

An Overview of cases of Parotid Gland Tumors Managed in a Teaching Hospital, North-west, Nigeria

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ABSTRACT

Objective: Salivary gland tumors are mostly slow growing and painless. Majorities are located in the parotid glands and are benign. Treatment of these parotid tumors may endanger the facial nerve. This study evaluated the clinical presentation and management of parotid gland tumors in Kaduna, North-west, Nigeria.

Methods: This was a retrospective study of patients that were treated for parotid gland tumors at the Maxillofacial Unit of Barau Dikko Teaching Hospital, Kaduna, North-west, Nigeria over a period of 13 years (January 2008 to December, 2020). Patients' records were analyzed for age, sex, clinical presentation, investigations, surgical management, histological diagnosis and outcome of treatment.

Results: A total of 55 patients with parotid gland tumors were seen. Age range was 12 - 75 years with a mean of 45.5 (SD± 0.7) years. The male: female ratio was found to be 1.1: 1. Pleomorphic adenoma was the commonest tumour (n=28, 50.9%). Four (7.3%) patients who had been on antiretroviral medications were seen with massive tumors. Superficial parotidectomy was the commonest surgical procedure carried out in these patients. Patients with malignancies were referred for post-surgical radiotherapy. High early recurrences were noticed in patients who were retroviral positive.

Conclusion: Pleomorphic adenoma was the commonest tumors treated and superficial parotidectomy was the commonest surgical procedure performed for the treatment of parotid gland tumors. Post-operative radiotherapy as an adjunct was carried out in cases with diagnosis of malignant lesions.

Keywords: Parotid gland, tumor, parotidectomy, neoplasm, pleomorphic adenoma.

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INTRODUCTION

Salivary gland tumors are rare, and occur in any of the salivary glands. They constitute 3% to 4% of all head and neck neoplasms.¹ The parotid gland is the largest of the three major salivary glands, others are submandibular and sublingual glands. These glands secrete saliva that is delivered into the oral cavity through their ducts. Parotid gland is most affected by tumor among other salivary glands. It

had been reported that 80% of salivary gland tumors arise in the parotid glands while 10-20% arises in the other salivary glands.^{2,3} Pleomorphic adenoma is the most common benign epithelial neoplasm that arise in the parotid glands both in children and adults.⁴⁻⁶ Parotid gland tumors are commoner in females than males.^{5,7,8} Also has a peak incidence in the fourth and fifth decades of life.^{5,6} This may be due to slow growing nature of

the benign tumors. The etiology of salivary gland neoplasms is not fully understood. However, there are associated factors implicated such as: therapeutic radiations for head and neck tumors, occupational exposures such rubber manufacturing and woodworking.^{5,7} Excessive tobacco and alcohol consumption are highly associated with head and neck squamous cell carcinoma, but have not been shown to play a major role in the development of malignancies of the salivary glands.⁶ Though, tobacco smoking has been associated with the development of Warthin tumors.⁶

Most parotid gland tumors present as unilateral enlargement of the gland. Few cases of bilateral presentation have been reported in retroviral positive patients.⁸ The diagnosis of a parotid gland neoplasm must be considered in any patient with lump near the ascending ramus of the mandible. The clinical presentation of these tumors could be a mass in the pre-auricular or infra-auricular region, or an isolated mass at the lower border of the mandible. The diagnosis of the tumor is based on duration, consistency of the tumor, associated pains, facial nerve involvement, ulcerations of the tumor, infiltration of adjacent structures, regional lymph node involvement and general health of the patient. Also, plain radiography, computerized tomography scan, magnetic resonance imaging and ultrasonography are useful in the diagnosis of parotid tumors. Oftentimes, the treatment is surgery only, except when it is malignant that radiotherapy and chemotherapy are required. This

study evaluated the clinical presentation and management of parotid gland tumors in Kaduna, North-west, Nigeria.

MATERIALS AND METHODS

The records of patients who presented with parotid gland tumors at the Maxillofacial Unit, Barau Dikko Teaching Hospital, Kaduna, North-west, Nigeria over a period of 13 years (January 2008 to December, 2020) were retrieved. Patients' records were analyzed for age, sex, clinical presentation, investigations, surgical management, histological diagnosis and outcome of treatment. Two retroviral positive patients with parotid cysts and three patients with lymphoepithelial cysts, and two family members (females) with milkulicz disease were excluded from the study, because these swellings were not classified as neoplasm.

Descriptive data was illustrated using simple statistical tables with percentages. While categorical data like mean and standard deviation were calculated using SPSS version.

RESULTS

A total of 55 patients with parotid tumors were treated. Age range was 12 - 76 years with a mean of 45.5 (SD $\pm$ 0.7) years. The M: F ratio was found to be 1.1: 1 (Table 1). Pleomorphic adenoma was the commonest tumour (n=28, 50.9%) (Table 2). Superficial parotidectomy was the commonest procedure that was done. Patients with malignancies were referred for post-surgical radiotherapy.

Table 1: Age and sex distribution of study population

Age (years)	Sex distribution		Total Population	Percent (%)
	Male	Female		
11-20	2	-	2	3.6
21-30	1	3	4	7.3
31-40	5	7	12	21.8
41-50	8	9	17	31.0
51-60	8	5	13	23.6
61-70	4	1	5	9.1
71-80	1	1	2	3.6
Total	29	26	55	100.0

Surgical management

Superficial parotidectomy was done for tumors that were limited to the superficial lobe and benign (n=34, 61.8%) and total parotidectomy was done for malignant lesions (n=21, 38.2%).

Complications of Surgery

Transient facial nerve palsy was noticed in seven patients that had superficial (n=2, 3.6%) and total

parotidectomy (n=5, 9.1%), while permanent facial nerve paralyses were seen in three patients that had radical parotidectomy with facial nerve resection for malignant tumors (Figure 2b). Profuse hemorrhage was noticed in one case that had radical parotidectomy for malignant tumor two weeks after surgery, and interventional radiotherapy was used to arrest the bleeding.

Table 2. Distribution of benign and malignant tumors of the parotid gland, according to histological type and sex,

Histological type	Sex		Total n (%)
	Female n (%)	Male n (%)	
Benign tumours			
Pleomorphic adenoma	13 (50.0)	15 (51.7)	28 (50.9)
Adenolymphoma	3 (11.5)	2 (6.9)	5 (9.1)
Oncocytoma	1 (3.8)	-	1 (1.8)
Malignant tumours			
Mucoepidermoid carcinoma	4 (15.5)	7 (24.1)	11 (20.0)
Adenoid cystic carcinoma	2 (7.8)	2 (6.9)	4 (7.3)
Acinic cell carcinoma	1 (3.8)	2 (6.9)	3 (5.5)
Adenocarcinoma	1 (3.8)	1 (3.5)	2 (3.6)
Squamous cell carcinoma	1 (3.8)	-	1 (1.8)
Total	26 (100.0)	29 (100.0)	55 (100.0)

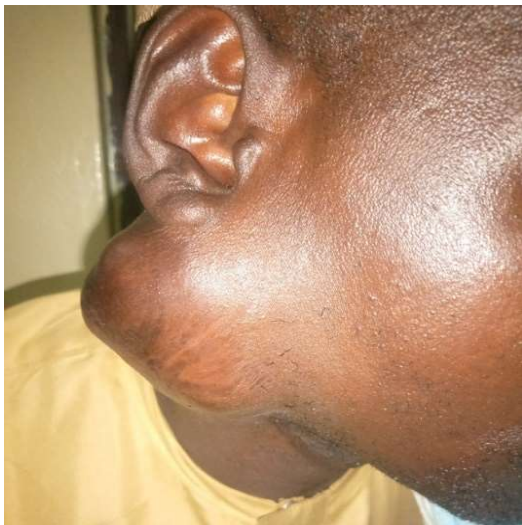


Figure 1: Pleomorphic adenoma of right parotid gland



Figure 2a: Mucoepidermoid Carcinoma of right parotid gland.

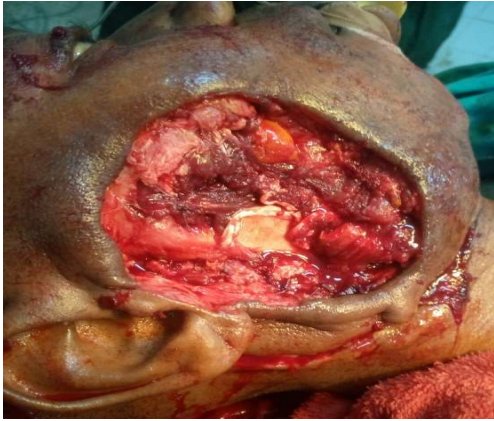


Figure 2b: Intraoperative surgical site after tumor excision



Figure 2c: This is superficial and deep lobe of the parotid gland



Figure 2d: Patient 2months after surgery



Figure 3a: Infra-auricular tumor

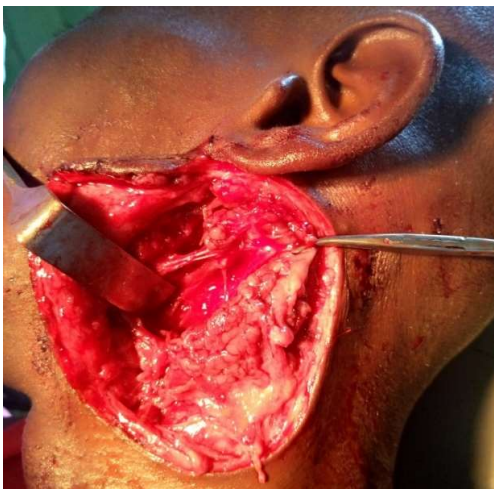


Figure 3b: Surgery under local anesthesia and intravenous sedation



Figure 3c: Surgical site post excision



Figure 3d: After closure of incision



Figure 3d: The excised tumor

DISCUSSION

Salivary gland tumors are not common and in most cases are confined to the head and neck region except for metastasis. Several authors⁶⁻¹⁰ had reported that parotid glands are most affected by tumors compared to other major salivary glands, this may be due to its big size and that it secretes mostly mucinous saliva. About 64 to 80% of all primary salivary gland epithelial tumors involved the parotid gland and are mostly located in the superficial lobe.⁸ Our study comprised of 34 cases of benign and 21 cases of malignant primary parotid gland tumours.

The incidence of salivary gland tumors peaks in the sixth and seventh decades of life; the mean age was 46 years³. Satko et al.¹¹ reported a mean age of 53 years (ranging from 2 to 87 years). Majority of our patients presented with parotid gland tumors in their third, fourth and fifth decades of life (n=42, 76.4%) (Table 1). The mean age in our study was 45.5 years (ranged from 12 to 76 years). Two cases were children between the age of twelve and fifteen years. This late presentation may be due the slow growing and painless nature of majority of the tumors. This finding is in agreement with similar studies done which had reported third to fourth decade of life.^{7,9}

Most of the reviews of salivary gland tumor series showed that more females were affected more than males in both benign and malignant cases.^{8,14,17} This varied with the type of tumor; for example, males predominate in Warthin's tumor.² Ito et al.¹² found that there were more female patients in benign tumors (58.5%), whereas males predominated in malignant tumors (52.2%).⁶ There was a slight male preponderance in this study, which differs from previous studies

done in other Centres that reported female dominance.^{3,14,17} This may be due to small size of our study population and it was a single Centre study. The time of presentation did not vary with sex but varied with financial strength, as both sexes presented late with marked parotid gland tumors in this study. This could be due to painless nature of majority of the tumors.

The predominant mode of presentation found in our study was a soft to firm pre-auricular tumour (Figure 2), followed closely by infra-auricular tumors (Figure 1) which agrees with the findings of most researchers.^{7,10,15} One case of a recurrent tumor presented with marked facial nerve palsy from previous surgery. The following investigations were done to enhance our diagnosis: ultrasonography which gave a good resolution of the tumour in superficial lobe. Also, it was employed to guide the needle when fine needle aspiration cytology (FNAC) was carried out. Also, magnetic resonance imaging was very useful in detecting deep lobe extension. Radiological investigation delineated the tumour location such as intraglandular or extraglandular and whether it was in the superficial or deep lobe of the parotid gland, also whether the adjacent mandible and contiguous structures were involved. Histopathology of the excised surgical tissue gave the most reliable diagnosis. Ademar et al.¹⁴ in their analysis of 600 patients with parotid neoplasms over a period of 50 years in Brazil reported that pleomorphic adenoma was the commonest benign tumor of the parotid gland and mucoepidermoid carcinoma the commonest malignant lesion. Another group of researchers reported that malignant tumors comprise about 15 to 30% of parotid tumors; the most commonly reported of

these was the mucoepidermoid carcinoma, followed by the adenoid cystic carcinoma.^{1,8} Wahlberg et al.¹⁶ reviewed 2,062 parotid carcinoma cases and revealed that the mucoepidermoid carcinoma was the most common tumor, followed by the adenocarcinoma, the acinar cell carcinoma, the adenoid cystic carcinoma, the carcinoma ex pleomorphic adenoma, and the undifferentiated carcinoma. However, this was supported by the findings in this study which showed pleomorphic adenoma as the commonest tumor which accounted for 50.9% of cases managed (Table 2) and mucoepidermoid carcinoma was the most common malignancy encountered in this study which accounted for 52.4% of malignant tumors, followed by adenoid cystic carcinoma (Table 2).

The majority of our patients had superficial parotidectomy (61.8%), and total parotidectomy was done for patients with malignant tumors (38.2%). All our surgeries were done under general anesthesia except one that was done under local anesthesia and intravenous sedation (Figure 3b). The excised tumor was encapsulated (Figure 3d). The complications encountered were hemorrhage from malignant tumors, transient facial nerve palsy, permanent facial nerve paralysis and cosmetic deformity. Tumor recurrence was seen in two patients who were on antiretroviral drugs who had malignant tumors. No recurrence was recorded for benign tumors. Patients with malignant lesions were referred for post-surgery radiotherapy in another Centre. The challenge of patients not coming for follow up appointments made it difficult to assess actual recurrence rate. This study has effectively noted that parotid gland tumors can be treated with few complications.

CONCLUSION

Pleomorphic adenoma was the commonest parotid gland tumor that required surgery in our study, while the commonest post-surgical complication was transient facial nerve palsy. However, access to radiation therapy after surgery remains a huge challenge in the management of malignant tumors.

Source of Support

Nil.

Conflict of Interest

None declared

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