

Full Length Research Paper

Salivary gland tumours in the intraoral region: A retrospective study of cases treated in a teaching hospital in North-West Nigeria

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Tumours of the minor salivary glands occurring in the oral cavity are uncommon. The oral cavity has many tiny salivary glands which occur in the lip, palate, floor of the mouth, cheeks, tongue and pharynx. Tumour could develop from any of these minor salivary glands. We conducted a retrospective study of twenty-four cases of these tumours treated in our Centre over a period of eleven years. The objective of this study is to investigate the nature, clinical features, pathology, and treatment of these tumours in North-West, Nigeria. This was a retrospective study of all patients with minor salivary gland tumours that were treated at Barau Dikko Teaching Hospital, Kaduna, Nigeria. The study covered a period of eleven years from January, 2009 to December, 2019. Information was extracted from case files of patients. Data collected includes: age of patient at presentation, sex, location of tumour, clinical features, treatment giving, complications and histological diagnosis. The age of the patients ranged from 16 to 70 years, with the mean SD = 43.0 ± 6.6 years and male-to-female ratio was 1: 2. Benign tumours were the most common compared to malignancies. Palate was the commonest site of occurrence; followed by upper lip. The treatment was surgical excision. Palatal fistula was the commonest complication of the surgery. Tumour of minor salivary glands need urgent attention as it greatly interferes with oral functions and could destroy maxillary bone resulting in untoward debilitating effect.

Key words: Salivary glands, tumour, intraoral, palate, benign, malignant.

INTRODUCTION

Salivary gland tumours are relatively uncommon lesion accounting for 3-6% of all head and neck neoplasms

(Lawal et al., 2015). Tumours of the minor salivary glands occurring in the oral cavity are uncommon (Ansari, 2007).

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Minor salivary glands are present in many sites in the oral cavity, such as the lips, cheek, floor of the mouth, palate, tongue, oropharynx, paranasal sinuses, and parapharyngeal spaces.

The tumours are heterogenous in nature and have variable histological patterns. The clinico-pathological features of these tumours varied according to race and geographical locations. The incidence of these tumours varies with age, sex and ethnicity. The tumour could present as a slow growing painless lesion in any part of the oral cavity where salivary gland is present or painful fast growing lesion with or without ulceration. Most affected area in the oral cavity is the palate, others include the lips, floor of the mouth and the cheek. The majority of these tumours are benign and only about 20% are malignant. Pleomorphic adenoma is the most common benign tumour, according to various reports (Ladehinde et al., 2007; Otoh et al., 2005; Tian et al., 2010; Adebiyi et al., 2011).

Several studies (Ansari, 2007; Ladehinde et al., 2007; Ladehinde et al., 2007; Otoh et al., 2005) of these tumours showed female predominance, but few reported equal incidence in both sex (Adebiyi et al., 2011). The etiology of these tumours is not known, but few studies implicated alcohol consumption and smoking, but these claims could not be substantiated. This is because many victims were not consuming any of the substance. Radiation, HIV infection and nutritional deficiencies have also been implicated. The diagnosis of these tumours could be facilitated based on clinical features and investigations such as: fine needle aspiration cytology, ultrasound, incision biopsy, computerized tomograph scan. Incision biopsy is contraindicated in pleomorphic adenoma to prevent seeding of the tumour into contiguous structures, which could result from breaking its capsule. This seeding will lead to recurrent tumour.

The mainstay of management of these tumours is surgical excision. Radiotherapy and cytotoxic chemotherapy may be required in malignant cases as adjunct to surgery (Otoh et al., 2005; Tian et al., 2010). However, there were few available literatures on minor salivary gland tumours in Northern Nigeria; therefore, we reviewed cases of minor salivary gland tumours treated in Barau Dikko Teaching Hospital, North- West, Nigeria.

MATERIALS AND METHODS

This was a retrospective study of all patients with minor salivary gland tumours treated at Barau Dikko Teaching Hospital, Kaduna, Nigeria. Tumours of the major salivary glands were excluded. The study covered a period from January, 2009 to December, 2019. Information was extracted from case files of patients. Data collected includes: age of patient at presentation, sex, location of tumour, clinical features, treatment given, complications and histological diagnosis. Hematoxylin-Eosin (H&E) stained slides of all cases were reviewed by pathologists. The data were analyzed for their distribution of patient's age, sex, anatomical location of tumours, clinical features, treatments received, complications, and histological reports. Permission was obtained from the patients for the use of

their photographs in this publication. Data obtained were analyzed using Statistical Package for Social Science (SPSS), version 20.0.

RESULTS

Age and sex distribution of the study participants

The age of the patients in this study ranged from 16 to 70 years, with the mean SD = 43.57 ± 6.6 years (Table 1). The peak incidence of benign tumours was the third and fourth decade of life (Table 2). Malignant tumour occurred in the fifth and sixth decade of life (Table 2). Patients most affected were in the age range of 21-40 years (n=12, 50%). Females were more affected than the males in the ratio of 2:1 (Table 1).

Anatomic location of the tumour

Palate was the most affected (n=11, 45.8%) and the upper retromolar region and the pharynx were least affected (n=1, 4.2%) each (Figure 1). Malignant tumour affected the palate and the jaws most (Table 2).

Histological types

The ratio of benign to malignancies was 2.43:1. Pleomorphic adenoma (PA) was the most common tumour and accounted for 54.1% of all the tumours (Table 2).

Treatments

All the cases had surgical excision of the tumour under general anaesthesia except one palatal tumour that was done under local anesthesia and intravenous sedation with diazepam 10 mg and pentazocine 30 mg. Malignant cases received post-surgery chemotherapy and radiotherapy. One case had recurrence of the malignant tumour, eight months after completing chemotherapy and radiotherapy.

Complications

Fistula formation was a common complication of surgery of the palatal tumour. Five of our cases had fistula repair under general anaesthesia at second surgery. Large oro-antral fistula was closed with fabrication of Obturators to restore oral functions.

DISCUSSION

Tumours of minor salivary glands occurring in the oral cavity are uncommon. Most of the salivary gland tumours

Table 1. Age and sex distribution of study participants.

Age group (years)	All study participants		Male participants		Female participants	
	Frequency	%	Frequency	%	Frequency	%
11 - 20	3	12.5	2	25.0	1	6.3
21 - 30	6	25.0	2	25.0	4	25.0
31 - 40	6	25.0	1	12.5	5	31.2
41 - 50	4	16.7	1	12.5	3	18.7
51 - 60	2	8.3	1	12.5	1	6.3
61 - 70	3	12.5	1	12.5	2	12.5
Total	24.0	100.0	8.0	100.0	16.0	100.0

Table 2. Histologic typing of intra-oral salivary glands.

S/N	Histologic	Anatomical location							Total	Percentage
		Palate	FM	CH	J	RM	PH	LIP		
1	Benign tumour									
A	Pleomorphic adenoma	6	2	1	-	-	-	4	13	54.1
B	Warthin's tumour	2	-	-	-	1	-	-	3	12.5
C	Oncocytoma	1	-	-	-	-	-	-	1	4.2
2	Malignant tumour	-	-	-						
A	Mucoepidermoid carcinoma	1	-	-	1	-	-	-	2	8.3
B	Adenoid cystic carcinoma	1	-	1	-	-	1	-	3	12.5
C	Adenocarcinoma	-	-	1	-	-	-	-	1	4.2
D	Squamous cell carcinoma	-	-	-	1	-	-	-	1	4.2
	Total	11	2	3	2	1	1	4	24	100.0

FM= Floor of the mouth, CH= Cheek, J= Jaws, RM= Retromolar, PH= Pharynx.

(75%) originated from major salivary glands and the remained (25%) originated from minor glands (Adebiyi et al., 2011; Vuhahula, 2004). The tumours of the minor salivary glands have insidious onset, oftentimes noticed when the tumour interferes with oral functions such as swallowing, speech, breathing or when there is associated pains. This study showed that many of the cases that had the tumour at the junction of hard and soft palate presented earlier than the ones on the cheek and the floor of the mouth, this was due to the difficulties they had with swallowing, breathing and speech. Pain is an uncommon symptom of the intraoral tumour. Few of our cases complained of pains, majority sought medical help because of the tumour impairment of oral functions.

This study furthermore emphasized that salivary gland tumours are common in females than males; this supported other researchers' view (Adebiyi et al., 2011; Vuhahula, 2004; Omitola et al., 2018). Also, this study showed that the tumours occurred most at the second to sixth decade of life and rarely occur in children, as our youngest case was a 16 years old female with pleomorphic adenoma of the upper lip. The etiology of the tumours could be ascertained as most of the cases

were not consuming alcohol or smoke cigarette, therefore, the tumour could be said to have insidious onset.

Majority of the tumours in this study were benign, and pleomorphic adenoma was the commonest, it accounted for 54.1% of all the intraoral tumours and occurred at different parts of the oral cavity (Table 2). This was consistent with other reports from different parts of the world, which have considered prevalence rates for pleomorphic adenoma between 40 and 65% (Adebiyi et al., 2011; Vuhahula, 2004; Omitola et al., 2018; Louredo et al., 2020; Noma and Obiora, 2015).

However, in this study Warthin's tumour occurred in the palate which infiltrated the adjacent gingival and the surgery necessitated the extraction of the affected teeth to prevent reoccurrence of the tumour, also another in upper retromolar region grew into the oropharynx which remarkably incapacitated the functions of swallowing, breathing and speech (Figure 2a).

Moreover, the clinical features of the tumours were unique for their types: pleomorphic adenoma presented as solitary tumour, well circumscribed, nodular and firm in consistency (Figure 3). Warthin's tumour present with



Figure 1. (A) A 70 years old woman with mucoepidermoid tumour on the palate. **(B)** The excised tumour.

diffuse base, infiltrating the gingivae, growing into the oro-pharynx, smooth surfaced boundaries were not well delineated (Figure 3a). A tumour that occurred on the palate in a 70 years old woman was nodulated, rough surfaced, not well circumscribed and presented with ulceration and ragged edges (Figure 2a), and was diagnosed histologically as mucoepidermoid carcinoma. Buchner et al (2007). studied relative frequency of intraoral minor salivary gland tumours and concluded that adenocystic carcinoma was the commonest malignant tumour Kruse et al. (2010). This study supported this claim (Table 2). Histological diagnosis should not be accepted without correlating it with clinical presentation of the tumour, as in this study a palatal tumour was first diagnosed as pleomorphic adenoma, until the attention of the pathologist was drawing to the clinical presentation of the tumour, and subsequently other parts of the tumour

were examined to discover it was mucoepidermoid carcinoma.

Surgery was the mainstay of management for all our cases. All the cases had surgery under general anaesthesia except one that was done under local anaesthesia and intravenous sedation. Haemorrhage was the commonest complication of the surgeries; also, fistula formation was common complication of most of the cases in the palate. The fistula size depends on the size of the tumour and its level of bone destruction. Few of the fistulas were repaired with local flaps at another surgery. The large ones were given obturators to restore oral functions. The case with the tumour at the floor of the mouth was a 19 years old boy that had the first excision biopsy done with histology result of pleomorphic adenoma, but after three month there was a tumour in the adjacent mandible, which was resected and the

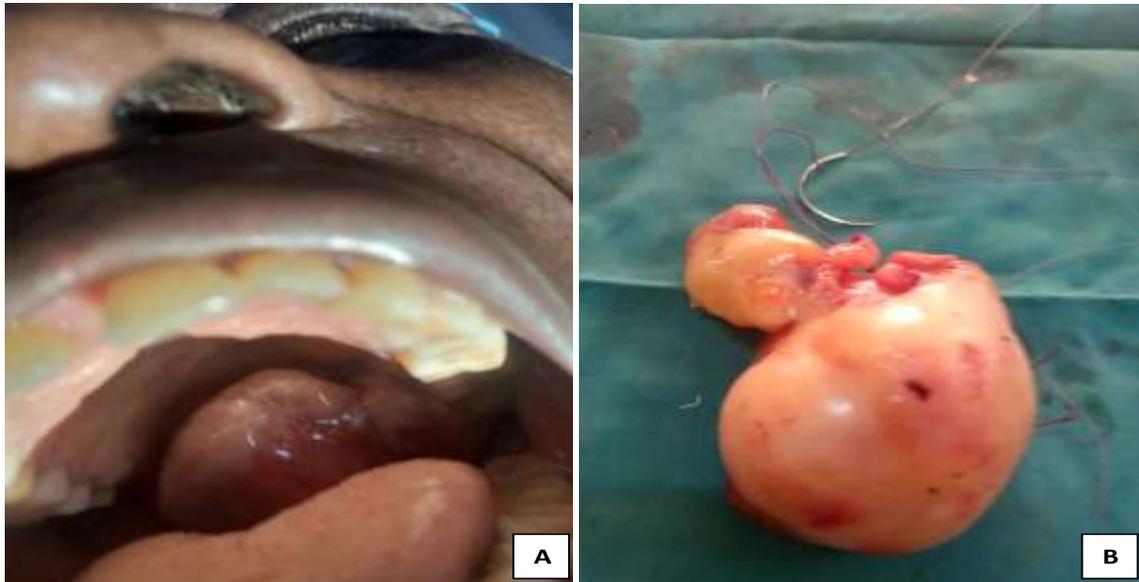


Figure 2. (A) A 41 years old man with Warthin's tumour in the oropharynx. (B) The excised tumour.



Figure 3. A 36 years old female with pleomorphic adenoma on the palate.

histology showed high grade mucoepidermoid carcinoma. Cytotoxic chemotherapy and radiotherapy were adjunct to surgery in adenocystic carcinoma and mucoepidermoid carcinoma. The prognosis of the treatment was satisfactory, except in one case with reoccurrence of the tumour 8-months after chemotherapy and radiotherapy.

Limitations

The incidence of recurrence of the tumours after surgery could not be evaluated, as very significant number of the cases never showed up for review after discharge. Also, the histology results were affected by the portion of the tumour examined, as a tumour was given two histological

diagnoses.

Conclusion

Intraoral salivary gland tumours cause significant impairment of oral functions; therefore urgent treatment is required to reduce the morbidity associated with the surgery.

Recommendation

More research should be done on the possible aetiology of these minor salivary gland tumours.

Ethical approval

This research was approved by the Ethics Committee of Barau Dikko Teaching Hospital, Kaduna, Nigeria. The approval number is KASU/BDTH/20/057.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Adebiyi EK, Ndukwe KC, Ugboko VI, Omoniyi-Esan GO, Olagundoye OO (2011). Histopathology study of salivary gland tumours in Ile-Ife, Nigeria. *Nigeria Postgraduate Medical Journal* 18(4):257-261.
- Ansari MH (2007). Salivary gland tumors in an Iranian population: a retrospective study of 130 cases. *Journal of Oral Maxillofacial Surgery* 65(11):2187-2194.
- Buchner A, Merrell PW, Carpenter WM (2007). Relative frequency of intra-oral minor salivary gland tumours: a study of 380 cases from Northern California and comparison to reports from other parts of the world. *Journal of Oral Pathology and Medicine* 36(4):207-214.
- Kruse AL, Gratz KW, Obwegeser JA, Lubbers HT (2010). Malignant minor salivary gland tumours: a retrospective study of 27 cases. *Oral and Maxillofacial Surgery* 14(4):203-209.
- Ladehinde AL, Adeyemo WL, Ogunlewe MO, Ajayi OF, Omitola OG (2007). Salivary gland tumours: A 15 years review at the Dental Centre, Lagos University Teaching Hospital. *African Journal of Medical Science* 36(4):299-304.
- Lawal AO, Adisa AO, Kolude B, Adeyemi BF, Olajide AO (2015). Malignant salivary gland tumours of the head and neck region: a single Institution review. *Pan African Medical Journal* 20:12-128.
- Louredo BVR, Santos AR, Vargas PA, Lopes AM, Martins MD, Guerra EN, Prado Ribeiro AC, Brandão TB, de Mendonça RM, Kowalski LP, Speight PM (2020). Clinicopathological analysis and survival outcome of primary salivary gland tumours in pediatric patients: A systemic review. *Journal of Oral Pathology and Medicine* 22(2):120-126.
- Noma EA, Obiora U (2015). Salivary gland cancer in Benin City, Nigeria. A pathological study. *African Journal of Medicine and Health Sciences* 14:47-51.
- Omitola GO, Soyele OO, Butali A, Akinshipo AO, Okoh D, Sigbeku O, Effiom OA, Adebiyi KE, Ladeji AM, Adisa AO, Lawal AO (2018). Descriptive epidemiology of salivary gland neoplasms in Nigeria: An AOPRC multicenter tertiary hospital study. *Oral Diseases* 25(1):142-149.
- Otoh EC, Johnson NW, Olasoji H, Danfillo IS, Adeleke OA (2005). Salivary gland neoplasm in Maiduguri, North- Eastern Nigeria. *Oral Diseases* 11(6):386-391.
- Tian Z, Li L, Wang L, Hu Y, Li J (2010). Salivary gland neoplasms in oral and maxillofacial regions: a 23-year retrospective study of 6982 cases in an eastern Chinese population. *International Journal Oral Maxillofacial Surgery* 39(3):235-242.
- Vuhahula EA (2004). Salivary gland tumors in Uganda: clinical pathological study. *African Health Science* 4(1):15-23.