



Full Length Research Paper

Challenges of Surgical Management of Maxillary Tumours in a Developing Country

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ABSTRACT

Most tumours of the maxillary sinus are “silent” producing no direct symptoms until they reach advanced stage. Treatment of these tumours often includes maxillectomy, with outcomes that vary depending on several factors. To highlight the clinical pattern of patients that had Maxillectomy for sinonasal tumours and the challenges of management in a Nigerian tertiary Hospital. Records were obtained from a chart review of all patients who underwent Maxillectomy for sinonasal tumour over a 10 year period. During the period, 31 patients with maxillary tumour were seen and only 11 patients underwent different forms of Maxillectomy. Three (27%) were males and 8 (73%) were females. Only four patients could afford a computed tomography scan. The common complications were postoperative epistaxis and feeding difficulty (27%) while cheek graft failure (9%) and depression (9%) were least. The challenges encountered in our facility during management include limited diagnostic equipments and treatment facilities and the fact that patients could not afford the cost of management. The challenges in the management are enormous and need to be addressed to enhance early presentation, diagnosis and better management and outcome.

Keywords: Maxillectomy, sinonasal tumours, challenges, Nigeria

INTRODUCTION

Maxillectomy is indicated for surgical excision of tumours arising from or affecting the maxilla (Wei, 1997; Brian and Maurice, 1992). The most common malignancy requiring maxillectomy is squamous cell carcinoma, although a wide variety of other malignancies including sarcoma, adenoid cystic carcinoma, and olfactory neuroblastoma may occur at this site (Kraus et al., 1990). Tumors of the maxillary sinus are diverse and may be benign or malignant and of varied origin. Since benign tumours are not uncommon (Cheesman and Jani, 1997), maxillectomy could be considered for huge benign tumours disfiguring the face or those with potential of malignant transformation like ameloblastoma or non neoplastic conditions like invasive fungal sinusitis. Maxillectomy is a multidisciplinary procedure involving the otolaryngologists, dentists, oral surgeons, oncologist, plastic surgeons, prosthodontists, neurosurgeons, speech pathologists, and clinical psychologist. This team

is needed to obtain an accurate diagnosis, staging and remove the tumour, reconstruct resulting cosmetic defects, and rehabilitate functional deficits.

Evaluation of patients with tumours of the maxillary sinus requires the identification of the tumour's site of origin, extension and histological differentiation. Therefore apart from a full history and clinical examination, the management of maxillary tumours includes investigations and other assessment such as magnetic resonance imaging (MRI), computerized tomography (CT) scan, examination under anaesthesia and biopsy for histological diagnosis. These are needed to establish the precise diagnosis and surgical planning of tumours when indicated (McMonagle and Gleeson, 2008).

The extent of surgical resection of the maxilla depends on the nature of the tumour, site of the maxilla involved and the extent of its local spread. Adjuvant therapies such as chemotherapy and radiotherapy are commonly

advocated, particularly in advanced stages or tumours with aggressive pathologies. The interplay of tumour and patient factors as well as availability of diagnostic and treatment facilities contributes to the outcome of management.

This study was aims to highlight the clinical pattern as well as challenges associated with presentation and surgical management of maxillary sinus tumours in a Nigerian Tertiary hospital.

METHODOLOGY

Study design

This is a retrospective cohort study of patients who had undergone maxillectomy for histologically confirmed maxillary sinus tumour over a 10year period (April, 2003 to April, 2013). These include patients seen in the Ear, Nose and Throat (ENT) and Oral and Maxillofacial Surgery Departments of our facility. Data were obtained from both clinics as cases were managed in either of them.

Study setting

The study was conducted at a referral tertiary hospital in the southwestern Nigeria.

Study protocol

The clinical records of patients with histologically confirmed maxillary sinus tumours that presented to our facility and undergone maxillectomy were analysed for age, sex, social class, pattern of clinical presentation, duration of symptoms before presentation, side of lesion, diagnostic protocol, associated complications and duration of follow up. Challenges and outcomes were also analyzed.

RESULTS

During the period under review, a total of 31 patients presented and were histologically proven to have tumours of the maxillary sinus that required maxillectomy but only 11 maxillectomies were done during this same period. The age ranged between 15 – 75years with a mean of 37.5years (Figure 1). Three (27%) were males and eight (73%) were females with a male to female ratio of 1:2.7.

Among the patients that underwent maxillectomy; 27.3% (three), 54.5% (six) and 18.2% (two) belonged to the upper, middle and lower socioeconomic class respectively. Out of the 20 that did not eventually

undergo surgery, 80% (16) were from low socioeconomic class and could not afford surgery. The remaining four had advanced and inoperable disease, eventually had palliative treatment.

Two patients underwent limited maxillectomy another two underwent extended maxillectomy while seven patients underwent total maxillectomy. Seven (63.6%) patients underwent maxillectomy for malignant tumour while four (36.4%) were performed for benign cases.

Out of the malignant cases, three (42.9%) patients presented within 5 months, another three (42.9%) presented between 5-10 months and 1(14.2%) presented 2 years after the onset of symptoms. Four (57.1%) of the tumours were located on the left and three (42.9%) on the right side. All seven malignant cases presented with nasal obstruction and a nasal mass with extension to the cheek in three (42.9%) cases. Five (71.4%) had epistaxis, two (28.6%) had prior history of tooth ache with dental extraction and five (71.4%) presented with proptosis (Figure 2)

For the benign cases (36.4%), all were females. Duration of symptoms before presentation ranged between 9 months - 5 years. Fifty percent (two) of the benign cases were on the left and 50% (two) on the right. All the patients presented with painless cheek swelling. Two (50%) had associated nasal obstruction (Figure 3). Squamous cell carcinoma was found to be the commonest histological type with a prevalence of 37% and others were 9% each (figure 5).

Plain radiographs of the paranasal sinuses (occipitomental and submentovertical views) were the only radiodiagnostic methods used in case management for most patients, only four patients (36.4%) could afford computed tomography (CT) scan available in hospital due to the high cost of the investigation. At first, MRI was not available at the hospital, but when it became available, its cost was too high to be used routinely. So, none of the patients of this study underwent MRI.

Table 1 highlights histological diagnosis and surgery performed on each patient. All patients were seen by the prothodontist at least two weeks before maxillectomy so as to make a surgical obturator and or feeding plates. Extent of the resection by intraoperative findings led to an ineffective fit in four (36.4%). This required the additional modifications which could not be done immediately. Two of the patients with malignant tumours had pre-operative chemotherapy and all seven were referred for post-operative chemo-radiation in another tertiary hospital.

The complications noted were feeding difficulty (27%), postoperative epistaxis (27%), cheek anaesthesia (18%), delayed wound healing (18%), flap failure due to necrosis occurred in one (9%) patients, depression secondary to aesthetic changes (9%) and two (18%) had tumour recurrence at about 18 months post operatively.

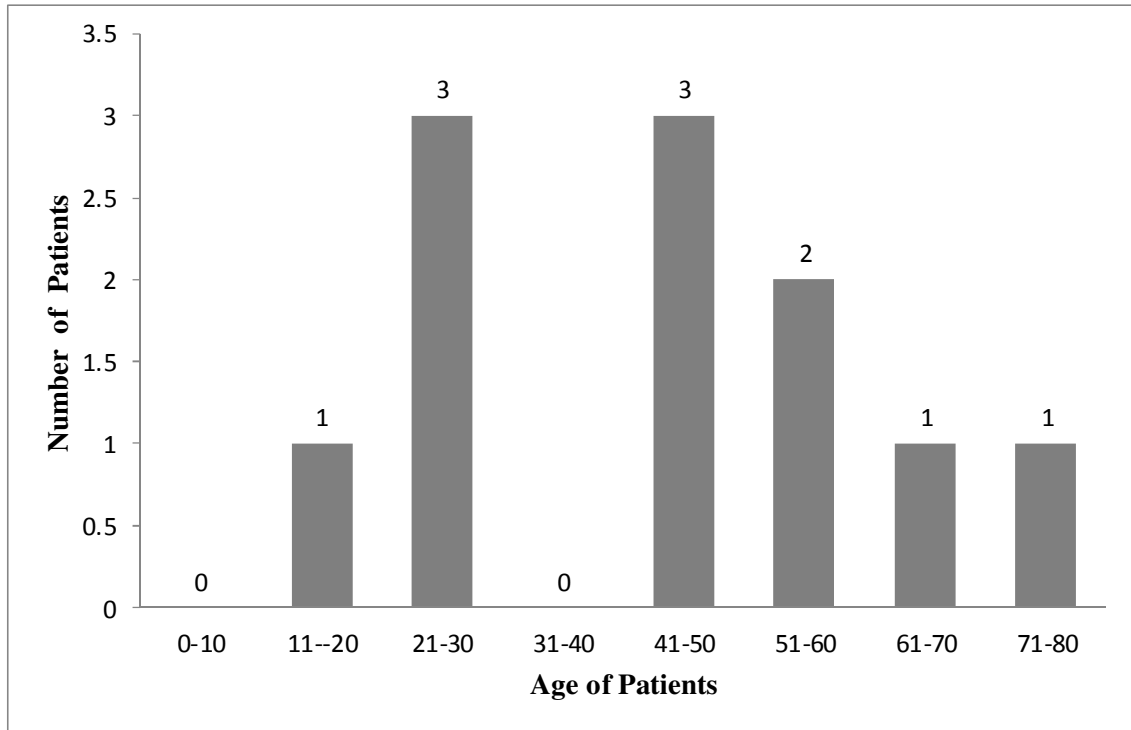


Figure 1. Age Distribution of Patients

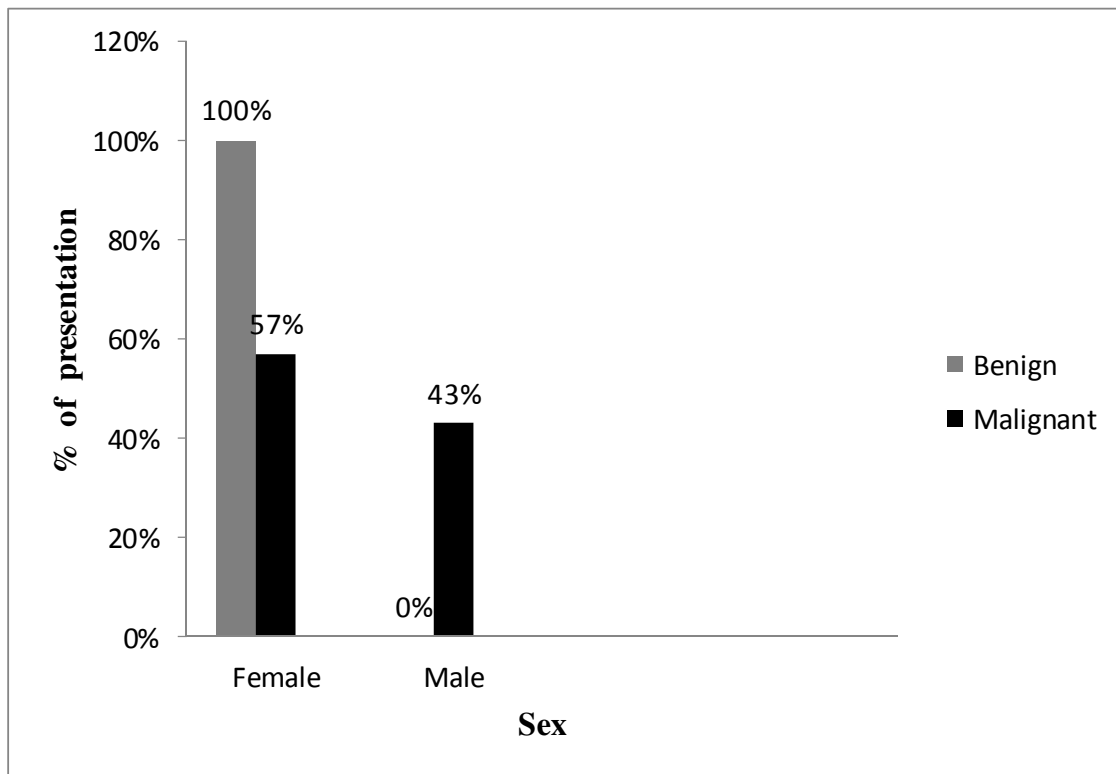


Figure 2. Clinical Pattern for Sex Distribution

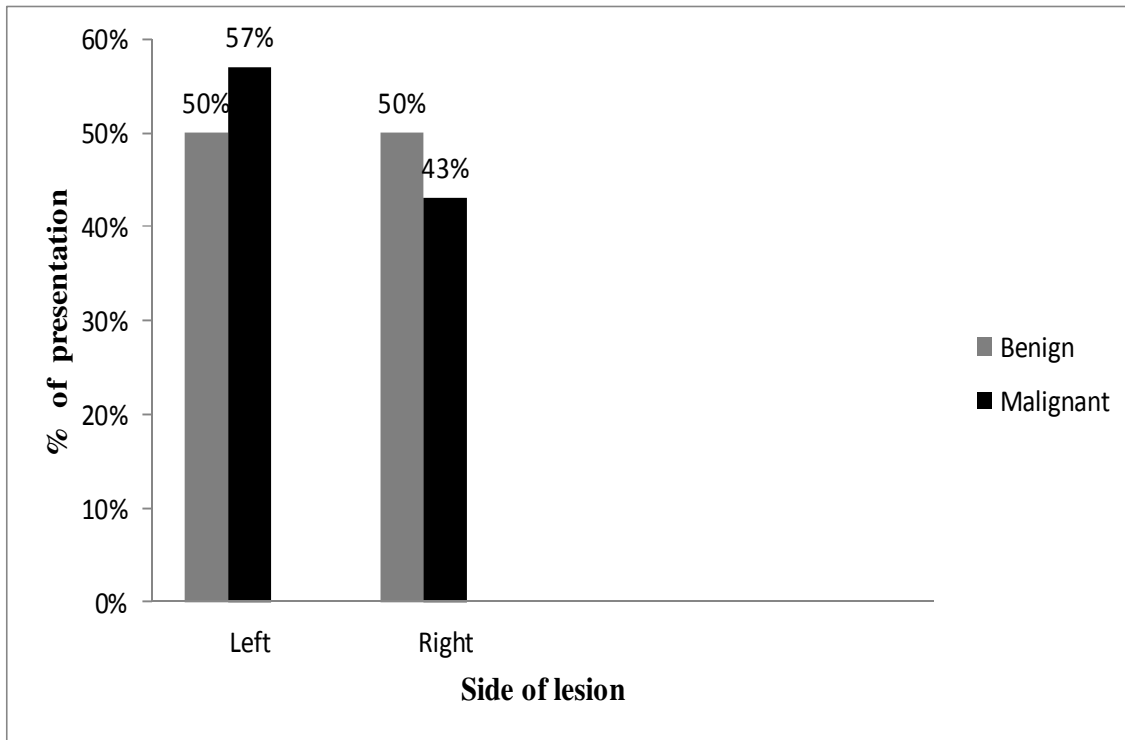


Figure 3. Clinical Pattern for side of lesion

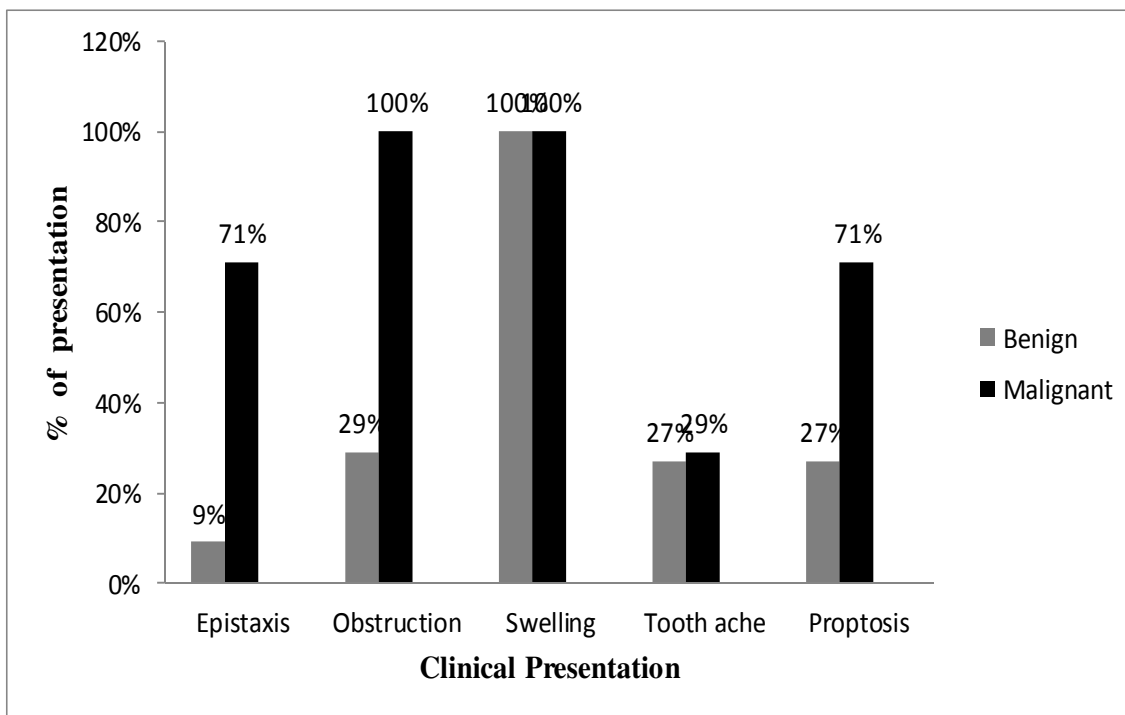


Figure 4. Clinical Presentation of Maxillary tumours

Table 1. Type of Maxillectomy performed and Histological Pattern of Tumours

S/N	HISTOLOGY		PROCEDURE
1	INTRAMEDULLARY OSTEOSARCOMA		EXTENDED MAXILLECTOMY
2	SQUAMOUS CARCINOMA	CELL	TOTAL MAXILLECTOMY
3	ODONTOGENIC MAXILLARY MYXOMA		PARTIAL MAXILLECTOMY
4	FIBROUS DYSPLASIA		TOTAL MAXILLECTOMY
5	SQUAMOUS CARCINOMA	CELL	TOTAL MAXILLECTOMY
6	NH LYMPHOMA		EXTENDED MAXILLECTOMY
7	SQUAMOUS CARCINOMA	CELL	TOTAL MAXILLECTOMY
8	RECURRENT AMELOBLASTOMA		TOTAL MAXILLECTOMY
9	UNDIFFERENTIATED CARCINOMA		TOTAL MAXILLECTOMY
10	SQUAMOUS CARCINOMA	CELL	TOTAL MAXILLECTOMY
11	INVERTED PAPILOMA		MEDIAL MAXILLECTOMY

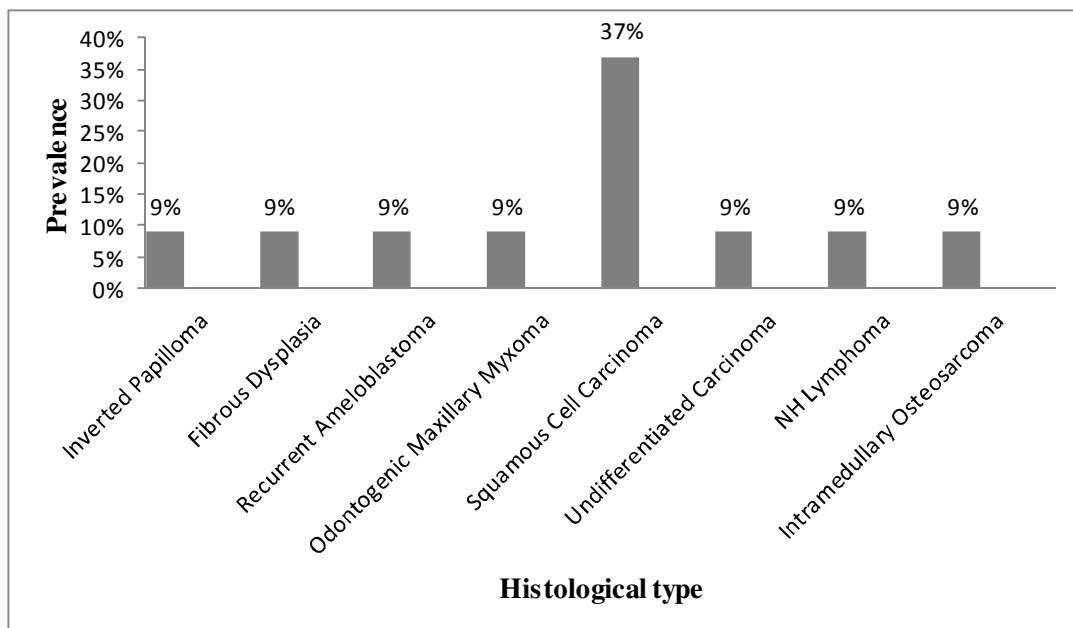


Figure 5. Prevalence of the histological Types

DISCUSSION

Maxillectomy is the resection of the maxilla (Dorland’s Medical Dictionary). It is commonly performed as an

oncological procedure in the management of maxillary tumours (Brian and Maurice, 1992). It is a multidisciplinary procedure involving but not limited to the oncologist, the prosthodontist who designs the

appropriate prosthesis following maxillectomy and the clinical psychologist who counsels the patient for the procedure. The extent of surgical resection of the maxilla depends on the nature of the tumour, site of the maxilla involved and the extent of its local spread. Maxillectomy could be classified into limited, subtotal, total and extended. The limited maxillectomy remove primarily one wall of the maxilla, while the subtotal maxillectomy removes at least two walls, including the palate and total maxillectomy is a term reserved for procedures resecting the entire maxilla (Spiro et al., 1997). Extended maxillectomy involves removal of the entire maxilla with other adjacent structures (Routledge, 1981). The limited maxillectomy is most frequently performed with either resection of the medial wall or the floor of the maxillary sinus (Spiro et al., 1997). Medial maxillectomy is a form of limited maxillectomy done for low-grade tumours involving the nasal cavity, medial wall of the maxillary sinus, and ethmoid sinus, such as inverted papilloma. Total and extended maxillectomies are indicated for extirpation of malignancies arising from or affecting the maxilla. Total maxillectomy could also be done for some extensive benign conditions like ameloblastoma and fungal sinusitis. Other newer approaches include endoscopic approach especially for tumours involving the lateral nasal wall (Ricardo and Arlen).

Most of the patients under review were females, contrary to Carrau et al. (1992), although this study was on patients who had maxillectomy and not the analysis of all cases of sinonasal tumours that presented to clinic. However, a study by Fasunla and Omokanye (2011) also shows more females presenting with sinonasal tumours.

The cases of maxillectomies managed show a reflection of the nature of maxillary tumours that present to our facility. The rarity of sinonasal tumours shows in the number of cases that presented including those that had maxillectomies done in the period under review. The patients in this series presented late and in advanced stages, this corroborates Fasunla and Omokanye (2011) report of late presentation. At the time of diagnosis, these tumours are usually very large and therefore bode a very poor prognosis as seen in our patients with malignancy presenting with obstructive nasal mass, epistaxis and proptosis (Mandpe, 2008). Delay in diagnosis was observed as some of the patients had tooth extractions before diagnosis of malignancy was made and others had gone from one chemist to another to buy serial nasal drops for nasal blockage due to ignorance. The absence of wide spread national health insurance scheme limit their access and utilization of available facilities since they have to pay out of pocket.

Surgical obturators were designed preoperatively for insertion. Even though all our patients were seen by the prosthodontist at least two weeks before maxillectomy so as to fashion a surgical obturator and or feeding plates. Extent of the resection by intraoperative findings led to an ineffective fit in four (36.4%). These required an

additional modifications which could not be done immediately and ointment-soaked gauze rolls were used in those instances. This development was as a result of not been able to accurately determine the extent of the disease since the patients were not able to afford CT. Although, when circumstances do not allow a preoperative prosthodontics consultation, a surgical obturator made from thermoplastic material can also be designed intraoperatively and is a reasonable alternative (Kumar, 2013) but it was not available in our facility.

All patients had good outcome in the immediate and intermediate period after surgery. The complications noted were feeding difficulty, postoperative epistaxis, cheek anaesthesia, delayed wound healing, flap failure due to necrosis depression secondary to unacceptable aesthetic changes and tumour recurrence. Other common complications in literature include velopharyngeal incompetency, epiphora, Eustachian tube dysfunction, trismus from scarring of muscles of mastication (Sakai et., 1988). These complications are usually worsened by postoperative radiotherapy.

Only three (30%) out of 10 patients that needed it had temporary prosthesis, none of the patients had any permanent prosthesis fitted. This is as a result of limited personal resources coupled with lack of institutional or governmental support of patients with cancer. The patients would rather go about with facial deformities.

All the patients treated for malignancy were referred to another tertiary hospital chemo-radiotherapy and subsequently defaulted in clinic appointments in our facility. Only two of the patients with malignant conditions were seen about 18 months after surgery and they both had recurrence. They attributed it to long queues, incessant break down of machines and consequent ineffective chemoradiotherapy at the hospital they were referred to because of the large volume of patients using the same facility. They defaulted from our facility because of the distance they had to cover from their homes to attend both hospitals appointment and the fact that the available fund was being kept for chemoradiotherapy bills. Two of the patients who underwent limited maxillectomy are having cavity care and follow up at the outpatient clinic.

The challenges encountered in our facility during management include limited or unavailable diagnostic and treatment facilities, the inability of the patients to afford the cost of investigations and treatment due to high cost of services when available and poverty state of the patients (Fatusi et al., 2006; Adoga and Silas, 2011).

From the result of this study, it is believed that if the government arises to these challenges, equips the available cancer treating hospitals, increases coverage of national health insurance scheme, or makes cancer treatment free of charge; many more patients will have access to better resources, diagnostic tests, treatment and therefore better prognosis and outcome.

CONCLUSION

The challenges in the surgical management of maxillary tumours are enormous and need to be addressed to enhance early presentation, diagnosis and better outcome of management.

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