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RESEARCH ARTICLE

A 9-YEAR AUDIT OF MAJOR ORAL AND MAXILLOFACIAL SURGERIES DONE AT NOMA CHILDREN HOSPITAL SOKOTO

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ABSTRACT

Ba*ckground:* Despite progressive development in dental sub-specialties and, an increase in the number of oral and maxillofacial surgeons in Nigeria, there were few studies done to report the pattern of maxillofacial surgeries done especially in the Northwestern region. This study aims to present an audit of oral and maxillofacial surgeries done at Noma children's hospital (NCH) Sokoto. ***Methodology:*** This is a retrospective study of the record of the oral and maxillofacial surgeries done at NCH Sokoto from June 2013 to June 2022. Demographic characteristics, site of the lesion, indication for surgery, route of intubation, the procedure performed and, complications were recorded. Data were analyzed using SPSS version 25. ***Result:*** There were 99(64.7%) males and 54(35.3%) females with a mean±SD of 20.68±15.52years and, a range of 1-72 years. Temporomandibular joint (TMJ) (47(30.7%)) was the commonest region affected followed by the mandible in 35(22.9%) of the cases. Temporomandibular joint ankylosis was the commonest indication for surgery. The most common surgical procedure done was surgical excision (32(20.9%)) while the least was Open reduction and internal fixation 4(2.6%). Reconstruction of hard tissue was done using iliac and rib grafts. Variable complications including facial nerve paresis, hardware extrusion and, recurrence were recorded in 25% of the cases. **Conclusion:** Oral and maxillofacial surgery is a demanding specialty in our clime due to the observable increase in cases and evolving specialized centers. There is a need for regular surgical audits, improved, and expansion of co-managing units and increase in the training of dental sub-specialists. Increasing healthcare funding as well as insurance coverage will assist in improving preventive and surgical aspects of oral and maxillofacial surgical conditions.

INTRODUCTION

Oral and maxillofacial surgery is a specialty in dentistry that involves diagnosis, surgical and adjunctive treatment of diseases, injuries, and defects involving both functional and aesthetic aspects of the hard and soft tissues of the oral and maxillofacial region.[1] The scope of this specialty includes; the management of congenital conditions of the head and neck, traumatic conditions of the face, jaws and, teeth as well as management of cervicofacial infections.[2] Oral and maxillofacial surgery is a relatively new and promising specialty in Nigeria, particularly in the northwestern part of the country.[3]

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There has been an increase in the number of cases possibly due to increased awareness and acceptance of hospital treatment by local people unlike before. It may also be due to recent frequent attacks on the communities by the armed bandits, unknown gunmen as well as political thugs inflicting variable oral and maxillofacial injuries. There is a growing emphasis on frequent evaluation and monitoring of surgical procedures through a surgical audit, especially in evolving specialties.[4] A surgical audit plays a vital role in improving service delivery, research and, good policy making.[5] It also enables prioritization and appropriate allocation and distribution of limited resources, especially in resource-limited environments like ours. A surgical audit is also expected to provide improved quality of care, continuous learning opportunities and, guide appropriate use of resources.[4, 5] It may also be required to evaluate the existing systems which aim at improving surgical

practice with the ultimate goal of giving patients a better quality of care.[4] Hence, this study aims to present an audit in terms of indication, pattern, types of procedures as well as the complications of oral and maxillofacial surgical procedures done at Noma children's hospital (NCH) Sokoto.

METHODOLOGY

This is a retrospective study of the patient's record of the oral and maxillofacial surgeries done at NCH Sokoto from June 2013 to June 2022. Noma children hospital was established in 1999 by the Sokoto State government to provide free services to curtail Noma diseases that became endemic in the study region as well as for research.4 However, Patients with all forms of maxillofacial lesions present to the hospital seeking free intervention. With a memorandum of understanding between NCH and the department of dental and maxillofacial surgery of UDUTH Sokoto, maxillofacial surgeons begin to operate in the health facility in 2013. Cases of cleft and Noma surgeries were excluded from this study.

After obtaining ethical approval from the State ministry of health, all case records of oral and maxillofacial surgeries performed during the study period irrespective of age and gender were included in the study. Case records with incomplete required information were excluded. Demographic characteristics, nature of the lesiom, site of the lesion, indication for surgery, route of intubation and, the type of surgery done were all recorded. Data were analyzed using SPSS version 25.

RESULTS

Records of 153 patients who had major oral and maxillofacial surgeries were included in the analysis. There were 99(64.7%) males and 54(35.3%) females with a mean± SD of 20.68±15.52years and a range of 1-72 years. The majority of patients were in their 2nd decade of life.

Table 1. Sociodemographic variables of the study cases

Sociodemographic	Frequency n (%)
Gender	
Male	99(64.7)
Female`	54(35.3)
Total	153(100)
Age group	
1-10	5 2(34.0)
11-20	35(22.9)
21-30	30(19.6)
31-40	18(11.7)
41-50	10(6.6)
51-60	6(3.9)
61-70	0(0)
71-80	2(1.3)
Total	153(100)
Level of Education	
Primary	26(17.0)
Secondary	25(16.3)
Tertiary	13(8.5)
Others/Nil	89(58.2)
Total	153(100)
Occupation	
Farming	45(41.3)
Business	15(13.8)
Civil servant	8(7.3)
Others	85(37.6)
Total	153(100)

Table 2. Distribution of the Site of the lesion among the study cases

Site of the lesion/condition	Frequency	Percentage (%)
Maxilla	21	13.7
Mandible	35	22.9
Lip	2	1.3
Parotid	13	8.5
Temporomandibular region	47	30.7
Palate	6	3.9
The floor of the mouth	5	3.3
Others	24	15.7
Total	153	100

Table 3. Oral and maxillofacial surgical conditions managed at NCH Sokoto, Nigeria

Indication/Diagnosis	Frequencyn (%)
Odontogenic tumors	
Ameloblastoma	13(8.5)
Adenomatoid odontogenic tumor	1(0.7)
Odontogenic myxoma	1(0.7)
Cysts	
Dentigerous cyst	5(3.3)
Odontogenic keratocyte	3(2.0)
Mucocele	2(1.4)
Ranula	5(3.3)
Dermoid cyst	3(2.0)
Salivary gland tumors	
Pleomorphic adenoma	16(10.5)
Adenoid cystic carcinoma	2(1.4)
Mucoepidermoid carcinoma	1(0.7)
Nonodontogenic tumors/tumor-like lesions	
Angiofibroma	1(0.7)
Cystic hygroma	1(0.7)
Fibrous epulis	2(1.4)
Haemangioma	1(0.7)
Lipoma	1(0.7)
Neurofibroma	2(1.4)
Osteosarcoma	1(0.7)
Squamous cell carcinoma	2(1.4)
Basal cell carcinoma	1(0.7)
Peripheral giant cell granuloma	2(1.4)
Pyogenic granuloma	2(1.4)
Soft tissue myxoma	1(0.7)
Fibro osseous lesions	
Fibrous dysplasia	2(1.4)
Ossifying fibroma	7(4.6)
Cemento-ossifying fibroma	2(1.4)
Central giant cell granuloma	1(0.7)
Trauma	
Mandibular fracture	3(2.0)
Nasal complex fracture	1(0.7)
TMJ ankylosis	47(30.7)
Others	
Osteomyelitis	16(9.2)
Oroantral communication	4(2.6)
Keloid	1(0.7)
Total	153(100)

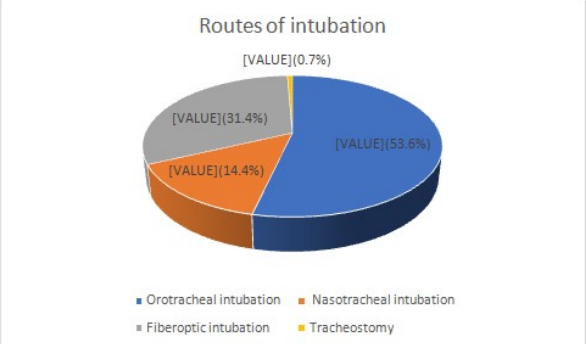


Figure 1. Routes of intubation used during the surgeries

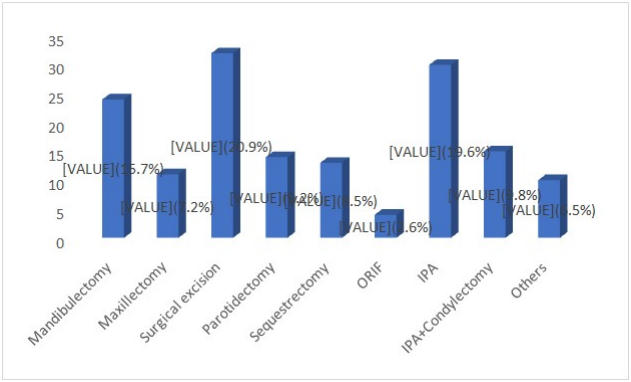
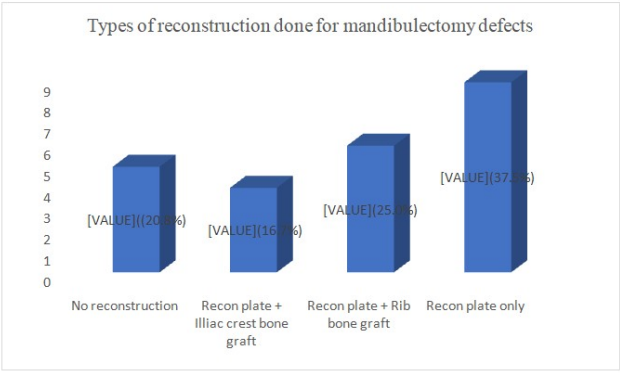


Figure 2. Types of surgeries performed

Table 1 shows the Socio-demographic variables of the study population. Temporomandibular joint 47 (30.7%) was the commonest maxillofacial region affected followed by mandible in 35(22.9%) (Table 2). Temporomandibular joint ankylosis 47(30.7%) was the commonest indication for surgery, followed by osteomyelitis in 16(9.2%) as depicted in Table 3.

All the cases in this study were done under general anaesthesia via: orotracheal intubation 82(53.6%), nasotracheal intubation 22(14.4%) fiberoptic intubation 48(31.4%) and, tracheostomy 1(0.7%) with no untoward events recorded (Figure 1). The most common surgical procedure done was surgical excision 32(20.9%) followed by interpositional gap arthroplasty (30(19.6%)) and mandibulectomy (24(15.7%)) (Figure 2).



Recon= Reconstruction

Figure 3. Types of reconstruction done for mandibulectomy defects

Open reduction and internal fixation (ORIF) procedures (4(2.6%)) were infrequently done. Among the cases that had mandibulectomy, 4(16.7%) patients had reconstruction with iliac crest bone graft, 6(25.0%) with rib bone graft and, 9(37.5%) had only reconstruction plate secured with the plan for secondary reconstruction (Figure 3).

Two cases of surgical excisions secondary to malignancies were reconstructed using pectoralis major myocutaneous flap and inferior based nasolabial flap respectively. None of the patients planned for secondary reconstruction came back for the second surgery. Records on postoperative complications releveled facial nerve paresis, lip paresthesia, hardware extrusion, recurrence and graft/flap failure in 25% of all the cases.

DISCUSSION

Until recently, there were few centers in Nigeria where cases of oral and maxillofacial surgeries were attended to, likely due to the scarcity of resources including; manpower and, equipment. Currently, more and more maxillofacial centers are evolving. This could be due to an increase in the number of oral and maxillofacial surgeons from the residency training programs prevailing in our training institutions across the country. Increasing awareness about maxillofacial surgical specialty and the services provided to the patients have been suggested to be the reasons for expansion in the existing infrastructure.[3] The main objective of this current study was to present an audit of oral and maxillofacial surgical conditions managed at Noma Children Hospital Sokoto for 9 years. Hospital audit in this relatively new and progressively growing surgical sub-specialty becomes necessary since it provides information on the level of quality of services provided so that it can be improved to a higher level. This could be used as a benchmark upon which health resources can be distributed by the relevant authorities. Adebayo et al.[6] in a similar study highlighted the importance of audits in health planning at the hospital services administrative level. A good audit can provide a comparison with previous and future performances. It can also discloses the degree of inadequacy as well as shortcomings and, can also provide feedback for quality improvement especially, when compared to the high standard of quality care given by the already established centers across the country and the globe in general.[7]

There were more males compared to female patients in this audit, which agrees with most findings in the literature.[3, 8, 9]This male preponderance have been linked with paternalistic predispositions in health-seeking behaviors, the higher worldwide prevalence of malignancies in males as well as their more involvement in vehicular movement which exposes them more to traumatic injuries.[2, 3]Furthermore, majority of the patients treated for the maxillofacial lesions in this study were farmers and they are more exposed to environmental factors compared to females, who are mostly housewives that stays at home most of the time. The majority of patients in this study were in their 2nd decade of life. Varying age decades were reported in many similar audits.[4, 10, 11] Moshy et al.[12]and Okoro et al.[13]reported 3rd and, 1st decade of life respectively. Ibikunle et al.[3] in a similar study at a similar environment reported the 4th decade of life as the modal decade. Because the spectrum of maxillofacial lesions can occur at any age, it is not a surprise when variable age brackets have been reported in different maxillofacial surgical audits. In our study, temporomandibular joint ankyloses was the commonest indication for surgery followed by osteomyelitis mostly in children. However, Ibikunle et al. in a 5year audit of maxillofacial surgeries reported tumor and tumor-like conditions to be the commonest indication for surgery. Ajike et al.[8] stated that trauma was the most common condition in their audit. In this current study, the incidence of temporomandibular joint (TMJ) ankylosis may be related to the fact that cases of TMJ ankylosis secondary to Noma are being registered as part of the free Noma intervention programmes by Medicine sans frontier (MSF) and, pool of these surgical cases were seen trooping from many parts of the country. The number of tumor and trauma cases was limited principally due to the presence of a tertiary teaching hospital in our center vicinity that has more resources in terms of manpower and facility to manage these related conditions.

A variable number of operative procedures were carried out within the period under review with some reported complications. All the procedures were performed under general anaesthesia. In oral and maxillofacial surgery, anaesthesia may present some intricate problems that are peculiar to oral and maxillofacial surgery as a result of the concept of shared airway.[15] These procedures demand special consideration in the establishment and maintenance of a patent and functional airway.[1] Anaesthetists must conduct a thorough and careful assessment of the upper respiratory tract, comprehend the inimitable nature of certain maxillofacial lesions, and establish ventilatory access that does not hinder with the planned procedure. A boundless deal of skill in airway handling is necessary.[14, 15] The various options of anaesthesia utilized in this current study were conventional orotracheal and nasotracheal intubation, fiberoptic intubation and, in one case a tracheostomy. No anaesthesia-related complication was recorded.

Surgical excision of various maxillofacial lesions constitutes the majority of surgical procedures recorded in this study. ORIF were the least procedure performed in this audit which is contrary to a study by Okoro et al.[12] who observed cleft lip and palate surgeries to be the commonest. Cleft lip and palate surgeries and, surgeries for correction of Noma defects using various local and regional flaps were not included in this study basically because they were considered in a separate surgical intervention by separate surgical teams within the hospital. Mandibulectomies were the second most commonly performed ablative surgical procedures in this audit. This is due to lesions with mandibular predilection such as ameloblastoma and, osteomyelitis that were commonly seen and managed in our setting. Most of the patients who had mandibulectomy had immediate placement of titanium reconstruction plates and srews. Some cases had mandibular reconstruction done using an iliac crest graft, while some were reconstructed with a rib graft. Soft tissue losses that could not be closed primarily were closed using either pedicled local or distant flaps. The hospital was initially meant for the management of Noma disease, but the progressive increase in the number of patients presenting with various other maxillofacial conditions warrants the hospital managing authority to sort an alternative for treating those other maxillofacial cases. Most of the time, refer cases comes from community health officers from the villages who had no adequate training in Noma disease identification. Postoperative sequelae and complications are inevitable in surgery, but the effort and prevention rendered is key to their minimization. This audit recorded graft/flap failure, facial nerve paresis, plate extrusion, lip anaesthesia and, tumour recurrence. Variable complications were reported by different authors. Adekeye and Apapa in a similar study reported facial deformity and drooling of saliva as the significant complications.[15] In a more recent study, Ajike et al.[8] reported malocclusion and facial deformity as observed complications. Complete follow-up records of these patients could not be determined due to loss of patients to follow-up. An appreciable number of patients were not seen after discharge from the hospital.

CONCLUSION

Oral and maxillofacial surgery is a demanding specialty in our clime due to an observable increase in the number of cases and new evolving centers. There is a need for regular audits, improved working conditions, expansion of other comanaging units and increase in the training of dental sub-specialists. Increasing healthcare funding as well as insurance coverage will assist in improved preventive and surgical aspects of oral and maxillofacial surgical conditions.

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