated) and elongated with variable growth rate.^{2,3} However, some of these localised overgrowths might

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look clinically ominous with large fleshy and ulcerated appearance [Figure 2].⁴ Several reports demonstrated that the anterior region, maxilla, females and those in the 3rd–4th decade of life are most frequently affected.^{3,5}

Majority of these hyperplastic lesions which are present on the surface of the oral mucosa were likely caused by exposure to chronic irritation by subgingival calculus, bacterial plaque, tobacco smoking, low-grade trauma, faulty restorations, irregular/sharp margins of carious or fractured tooth/fillings and friction from ill-fitting dentures and are especially common in areas such as the interdental papillae or the edentulous alveolar ridge.^{2,3} These irritants might be aggravated by some hormones such as oestrogen and progesterone in females.^{3,4} Consequently, most of these lesions are accompanied by inflammation, produce granulation tissue due to exaggerated fibroblast proliferation and manifest as an overgrowth called reactive hyperplasia.^{3,4} Eversole and Rovin⁶ speculated that the different histological entities of reactive hyperplasia may be due to connective tissue response to varied intensities of gingival irritation. Many of these lesions can be identified as specific entities on the basis of their histopathologic features and are divided into fibrous, vascular and giant cell type.⁷ The World Health Organization (2015) further classified disorders of gingiva and the edentulous alveolar ridge as fibrous epulis, giant cell epulis, peripheral giant cell granuloma and pyogenic granuloma (PG) of gingiva.⁸

Biopsy findings have an important role and are definitive in establishing the diagnosis for any mass of the oral cavity including gingival lesions.⁹ Biopsy with subsequent histologic evaluation is an important and reliable diagnostic tool that can help differentiate simple non-neoplastic epulides from tumour-like and malignant lesions [Figures 3 and 4]. A few studies have been carried out to reflect the different occurrences of epulides in Nigeria and other African countries.^{10–13} However, the epidemiology of gingival lesions (non-neoplastic and hyperplastic) in a Northern Nigerian population is not well documented in literature to date.¹³ The aim of this study is to analyse the clinical and histopathologic features of epulides in Northern Nigeria and to compare these data with those of previous studies in literature.

METHODS

This was a retrospective study of patients histologically diagnosed with epulis and treated at the Department of Dental and Maxillofacial Surgery, Usmanu Danfodiyo University Teaching Hospital, over a 10-year period (2007–2017). This study was approved by the Departmental

Ethics and Research Committee of the Department of Dental and Maxillofacial Surgery, Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria. All cases with complete information on age, gender, site, treatment and histological diagnosis were retrieved from the hospital records. Individuals taking anticonvulsants, antihypertensive calcium channel blockers and immunosuppressant drugs, along with edentulous patients, were excluded from the data collected. The lesions were classified into two groups according to the study of Kadeh *et al.*,¹⁴ aiming to reflect the clinical presentations of epulides as: (I) fibrous lesions (epulis fissuratum, irritation fibroma, giant cell fibroma and peripheral ossifying fibroma [POF]) with connective tissue predominantly consisting of collagen and (II) soft haemorrhagic lesions (PG, peripheral giant cell granuloma, epulis granulomatosum and pregnancy tumour) which are clinically papillomatous and histologically showing vascular channels as an important clinical and histological feature.¹⁴

Data collected were analysed with SPSS Version 21 (IBM SPSS Statistics for Windows, version 21 IBM Corp., Armonk, N.Y., USA). Qualitative data were summarised using frequency distribution, whereas quantitative numeric data were summarised with mean and standard deviation (SD). Association between categorical variables were computed with fisher's exact test. Differences between means were analysed with student's *t*-test. Statistical significance was set at $P \leq 0.05$.

RESULTS

A total number of 28 gingival epulides from a total population of 644 cases were diagnosed during the study period. There were 20 (71.4%) females and 8 (28.6%) males (female:male = 2.5:1). The 21–30 years was the most commonly affected age group with 7 cases (25%), followed by 41–50 years with 6 cases (21.4%) [Table 1]. Only eight cases had their site specificity found with six cases (75%) occurring in the mandible and two cases (25%) involving the maxilla [Table 1]. The most common epulides observed in our study were PG, (35.7%) followed by fibroepithelial hyperplasia (14.3) and POF (10.7) [Table 2].

The age of the patients ranged from 5 to 71 years (mean age: 29.4 years \pm 16.4 SD). The mean age of male patients was 31.5 (SD = 22.3) years, whereas that for females was 28.5 (SD = 14.0) years [Table 3]. Fibrous epulis ($n = 15$, 53.6%) was more commonly diagnosed than vascular epulis ($n = 13$, 46.4%) [Table 3]. The mean age of fibrous epulides was 22.73 \pm 14.7 years, which was significantly lower than the mean age of vascular epulides (37.1 \pm 15.4) ($P = 0.018$). Individuals within the

first decade of life (0–10 years) were only affected with fibrous epulis [Table 4].

DISCUSSION

In many studies,^{1,7,10,15} the gingiva was the most common location for reactive hyperplastic lesion (RHL). This favoured anatomic site for RHL is an indicator that the periodontal ligaments maybe the origin of epulides.¹⁵ In

addition to this, the frequency of food impaction along with tendency for plaque accumulation interdental may act as a constant irritant to the gingivae with resultant hyperplastic reaction.¹⁶ The fibrous epulis usually appears in the interdental papilla.²

This present study showed that 71.4% of epulides were found in females with a female-to-male ratio of 3:1. Most of the studies in literature have shown a higher prevalence of the lesion in female compared to males;^{10,14,17} however, Naderi *et al.*¹⁵ reported a higher prevalence in men. The role of hormonal factors as a predisposing factor in the development of these lesions has been proposed as the reason for the increased prevalence in females.¹⁸

In this present study, the mean age of patients with epulides was 29.4 ± 16.4 years. This is consistent with the reports of Effiom *et al.*¹⁰ and Reddy *et al.*¹⁹ The most common age group of patients presenting with epulides was the 21–30 years' age group, and this is consistent with the findings of Seifi and Nosrati²⁰ and Reddy *et al.*¹⁹ However, this finding is in contrast to the reports of Kadeh *et al.*¹⁴ in which epulides were more common in individuals above 40 years. In general, epulides are uncommon in elderly individuals above 65 years of age. These individuals are often edentulous and do not go for regular checks, and as such, they are undetected.²⁰ The frequency of vascular epulides was higher in the 41–50 years' age group in contrast to the findings of Kadeh *et al.*¹⁴ and Seifi and Nosrati²⁰ which found haemorrhagic lesions to occur more frequently in the 20–40 years' age group. The frequency of fibrous epulides was higher in the 0–10 and 21–30 years' age groups. The high frequency of fibrous epulides in the 0–10 years' age group may be due to the cases of Heck's disease which were classified as fibrous epulides, most of which occurred in the 0–10 and 11–20 years' age groups.

Table 1: Demographic features of epulides

	n (%)
Gender	
Males	8 (28.6)
Females	20 (71.4)
Total	28 (100)
Age group	
0-10	5 (17.9)
11-20	4 (14.3)
21-30	7 (25.0)
31-40	5 (17.9)
41-50	6 (21.4)
70-80	1 (3.6)
Total	28 (100.0)
Anatomic site	
Mandible	6 (21.5)
Maxilla	2 (7.1)
Unreported	20 (71.4)
Total	28 (100.0)

Table 2: Distribution of histological types of epulides

Type of lesion	Frequency (%)
Fibrous epulis	15 (53.6)
Peripheral ossifying fibroma	3 (10.7)
Fibroepithelial hyperplasia	4 (14.3)
Focal epithelial hyperplasia (Heck's)	3 (10.7)
Granular cell tumour	1 (3.6)
Non-specific chronic inflammation	3 (10.7)
Condyloma acuminatum	1 (3.6)
Vascular epulis	13 (46.4)
Plasma cell mucositis	1 (3.6)
Pyogenic granuloma	10 (35.7)
Inflamed granulation tissue	1 (3.6)
Total	28 (100)

Table 3: Distribution of the histologic types according to sex

Type of lesion	Frequency (%)	Sex, mean±SD		
		Male	Female	Total
Fibrous epulis	15 (53.6)	23.0±15.6	22.6±15.0	22.73±14.7
Peripheral ossifying fibroma	3 (10.7)	40.0	37.5±10.6	38.3±7.6
Fibroepithelial hyperplasia	4 (14.3)	23.0±19.8	14.5±0.7	18.8±12.4
Focal epithelial hyperplasia (Heck's)	3 (10.7)	6.0	7±2.8	6.7±2.1
Granular cell tumour	1 (3.6)	0.0	6.00	
Non-specific chronic inflammation	3 (10.7)	23.0	37.5±10.6	32.7±11.2
Condyloma acuminatum	1 (3.6)	0.0	27.00	
Vascular epulis	13 (46.4)	45.7±27.8	34.5±10.7	37.1±15.4
Plasma cell mucositis	1 (3.6)	0.0	19.00	
Pyogenic granuloma	10 (35.7)	35.1±10.6	45.7±27.8	38.3±16.5
Inflamed granulation tissue	1 (3.6)	0.0	45.00	
Peripheral giant cell granuloma	1 (3.6)	0.0	35.00	
Total	28 (100)	31.50±22.3	28.5±14.0	29.4±16.4
P				0.018**

**Statistically significant, SD: Standard deviation

The research by Kadeh *et al.*¹⁴ and Seifi and Nosrati²⁰ found haemorrhagic lesions to occur at an earlier age group in their study.

In this study, fibrous epulides were more common than vascular epulides, and this is similar to the findings of Seifi and Nosrati.²⁰ In the study of Kadeh *et al.*¹⁴ and Seyedmajid

*et al.*²¹ which also used the same classification system as our study, they found soft haemorrhagic lesions to be more common than fibrous lesions. Many vascular lesions will mature over time to become more fibrotic, and this may account for a higher frequency of fibrous lesions observed in these studies.

In the present study, the most frequent lesion was PG consisting of 41% of all cases of epulides. This is consistent with the findings from other studies.^{10,14,16} However, in the reports by Buchner *et al.*,¹⁶ Zhang *et al.*¹⁷ and Reddy *et al.*,¹⁹ the most common gingival lesion was irritation fibroma. Although PG can occur in any age group, it is most prevalent in young adults under the age of 40 years with a female predilection.^{7,10,14,15,22} The finding from this study showed that 10.7% of epulides were diagnosed as Heck's disease with an average age of 6.7 ± 2.1 years and a female-to-male ratio of 2:1.²³ Focal epithelial hyperplasia primarily occurs in children with no gender predilection.²³

Table 4: Distribution of the histologic types according to age group

Age group of participants (years)	Histologic types		Total, n (%)
	Fibrous epulis, n (%)	Vascular epulis, n (%)	
0-10	5 (17.9)	0 (0.0)	5 (17.9)
11-20	2 (7.1)	2 (7.1)	4 (14.3)
21-30	4 (14.3)	3 (10.7)	7 (25.0)
31-40	2 (7.1)	3 (10.7)	5 (17.9)
41-50	2 (7.1)	4 (14.3)	6 (21.4)
70-80	0 (0.0)	1 (3.6)	1 (3.6)
Total	15 (53.6)	13 (46.4)	28 (100)

Fisher's exact test=6.918, P=0.223

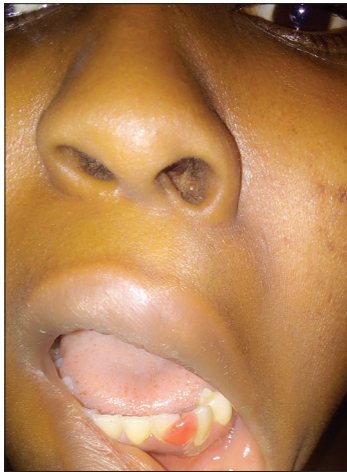


Figure 1: Epulides on the anterior mandible, between the left mandibular lateral incisors and canine



Figure 2: A large epulis on the buccal gingivae of the maxillary central incisors



Figure 3: Surgical site of the tumour in Figure 2 after surgical excision and curettage down to bone

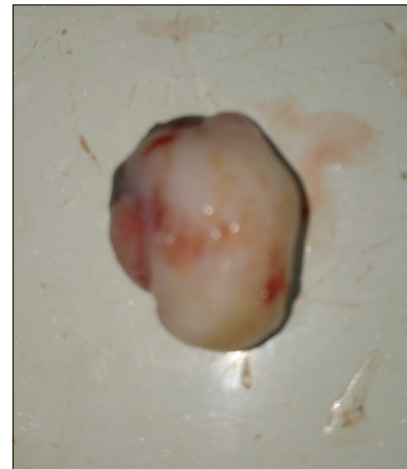


Figure 4: Post-surgical specimen of the lesion in Figure 2

In this study, POF constituted 10.7% of epulides in this study, with an average age of 38.3 + 7.6 years and a female-to-male ratio of 2:1. POF is commonly seen in young adults with a female predominance. It commonly affects the maxilla, particularly the incisor-premolar region.²⁴

The limitation of this study is based on the fact that it is a retrospective study of cases in a hospital and does not reflect the true prevalence of epulides in the population. Furthermore, data collected in some cases were incomplete and had to be excluded.

CONCLUSIONS

The results of our study on epulides are largely similar to those of previous reports on larger series of such lesions. The most common epulides were PG and POF and fibroepithelial hyperplasia. Therefore, knowledge of the frequency and distribution of these lesions is beneficial when establishing a diagnosis and a proper treatment plan in practice.

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Conflicts of interest

There are no conflicts of interest.

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