

## ORIGINAL ARTICLE

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# AUDIT OF ORAL AND MAXILLOFACIAL SURGICAL CONDITIONS SEEN AT PORT HARCOURT, NIGERIA

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### Abstract

**Background:** The worldwide pattern of oral and maxillofacial surgical conditions has been rarely reported despite its significance in head and neck medicine. The Niger Delta region comprises 9 of the 36 states in the Federal Republic of Nigeria. There are scanty reports on oral and maxillofacial surgical diseases from the region despite its 95% contribution to Nigeria's oil-revenue.

**Methods:** This retrospective survey of oral/maxillofacial surgical cases seen at a referral center in Port Harcourt, a city in the Niger delta region of Nigeria.

**Results:** Between 2000 and 2004, our center offered specialized maxillofacial surgical services to 86 patients coming from 5 states in the Niger delta region. These patients made up 20% of all patients seen at the department within the period. There were 110 indications for surgical interventions. Most were complaints of trauma (46.4%). The rest were tumors and allied lesions (39.0%) and cysts (12.7%). Ratio of male to female patients was 1.7:1 while patients were aged between 9 and 85years (mean 31.2years, standard deviation  $\pm 15.4$ ). Most (n = 63, 73%) had surgical treatment while a significant proportion (19%) defaulted. Seventy -nine surgical procedures were performed (69 primary and 10 secondary). Primary procedures included maxillo-mandibular fixation (31.9%) and enucleation of tumor/cyst (17.4%). While our series of 86 cases over 4years appears low, there is likelihood that oral and maxillofacial surgical conditions are as common in the Niger Delta region as in other parts of Nigeria. There is scarcity of skilled manpower and equipments for the management of oral maxillofacial surgical conditions in the region. Health promotion activities are needed to improve awareness for early diagnosis of these conditions. Also, poverty alleviation measures need to be effective as defaults were often due to inability to pay for treatment.

**Conclusion:** In many parts of the Niger Delta region of Nigeria, oral and maxillofacial surgical diseases are not uncommon causes of morbidity. However, many parts of the region lack requisite manpower for prevention and curative health activities. Defaults from hospital treatment were due to preference for traditional (unorthodox) measures and financial inability. Poverty alleviation measures need to be stepped up while the state of medical infrastructure should be enhanced in the region.

**Keywords:** oral, maxillofacial, diseases, trauma, tumors, cysts, cancer

### Résumé

**Introduction:** La tendance mondiale de la situation de la chirurgie buccale et maxillo a été rarement signalée en dépit de son importance dans le domaine de médecine de la tête et du cou. La région du Niger Delta comprend 9 des 36 Etats de la République Fédérale du Nigéria. Il y peu de rapports sur la maladie de la chirurgie buccale et maxillo dans la région en dépit de sa 95% contribution au revenu pétrolier du Nigéria.

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**Méthodes:** Cette étude rétrospective des cas d'oral/chirurgie maxillo vus à un centre de referral à Port Harcourt, une ville dans la région du Niger Delta au Nigéria.

**Résultats:** Entre 2000 et 2004, notre centre a offert des services spécialisés de chirurgie maxillo au 86 patients venant de 5 Etats dans la région du Niger Delta. Ces patients représentaient 20% de tous les patients vus dans le Département au cours de cette période. Il y avait des indications pour 110 interventions chirurgicales. La plupart des plaintes ont été des traumatismes (46,4%). Les autres étaient des tumeurs et des lésions connexes (39,0% et des kystes (12,7%, Proportion sexe masculine – sexe féminin était 1. 7:1 des patients. Alors que les patients étaient âgés entre 9 et 85 ans (moyenne de 31,2 ans, l'écart – type +- 15,4). La plupart (n = 63, 73%) ont eu une intervention chirurgicale tandis que une proportion importante (19%) était en défaut. Soixante-dix neuf interventions chirurgicales ont été réalisées (69 primaires et 10 secondaires). Des protocole primaires inclus de fixation maxillo-mandibulaires (31,9%) et l'énucléation de la tumeur / kyste (17,4%). Bien que notre série de 86 cas pendant une durée de 4 ans apparaît faible, il est probable que la chirurgie buccale et maxillo conditions sont aussi fréquente dans la région du Niger Delta comme dans d'autres régions du Nigéria. Il y a pénurie de main-d'œuvre qualifié et des équipements pour la gestion de la chirurgie maxillo-orale dans la région. Les activités de la promotion de la santé sont nécessaires pour améliorer la sensibilisation pour le diagnostic précoce de ces affections. Aussi, des mesures doivent être efficaces parce que le problèmes est souvent due à l'impossibilité de payer pour se faire soigner.

**Conclusion:** Dans de nombreuses parties de la région du Niger Delta du Nigéria, les maladies de la chirurgie buccale et maxillo ne sont pas rare comme attribuable pour la cause de la morbidité. Toutefois, de nombreuses parties de la région, manquent de la main-d'œuvre nécessaire pour effectuer la prévention et de soins curatifs. Manquement de l'hôpital de traitement étaient dues à la préférence des mesures traditionnelles (orthodoxe), ainsi que un problème d'incapacité financières. Des mesures d'atténuation de la pauvreté doivent être intensifiés alors que l'état de l'infrastructure médicale devrait être renforcée dans la région.

**Mot clés:** Buccal, maxillo, les maladies, les traumatismes, les tumeurs, les kystes, le cancer

## Introduction

The scope of oral and maxillofacial surgery includes the management of traumatic conditions of the face, jaws and teeth, cysts, tumors and allied lesions. Other conditions encountered are congenital malformations of the head and neck and infections.<sup>1</sup> Despite its importance in health planning, few reports on the worldwide pattern of oral and maxillofacial surgical diseases are available. In Nigeria, there are considerable data on specific surgical conditions such as facial fractures,<sup>2-4</sup> tumors<sup>5-7</sup> and other maxillofacial conditions.<sup>8-10</sup> However, reports of the overall pattern of presentation to oral and maxillofacial surgical treatment centers in Nigeria are quite few. To date, only one<sup>1</sup> exists to our knowledge.

Due to paucity of specialized oral/maxillofacial surgical manpower, the few reports,<sup>11-13</sup> from the Niger delta region of Nigeria were on violence and vehicular causes of trauma. The pattern and distribution of other conditions such as maxillofacial tumors, cyst and allied lesions have not been previously published to our knowledge. In the geopolitics of Nigeria, the Niger Delta region comprises 9 (Akwa Ibom, Abia, Bayelsa, Cross Rivers, Edo, Delta, Imo, Rivers and Ondo States) of Nigeria's 36 states. The estimated population of the region is 20 million with an annual growth rate of 2.8%.<sup>14</sup> It

provides about 95% of the nation's oil-revenue. However, in this paper, patients were received only from 5 States (Akwa Ibom, Bayelsa, Cross Rivers, Delta and Rivers States). The aim of this paper is to present the pattern of oral and maxillofacial surgical conditions such as fractures, tumors, cysts and allied lesions seen between 2000 and 2004 at Port Harcourt in the Niger Delta region of Nigeria.

## Materials and Methods

Materials for this study were obtained from a retrospective search of medical records of all patients seen at the Department of Dental Surgery, Military Hospital, Port Harcourt, Nigeria between 2000 and 2004. During the study period, the hospital was the referral center for patients with oral and maxillofacial surgical conditions in Akwa Ibom, Delta, Rivers, Bayelsa and Cross Rivers States of Nigeria's Niger Delta region. From the entire cases seen, records of patients with oral and maxillofacial surgical conditions were selected out for analysis of cases notes, operation notes, histopathology results for tumors and cysts and hospital follow-up records. Odontogenic tumors were classified as in Kramer et al.<sup>15</sup> Data collected was analyzed using Microsoft Excel.

**Results**

During the study period, 86 patients were seen who needed oral and maxillofacial surgical treatment. This represented 20% of total patients seen in the department within the period. Table 1 shows there were 110 oral/maxillofacial surgical conditions with trauma making up 46.4% followed by tumors and allied lesions (39.0%). Fifty-four patients (63%) were males while 32 (37%) were females giving a male to female ratio of 1.7:1.

**Table 1.** Oral and maxillofacial surgical conditions seen in Port Harcourt, Nigeria

Indication/diagnosis	No. (%)
Odontogenic tumors	
Ameloblastoma	12
Calcifying odontogenic tumor	1
Odontoma	1
Ameloblastic carcinoma	1
Salivary gland tumors	
Pleomorphic adenoma	1
Ectopic salivary gland tissue	1
Adenoid cystic carcinoma	1
Fibro-osseous lesions	
Fibrous dysplasia	4
Ossifying fibroma	3
Cysts	
Dentigerous	11
Nasolabial	1
Epidermal	2
Non-odontogenic tumors	
Haemangioma	3
Angiofibroma	1
Fibroma	1
Lipoma	1
Benign fibrous histiocytoma	1
Plasmacytoma	1
Squamous cell carcinoma	1
Undifferentiated sarcoma	6
Tumor-like lesions	1
Central giant cell granuloma	1
Epulis	1
Lingual polyp	1
Trauma	
Mandibular fractures	6
Maxilla fractures	26
Zygomatic complex fractures	5
Orbital floor fracture	1
Cheek laceration	5
Lip laceration	2
Tongue laceration	2
Nose laceration	2
Detachment of canthi	2
Others	
Bilateral TMJ ankylosis	1
Chronic TMJ dislocation	1
<b>Total</b>	<b>110</b>

TMJ: Tempromandibular joint

Ages of patients ranged from 9 to 85 years (mean 31.4 years ±15.4). Out of 86 cases, more (31, 36%) were in the third decade of life than in the fourth decade (20%). In all age groups except the very elderly (above 70 years), there were more males than females. Between age group 20-29years, the male to female ratio was 3:1. Surgical procedures were performed on 63 cases (73%), a few defaulted (16, 19%) while the rest (8%) were referred. Table 2 shows details of 69 primary procedures performed as treatment.

The main modality (22, 31.9%) was maxillo-mandibular fixation (MMF) followed by enucleation of cyst/tumor (12, 17.4%) and excision of lesion (15.9%). Twenty-one complications (Table 3) resulted from primary treatment. Limitation of mouth opening was the most common complication (24%). Table 4 shows 10 secondary procedures performed to manage these complications.

**Table 2.** Primary oral and maxillofacial surgical procedures performed

Surgical procedures	No. (%)
Maxillo-mandibular fixation	22
Resection	6
Suturing	2
Tracheostomy	2
Angle ostectomy	1
Ramus osteotomy	1
Antral pack	1
Fronto-mandibular suspension	2
Malar elevation	1
Incision and drainage	1
Enucleation of lesion	12
Excision of lesion	11
Debridement	
Removal of bullet pellets	3
Circum-zygomatico-mandibular suspension	1
Transosseous wiring	1
<b>Total</b>	<b>69</b>

**Table 3.** Post-operative complications after primary surgical procedures in 22 patients

Complication	No.
Stitch abscess	3
Painful mobile tooth	1
Persistent discharging sinus	2
Paraesthesia of lower lip	1
Recurrence of lesion	5
Unilateral fibrous ankylosis	1
Limited mouth opening	5
Recurrence of bony ankylosis	1
Delayed union	1
Apical lucency	1
Post-operative death	1
<b>Total</b>	<b>22</b>

**Table 4.** Secondary surgical procedures in 10 patients

Indications	Secondary procedure	No.
Discharging sinus	Debridement	1
Recurrent epidermal cyst	Enucleation	1
Discharging sinus	Exploration	1
Limited mouth opening	Jaw exercises	3
Delayed union	Jaw immobilization	1
Recurrent ossifying fibroma	Excision	1
Apical lucency	Tooth extraction	2

## Discussion

Generally, the literature on the pattern of oral and maxillofacial surgical diseases is scanty despite its importance in health planning and the study of disease conditions in the head and neck region. In Nigeria, considerable accounts of specific surgical conditions have been published<sup>2,5,7,9,16</sup> with only one publication<sup>1</sup> on the overall pattern of presentation at oral/maxillofacial surgical clinics.

The Niger Delta region comprises 9 oil-producing states out of Nigeria's 36 federating states. These states with an estimated population of 20 million people in 2000 had only one tertiary oral/maxillofacial care center (at Benin City, Edo State) before our center opened in 2000. Available reports on maxillofacial surgical conditions in the region are few<sup>11-13</sup> probably due to paucity of oral and maxillofacial care services in most parts of the region. To our knowledge, a report on the overall pattern of hospital presentation for oral and maxillofacial surgical conditions in the Niger delta region of Nigeria has not been previously presented. The previous reports from the Niger Delta,<sup>11-13</sup> were on trauma to the maxillofacial region

According to Ajike et al,<sup>1</sup> 78% of the total patients seen at the Aminu Kano University Teaching Hospital, Kano in Northwestern Nigeria had maxillofacial surgical diseases. The Kano center serves at least five states in Nigeria's northwestern geopolitical zone. This is considerably higher than our rate (20%) from another hospital at Port Harcourt located in Nigeria's South South geopolitical zone. This difference may not necessarily be an indication of differing disease patterns. While the Kano center is a tertiary health care center receiving many referrals, our center in Port Harcourt had a considerable number of general dental cases as it is a secondary care facility. Referral to our center was from dental and general surgical clinics in the five states (Delta, Rivers, Bayelsa, Akwa Ibom and Cross River States) without specialist oral and maxillofacial surgical services within the study period. In Nigeria, management of maxillofacial trauma<sup>2-4,16,17</sup> and neoplasms<sup>5-7,18</sup> appear to constitute the bulk of maxillofacial surgical practice from reports on these conditions. However, the absence of studies on the

overall pattern from various treatment centers in Nigeria make it difficult to determine the relative contributions of each surgical condition to the average workload of the oral and maxillofacial surgeon.

In the report from Kano,<sup>1</sup> trauma accounts for most (55%) maxillofacial surgical conditions seen with less than a quarter (21%) being cases of tumors and allied lesions. Our results based on a Niger delta population within 5 states also show more cases of trauma (46.4%) than tumors and allied lesions (39.0%). The prevalence of maxillofacial tumors and cysts is difficult to compute from this study as the relatively few cases (n = 86) likely represent a tip of the iceberg. A wider population based study is necessary to ascertain the prevalence of jaw tumors and cysts in the Niger Delta region. During the period of this study (2000-2004), our center in Port Harcourt, Rivers State was the only hospital providing specialized maxillofacial surgical care within the 5 states covered. This shows that the estimated entire population of about 10 million people in these 5 states had scanty oral and maxillofacial surgical care facilities. Hence, there is need for more trained personnel to be recruited coupled with investment in provision of infrastructure to meet the health care needs of the population in this part of Nigeria.

Unlike the report from Kano, Nigeria, we could not compare the distribution of conditions to socio-economic status. However, cases of defaults by patients (16%) were reportedly due to inability to pay for treatment and preference for traditional (unorthodox) treatment. This is reflective of the widespread poverty and ignorance on the benefit of modern surgical treatment methods.

About 1% of all oral specimens in North America are odontogenic tumors.<sup>19,20</sup> In sub-Saharan Africa however, odontogenic tumors account for between 8%-31% of all oral and peri-oral surgical specimens.<sup>16,21</sup> Fifteen odontogenic tumors (Table 1) were seen accounting for 26% of all the tumors, cysts and allied lesions seen in this Niger Delta population in Nigeria. This is within the range of other Nigerian studies.<sup>6,7,16</sup>

In a previous work, Adebayo<sup>12</sup> showed that a disproportionate (40%) number of facial fractures in the Niger delta area were due to violence.

This is unlike the general pattern from other parts of Nigeria where facial fractures are due to road crashes (56%-83%), falls (11%-24%) and violence (8%-14%). Reasons for the difference in etiological pattern include youth restiveness, influence of alcohol and excessive use of firearms.

The United Nations Development Programme (UNDP) found that life expectancy of the Nigerian population decreased from 53 years in 1999 to 47 years in 2004. This shows that improvement in state revenue mostly from oil exports in Nigeria has not improved the quality of life of her citizens. This is more obvious in the Niger Delta region where five of the six states within the period 2000-2004 lacked adequate skilled oral and maxillofacial care. Figure 1 showed that 36% of our patients were in the third decade while 16% were in the second decade. This may be explained by the youthful nature of Nigeria's population as 45% of the population is below 15 years of age.<sup>14,22</sup> Also, restiveness in the region has been mostly among the young people. It is necessary to urgently tackle the various causes of low life expectancy in Nigeria as shown in the Vision 2010 document and Nigerian Demographic and Health Survey of 2003.<sup>14,23</sup> It is suggested that health promotion and poverty alleviation be stepped up throughout Nigeria especially in the Niger Delta region.

Treatments for the various surgical conditions encountered in this report are as in other Nigerian studies. Among 69 procedures performed, MMF with either open or closed reduction of fractures was the most common (31.9%). Others were enucleation of tumors/cysts (17.4%), excision (15.9%) and jaw bone resection (8.7%). MMF was the most common surgical procedure in the Kano report.<sup>1</sup> Reasons why MMF is favored over open reduction with use of hardware have been discussed in earlier studies on fracture treatment among Nigerians.<sup>3,4</sup>

Post-operative morbidity is important as it influences patient's perception of available surgical care. According to Adekeye and Apapa,<sup>22</sup> facial deformity and drooling of saliva are significant complications of jaw and soft tissue resection in the maxillofacial region. In a later report on maxillofacial surgical procedures of different types, Ajike et al,<sup>1</sup> found that malocclusion (30%) and facial deformity (26%) were the more important. Our patients reported limited mouth opening (24%), stitch abscess (14%) and recurrence of lesion (14%) as significant complications. Differences in types and rates of complications reflect the stage at which surgical lesions are treated and surgical expertise available.

### Conclusion

This hospital based study represents a tip of the iceberg considering the likely scale of oral and maxillofacial surgical conditions in the Niger Delta region of Nigeria. There is relative paucity of surgical

care centers, ignorance of early symptoms of maxillofacial surgical disease and prevalent poverty prevent many patients from reporting with disease conditions. Some who reportedly default also complain of inability to pay. Previous Nigerian studies show that traumatic conditions and tumors constitute the bulk of presentation for specialized oral and maxillofacial surgical care. There is need for greater investment in health and other human services in Nigeria generally to improve life-expectancy and foster socio-economic development. There is also need for more public enlightenment of the populace to create awareness on benefits of early diagnosis of these conditions.

### References

1. Ajike SO, Arotiba JT, Adebola RA, Ladehinde A, Amole IO. Spectrum of oral and maxillofacial surgical procedures in Kano, Nigeria. *West Ind Med J.* 2004; 53 (Suppl 6):9-12.
2. Adekeye EO. The pattern of fractures of the facial skeleton in Kaduna, Nigeria. A survey of 1447 cases. *Oral Surg.* 1980;6:491-495.
3. Ugboko VI, Odusanya SA, Fagade OO. Maxillofacial fractures in a semi-urban Nigerian teaching hospital. A review of 442 cases. *Int J Oral Maxillofac Surg.* 1998;27:286-289.
4. Adebayo ET, Ajike SO, Adekeye EO. Analysis of the pattern of maxillofacial fractures in Kaduna, Nigeria. *Br J Oral Maxillofac Surg.* 2003;41:396-400.
5. Subbuswamy SG, Shamia RI. Oral and maxillofacial tumors in northern Nigeria. An analysis over five years. *Int J Oral Surg.* 1981;10:255-260.
6. Odukoya O. Odontogenic tumors, analysis of 289 Nigerian cases. *J Oral Pathol Med.* 1995;24:454-457.
7. Arotiba JT, Ogunbiyi JO, Obiechina AE. Odontogenic tumors. A 15 years review from Ibadan, Nigeria. *Br J Oral Maxillofac Surg.* 1997;35:363-367.
8. Daramola JO, Ajagbe HA. Chronic osteomyelitis of the mandible in adults; a clinical study of 34 cases. *Br J Oral Maxillofac Surg.* 1982;20:58.
9. Adekeye EO, Ord RA. Cancrum oris: principles of management and reconstructive surgery. *J Maxillofac Surg.* 1988;11:160-170.
10. Ugboko VI, Oginni FO, Ajike SO, Olasoji HO, Adebayo ET. A survey of temporo-mandibular joint dislocation; aetiology, demographics, risk factors and management in 96 Nigerian patients. *Int J Oral Maxillofac Surg.* 2004; 34:499-502.
11. Saheeb BDO, Etetafia MO. Influence of positions on the incidence and severity of maxillofacial injuries in vehicular crashes. *West Afr J Med.* 2003;22:146-149.

12. Adebayo ET. Maxillofacial fractures in Port Harcourt, Nigeria- A short report. *African Journal of Trauma* 2004; 2: 85-87.
  13. Saheeb BDO, Adeola DS. Cranio-maxillofacial gunshot injuries sustained in religious and ethnic riots in Nigeria. *African Journal of Trauma* 2004; 2: 88-91.
  14. Federal Republic of Nigeria. Nigeria Vision 2010 Report. *Nigeria World* (accessed online 30 Mar 2006).
  15. Kramer IRH, Pindborg JJ, Shear M. Histological classification of odontogenic tumors. World Health Organization. Springer-Verlag, Berlin, 1992;7-9.
  16. Adebayo ET, Ajike SO, Adekeye EO. A review of 318 odontogenic tumors in Kaduna, Nigeria. *J Oral Maxillofac Surg.* 2005;63:811-819.
  17. Oji C. Jaw fractures in Enugu, Nigeria 1985-1995. *Br J Oral Maxillofac Surg.* 1999;37:106-109.
  18. Anand DV, Davies WW, Cohen B. Tumors of the jaws in West Africa. *Br J Surg.* 1967;54:901-917.
  19. Regezi JA, Kerr DA, Courtney RA. Odontogenic tumors; analysis of 706 cases. *J Oral Surg.* 1978;36:771-778.
  20. Daley TD, Wysocki GP, Pringle GA. Relative incidence of odontogenic tumors and oral and jaw cysts in a Canadian population. *Oral Surg Oral Med Oral Pathol.* 1994;77:276-280.
  21. Chidzonga MM, Lopes Peres WH, Portilla Alvarez AL. Odontogenic tumors; Analysis of 148 cases in Zimbabwe. *Cent Afr J Med.* 1996;42:158-160.
  22. Adekeye EO, Apapa DJ. Complications and morbidity following surgical ablations of the jaws. *West Afr J Med.* 1987;6:193-200.
  23. Federal Republic of Nigeria. Nigerian Demographic and Health Survey 2003. Key Findings. National Population Commission and ORC Macro, Maryland, 2004.
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