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CYSTS OF THE ORO-FACIAL REGION: A CLINICO-PATHOLOGIC REVIEW OF 403 NIGERIAN CASES

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A CLINICO-PATHOLOGIC REVIEW OF 403 NIGERIAN CASES**

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**ABSTRACT**

**Objectives:** To review the types, frequency, distribution, treatment, and treatment outcome of oro-facial cysts seen at four tertiary health centres in southwestern Nigeria and to categorise the cases using Lucas (1966), Killey and Kay (1968) and World Health Organization (WHO) (2005) classification protocols.

**Design:** A descriptive retrospective study

**Setting:** Tertiary hospitals across the south west zone of Nigeria.

**Main outcome measures:** Treatment outcome of oro-facial cysts seen at four tertiary health centres in southwestern Nigeria and categorisation of the cases using Lucas (1966), Killey and Kay (1968) and World Health Organization (WHO) (2005) classification protocols.

**Results:** The treatment modalities included marsupialisation, enucleation, enucleation with peripheral osteotomy and surgical excision of non-epithelial cyst of the jaws. The follow-up period ranged from a minimum of six months to five years. Such follow-up consisted of examination and periapical or panoramic radiographs. All patients were without evidence of disease during the follow-up period and many of them were lost to follow up due to absence of diseased condition. Lucas classification and WHO classification showed that inflammatory cysts were the most common accounting for 36%, developmental cysts represented 27%, 4% were non-epithelial while, 32.8% were unclassifiable.

**Conclusion:** The inflammatory jaw cyst is the most common type in southwest Nigeria, occurs more in males compared to females and is more common in the mandible compared to the maxilla.

**INTRODUCTION**

A cyst is defined as a pathological cavity having fluid, semi fluid or gaseous content which has not been created by the accumulation of pus(1). Cysts are common pathological lesions of the jaws and they constitute a large part of biopsies in oral and maxillofacial pathology sent by oral and maxillofacial surgeons to confirm the definitive diagnosis of excised lesions. They are typically slow growing, but they may enlarge to a remarkable size, causing root resorption, bone destruction, pathologic fracture of the mandible and occasionally the cystic lining may undergo neoplastic transformation(1-5). Cysts of the jaws may or may not be lined by epithelium. Epithelial-lined cyst are termed true cysts, for example the radicular cyst but cystic cavities that are not lined by epithelium are termed pseudo-cysts for example the traumatic bone cyst(6).

The cysts of the jaws have been broadly classified into odontogenic and non-odontogenic cysts and odontogenic cysts into inflammatory and developmental. Different

classifications of cysts of the oral and maxillofacial region have been documented. The prevalence of odontogenic cysts is higher than non-odontogenic cysts in the jaws presumably because odontogenic cysts arise from activation of odontogenic epithelial residues that remain trapped within the gingiva or bone during development. Examples of such epithelial rests are those of Serres and Malassez, and it is for this same reason that cystic lesions are more common in the jaws than in other bones(6, 7).

Quite a large number of studies have been done on cysts of the jaws but detailed information on demographic profiles in different populations is limited and most have focused on odontogenic cysts. This study aims to review the types, frequency, distribution, treatment, and treatment outcome of oro-facial cysts seen at four tertiary health centres in southwestern Nigeria and to categorise the cases using Lucas (1966), Killey and Kay (1968) and World Health Organization (WHO) (2005) classification protocols.

**MATERIALS AND METHODS**

This was a descriptive retrospective study of oro-facial cysts presenting at four tertiary hospitals in southwestern Nigeria. The oral biopsy/histopathology records of oro-facial cysts were retrieved from the archives. Cysts diagnosed as odontogenic keratocyst were excluded from the study. Clinical information regarding age at diagnosis, gender and duration of the lesion, clinical presentation, anatomic location, type of cysts and treatment modalities after diagnoses were documented. All patients underwent clinical examination and plain film radiography (panoramic, periapical, and occlusal views). Some of them were referred for computed tomography (CT). Depending on the case, surgery was performed under local or general anaesthesia and included one of the following treatment modalities: marsupialisation, enucleation, enucleation with bone grafting or resection.

Data were entered into and analyzed with SPSS version 18.01 software and frequency tables were generated. The cases were considered with reference to the Lucas (1966), Killey and Kay (1968) and WHO (2005) classifications protocol.

**RESULTS**

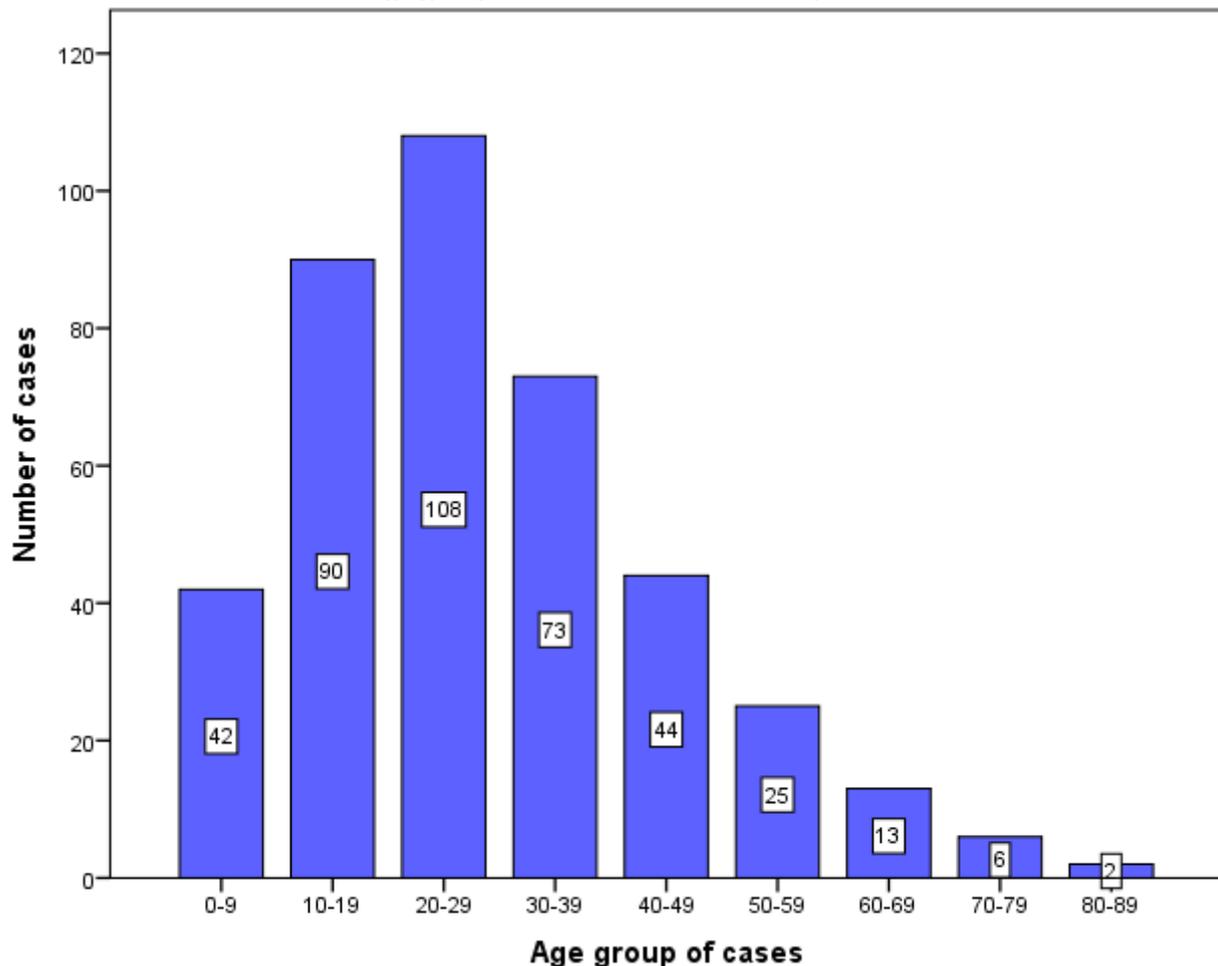
During this study period of 10 years (2004-2014), a total of 403 histologically diagnosed orofacial cysts were seen in four tertiary health centres in Southwestern Nigeria. Orofacial cysts were more common in males (57.6%) than females (42.4%) with a male to female ratio of 1.4:1

The cases presented in the age range of two months to 82 years with a mean age of 28 +/-7 years and a peak incidence in the third decade of life (108) 26.8%. A large percentage of cases were seen in the first four decades of life (77.6%) while 22.4% were seen from the fifth decades upwards. Orofacial cysts in the seventh and eight decades accounted for only 2% of cases (Figure 1).

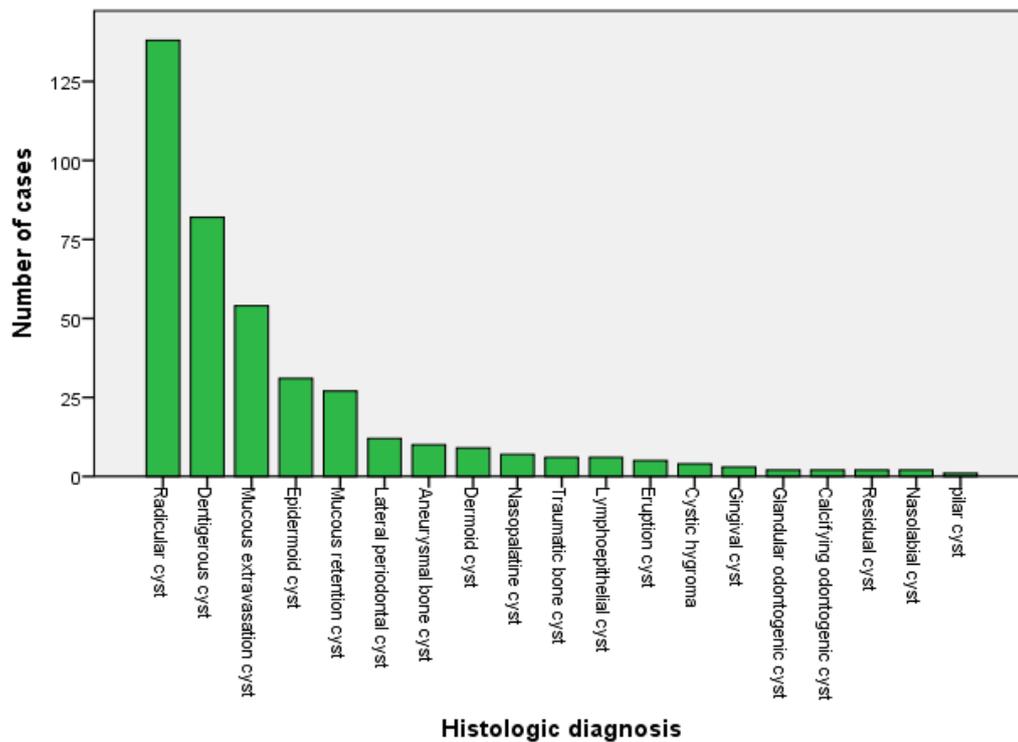
We noted that periapical 138 (34.2%), dentigerous 82 (20.3%) and mucous extravasation cysts 54 (13.4%) were the most common; while epidermoid cyst, mucous retention cyst, lateral periodontal cyst and aneurysmal bone cysts accounted for 7.7%, 6.7%, 3% and 2.5% of total number of cases seen respectively (Figure 2).

The most common site of occurrence was the mandible with 194 (48.1%) of the cases while 129 (32.0%) of the cases occurred in the maxilla with a mandible/maxilla ratio of 1.5:1. The lower lip, floor of mouth and palate accounted for 10.4%, 5.5% and 3.7% respectively.

**Figure 1**  
Age group distribution of orofacial cysts



**Figure 2**  
Frequency of orofacial cysts



The treatment modalities included marsupialisation, enucleation, enucleation with peripheral osteotomy and surgical excision of non-epithelial cyst of the jaws.

The follow-up period ranged from a minimum of six months to five years. Such follow-up consisted of examination and periapical or panoramic radiographs. All patients were without evidence of disease during the follow-up period and many of them were lost to follow up due to absence of diseased condition.

Tables 1-3 show orofacial cysts distribution based on the Killey and Kay, Lucas and WHO classifications respectively. According to Killey and Kay classification, cysts arising from epithelial rests were the most common accounting for 38.5% of cases while cysts derived from reduced enamel epithelium represented 22.3%. Pseudo cysts accounted for 4% while 37.5% were unclassifiable by the Killey and Kay

classification. The cysts under this classification were more common in men except for pseudocysts that were more common in females with a ratio of 2:1.

Lucas classification showed that inflammatory cysts were the most common accounting for 36%, developmental cysts represented 27%, 4% were non-epithelial while, 32.8% were unclassifiable. Peak incidence of inflammatory cysts was in the third decade of life, accounting for 31%.

Similar to Lucas classification, the WHO classification revealed that inflammatory cysts were the most common accounting for 36%, cysts of tissue of the mouth, face and neck accounted for 32.8%, while developmental cysts were 27%. All cases were classifiable by the WHO method and under this protocol, cysts of the mouth, face and neck were more common in males than females with a ratio of 1.5:1 while non-epithelial cysts were more common in female than males with a ratio of 2:1.

**Table 1**  
Oro-facial cysts distribution according to Killey and Kay classification.

	Man %	Max %	Others %	M/F	Peak age (years)
Enamel organ	2 (100)	0 (0)	0 (0)	1:1	20-29
Reduced enamel epithelium	85 (96.5)	2 (2.3)	1 (1.15)	1.1:1	10-19
Rest cells of Malassez	20 (13.7)	125 (85)	1 (1.3)	1.5:1	20-29
Bone cysts	16 (100)	0 (0)	0 (0)	1:2	10-19
Unclassified	71(47)	2(1.3)	78(51.6)	1.5:1	20-29

**Table 2**  
**Oro-facial cysts distribution according to Lucas classification**

	Man %	Max %	Others %	M/F	Peak age (years)
Developmental	60 (55)	40 (37)	9 (8)	1.2:1	10-19
Inflammatory	20 (13.3)	124 (86)	1 (0.6)	1.5:1	20-29
Pseudocysts	16 (100)	0 (0)	0 (0)	1:2	10-19
Non-epithelial	5 (100)	0 (0)	0 (0)	2:3	10-19
Unclassified	60(45.5)	2(1.5)	72(54.5)	1.5:1	20-29

**Table 3**  
**Oro-facial cysts distribution according to WHO classification**

	Man %	Max %	Others %	M/F	Peak age(years)
Inflammatory	20 (13.3)	124 (86)	1 (0.6)	1.5:1	20-29
Developmental	60 (55)	40 (37)	9 (8)	1.2:1	10-19
Cysts of Soft tissues of MFN	61 (46.2)	1 (0.7)	70 (53)	1.5:1	20-29
Non-epithelial	16 (100)	0 (0)	0 (0)	1:2	10-19

MFN- Mouth, Face and Neck

## DISCUSSION

We noted that in southwest Nigeria radicular jaw cyst was the commonest, followed by dentigerous cyst and this is in agreement with several other studies from varied topographies (5, 8-10). The most common etiology for jaw cysts in general therefore is the spread of inflammation, since this is responsible for radicular cysts. All the classification schemes used in this study, either directly or by inference, categorised inflammatory jaw cysts as the most common.

In this study oro-facial cysts were more common in males than females with a male to female ratio of 1.4:1. A study in Kumasi, Ghana, another west-African location found a male to female ratio of 1:1 in a cohort of 55 cases (9). A larger sample study of 695 cases in France however, found a male to female ratio of 1.8:18; we can therefore submit that on a general scale, large studies show a definite but slight male predilection for oro-facial cysts and these types of studies are more representative.

A large percentage of cases were seen in the first four decades of life and this is in agreement with various other studies (8-10). We however noted a decrease of inflammatory cystic lesions with increasing age; this may also suggest a decrease in caries in that age group. Other studies found a rising DMFT with increasing age (11, 12), mainly due to caries, and this supports the aetiopathogenesis of inflammatory cyst in such populations. Our observation thus poses the question of what the aetiopathogenesis of inflammatory jaw cyst is in the southwest Nigerian adult.

The most common site of occurrence in our study was the mandible with a mandible/maxilla ratio of 1.5:1. Meningaud *et al* and Fahimeh *et al* all found a mandible to maxilla ratio of 3:1 (8, 13). Demirkol *et al* however found a maxilla to mandible ratio of 1.2:1 (10). General reviews of literature agree with mandibular preponderance and this

may imply a higher tendency for activation of rest cells toward cystic degeneration in the mandible.

For most of the cysts, plain film radiography (PFR) was an adequate imaging modality. In some of the cases, CT with MPR programme was also performed. The CT with MPR software, originally designed for implant dentistry, has proven to be useful in the evaluation of jaw abnormality and pathology (4,15-19). Using this software programme, anatomic structures, such as the mandibular canal, mental foramen, incisive canal, and maxillary sinus, can be seen in cross-section.

The objective of treating orofacial is to restore the morphology and function of the affected area. There are two basic surgical procedures, namely marsupialisation and enucleation. Marsupialisation, a relatively simple procedure, consists of surgically producing a "window" in the cystic wall to relieve intra-cystic tension. After this, the cystic cavity slowly decreases in size. The cavity is lightly packed with paraffin gauze until the line of junction between the cystic lining and the oral mucosa has healed. Three to six months later, enucleation is performed.

Adjudging the discrepancies between the classification schemes, we noted that 37.5% were unclassifiable by the Killey and Kay classification, 32.8% were unclassifiable using the Lucas classification but all cases were classifiable by the WHO method. So what categorisation system should we use? To resolve controversy, Shear and Speight advised that readers be encouraged to use any classification they find valuable as an aid to memory and understanding (5). We advise the use of the most comprehensive scheme for appropriate inclusion of every cyst and a unified internationalised comparison format.

## CONCLUSION

The inflammatory jaw cyst is the most common type in southwest Nigeria, occurs more in males compared to females and is more common in the mandible compared to the maxilla. Using all the classification schemes agree with this observation, but for confusion to be avoided we recommend the use of the most comprehensive scheme for appropriate inclusion of every cyst.

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