

Clinicopathologic Presentation of Salivary Gland Tumours: A Retrospective Analysis from a Single Tertiary Care Centre

*Ernest Ebuka AFORKA, **Akin Taofeek AKINNIYI, ***Afolake Shakirat SALAMI, ****Peter Mutiu ALIM, ****Olatunji Abeeb LAWAL, *Ifeanyi Charles NWOKIKE

[*Department of Oral Pathology and Oral Medicine, University of Nigeria Teaching Hospital, Ituku/Ozalla, Enugu State, Nigeria. **Department of Oral and Maxillofacial Surgery, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria. ***Department of Oral/ Maxillofacial Pathology, Radiology and Oral Medicine, University of Medical Sciences, Ondo State Nigeria. ****Department of Oral Medicine and Oral Pathology, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria]

Correspondence

Dr. Afolake Shakirat Salami
Department of Oral/ Maxillofacial Pathology,
Radiology and Oral Medicine.
University of Medical Sciences, Ondo State
Nigeria
Email: ssalami@unimed.edu.ng

Ernest Ebuka Aforka

<https://orcid.org/0009-0005-6992-8207>

Akin Taofeek Akinniyi

<https://orcid.org/0000-0002-3814-4830>

Afolake Shakirat Salami

<https://orcid.org/0000-0003-0036-9134>

Peter Mutiu Alimi

<https://orcid.org/0009-0007-8704-010X>

ABSTRACT

Background: Salivary glands often develop various benign and malignant tumours, but their presentation in Nigerian patients is not well documented. This study reviews the clinicopathologic features of histologically diagnosed salivary gland tumours seen at Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria.

Methods: Records of SGT cases diagnosed from January 2017 to December 2024 at the department's biopsy service were reviewed. Data collected included patient demographics, tumour site, histopathologic diagnosis, and clinical features.

Results: A total of 38 SGT cases were identified, with patient ages ranging from 3 to 96 years (mean = 47.1 ± 21.58 years). There was a slight female predominance. The parotid gland was the most frequently affected site. Pleomorphic adenoma was the most common benign tumour, while adenoid cystic carcinoma represented the predominant malignant type. Pain was a significant presenting symptom, and male patients were more likely to present when pain was associated with the lesion.

Conclusion: This study examines SGT patterns at a Nigerian tertiary hospital, identifying pain as a key factor for presentation. The findings emphasize the importance of early public health education and reporting to improve outcomes.

Keywords: Salivary gland tumours, Pleomorphic adenoma, Adenoid cystic carcinoma.

Olatunji Abeeb Lawal

<https://orcid.org/0009-0004-7488-4117>

Ifeanyi Charles Nwokike

<https://orcid.org/0009-0001-4771-2393>

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INTRODUCTION

Salivary glands are affected by a variety of pathological processes, both neoplastic and non-neoplastic. These include the major glands—the parotid, submandibular, and sublingual—as well as numerous minor glands distributed throughout the oral mucosa and upper aerodigestive tract, excluding the gingiva and anterior hard palate. Most salivary gland neoplasms (SGNs) originate from epithelial tissue and exhibit a wide range of benign and malignant forms.¹

Globally, SGNs are uncommon, accounting for 0.1–1% of all tumours and about 3–5% of head and neck neoplasms, with an estimated annual incidence of 2.5–3.0 per 100,000 people.^{2–4} Approximately 70% of these tumours arise in the parotid gland, of which 20–25% are malignant, while over half of minor gland tumours show malignancy.^{2–4} Benign tumours constitute around 80% of all SGNs and are more frequent in women, typically occurring in the third to fourth decades, whereas malignant tumours peak in the fifth to seventh decades and are slightly more common in men.^{5–7} Pleomorphic adenoma remains the most frequent benign tumour, while adenoid cystic carcinoma and mucoepidermoid carcinoma are the predominant malignant types.^{6,7}

Clinically, benign tumours present as slow-growing, well-circumscribed, and painless swellings, while malignant tumours are often firm, rapidly enlarging, and may cause mucosal ulceration or nerve involvement.^{2,7} Diagnosis requires a combination of clinical, radiologic, and histopathologic evaluation. Imaging modalities such as magnetic resonance imaging (MRI), computed tomography (CT), and ultrasonography help define the lesion's extent and glandular origin.^{8–10}

Given the observed geographical variability in the distribution and behaviour of salivary gland tumours, regional data are crucial for understanding disease patterns and improving management strategies. This study therefore reviews the clinicopathologic features of epithelial salivary gland neoplasms diagnosed over eight years at Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria.

MATERIALS AND METHODS

This retrospective study evaluated the clinicopathological characteristics of epithelial salivary gland neoplasms diagnosed at the Oral Pathology Unit, Department of Oral Medicine and Oral Pathology, Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife, Nigeria, over eight years (January 2017–December 2024). Ethical approval was obtained from the OAUTHC Health Research Committee.

Data Collection

Patient data were collected from histopathology records, lab requests, biopsy logs, and diagnostic reports, including age, sex, lesion site, diagnosis, symptom duration, and clinical symptoms such as pain. Two oral pathologists reviewed all slides for diagnostic accuracy; cases lacking sufficient data were excluded. Salivary gland tumors were analyzed by demographics, anatomical site, histological classification, and subtype, allowing thorough evaluation of presentation patterns and histologic variation in the study population.

Data Analysis

Data were entered, cleaned, and analysed using IBM SPSS Statistics version 26 (IBM Corp., Armonk, NY, USA). Descriptive statistics—including frequencies, percentages, means, medians, and standard deviations—were computed for continuous variables such as age and duration of symptoms. Categorical variables were analysed using the Chi-square test, and a p-value of <0.05 was considered statistically significant.

RESULTS

Age Distribution

Patients ranged in age from 3 to 96 years (mean: 47.1 ± 21.58), with a modal age of 40 and median of 46. The fourth decade was most affected overall; benign lesions appeared mainly in the fourth and fifth decades, while malignant lesions were most common in the fourth and sixth. All three cases in the first decade were malignant. Age distribution did not differ significantly between benign and malignant lesions (p = 0.104).

Gender Distribution

Generally, there was a slight female preponderance, with a male-to-female ratio of 1:1.2. Malignant salivary gland tumours were more common in males (male-to-female ratio 1:0.9); however, this difference was not statistically significant ($p = 0.096$).

Anatomical Site Distribution

The parotid gland was the most commonly affected site, accounting for 22 cases (58%) (Table 1). The

palate was the second most frequent site (18%). Other affected sites included the submandibular gland (3 cases), maxillary sinus (2 cases), tongue (2 cases), and upper and lower lips (1 case each). Malignant tumours were more prevalent than benign tumours in the parotid (ratio 1.75:1), palate (6:1), and submandibular glands (2:1). All lip tumours were benign (pleomorphic adenomas), while all tumours of the maxillary sinus and tongue were malignant.

Table 1: Site Distribution of SGTs. The parotid gland represents the most common site of affection.

Salivary gland	Pleomorphic adenoma	Mucoepidermoid carcinoma	carcinoma ex pleomorphic	Acinic cell	Adenoid cystic	Salivary duct carcinoma	polymorphous adenocarcinoma	ductal papilloma	Adenocarcinoma NOS	papillary mucinous cystadenoma	Total
Parotid	7	2	4	1	4	0	1	1	1	1	22
Lower lip	1	0	0	0	0	0	0	0	0	0	1
Upper lip	1	0	0	0	0	0	0	0	0	0	1
Palate	1	0	1	0	2	1	1	0	1	0	7
Submandibular gland	1	0	1	1	0	0	0	0	0	0	3
maxilla and sinus	0	1	0	0	1	0	0	0	0	0	2

Duration of Symptoms

The average symptom duration before presentation was 40 ± 55.47 months. Parotid tumour cases lasted longer (47.4 months) than palatal cases (25.1 months), and females presented later than males (44.7 vs 35.2 months). Benign tumours had a longer mean duration before presentation than malignant ones (50 vs 35 months; $p = 0.03$). The longest delays were 300 and 144 months, both in carcinoma ex pleomorphic adenoma patients. Pain shortened presentation time significantly ($p = 0.020$); except for the 300-month case, patients with pain averaged 10.8 months, while those without pain averaged 43.5 months.

Associated Symptom: Pain

Pain was reported by 32% of patients and was significantly associated with malignancy ($p = 0.004$) (Table 2). Pain was most frequently observed in adenocarcinoma not otherwise specified (NOS) ($n=2$) (100%), followed by adenoid cystic carcinoma ($n=5$) (70%), carcinoma ex pleomorphic adenoma ($n=2$) (50%), polymorphous adenocarcinoma ($n=1$) (50%), and mucoepidermoid carcinoma ($n=2$) (40%). Acinic cell carcinoma was not associated with pain in this series. Pain was more common among males (47%) than females (19%), although the difference was not statistically significant ($p = 0.065$).

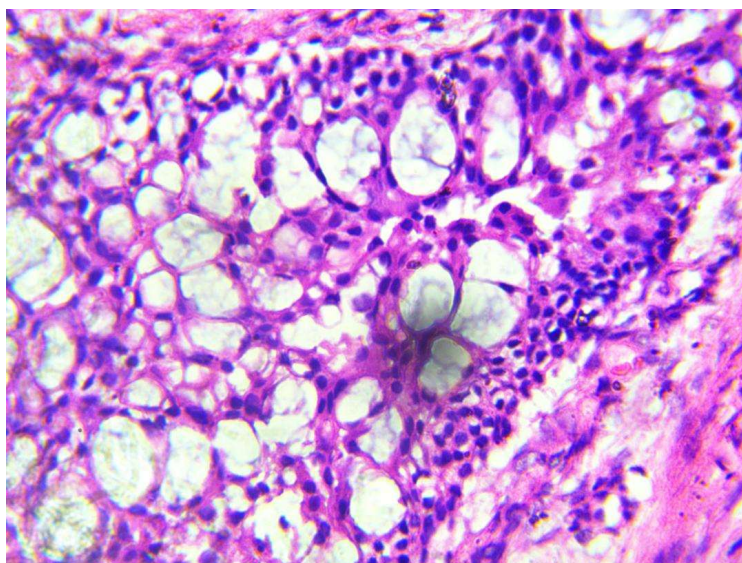


Image1: (IMG-2026070WA0009.jpg) Photomicrograph showing Cribriform pattern of Adenoidcystic carcinoma showing basaloid cells arranged in microcystic space (H and E magnification X400)

Pleomorphic Adenoma

Pleomorphic adenoma was the most common tumor, accounting for 29% of cases (Figure 1). It mainly affected individuals in their fifth decade (mean age 46.2 years), with symptoms lasting an average of 47.5 months before diagnosis. The male-to-female ratio was 1:5.5, and the parotid gland was the primary site (64%), with the submandibular gland and lips each at 9%. The tumor was not linked to pain or facial weakness. Malignant transformation occurred in 24% of pleomorphic adenomas, particularly in older males,

with risk factors including prolonged lesion duration (mean 93.5 months), lymphadenopathy, and pain.

Mucoepidermoid Carcinoma

Mucoepidermoid carcinoma accounted for 13% of all salivary gland tumours and 18.5% of all malignant lesions. It was more common in females (male-to-female ratio 1:1.5), with peak occurrence in the first and fifth decades of life. The mean duration of symptoms before presentation was 32.8 months. The parotid gland and tongue were the most frequent sites (two cases each). 40% of patients reported pain, and 60% presented with clinically detectable lymphadenopathy.

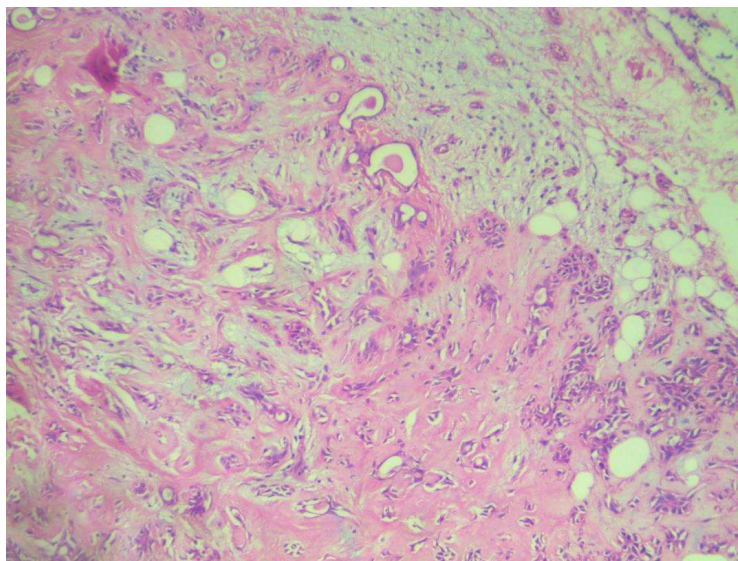


Image2: (IMG-20260703-WA0010.jpg). Photomicrograph of pleomorphic adenoma showing ductal epithelial cells arranged as islands, nests and duct-like structures in a myxoid stroma. (H and We magnification x 100)

Adenoid Cystic Carcinoma

Adenoid cystic carcinoma accounted for 18% of all salivary gland tumors and constituted 30% of malignant lesions. This malignancy demonstrated the shortest mean duration prior to presentation (9.3 months). Pain was noted in 71% of cases, and

clinically detectable lymphadenopathy was present in 43% at the time of diagnosis. The peak incidence occurred in the fourth decade of life. The palate represented the most common intraoral location, while the parotid gland was the major gland most frequently involved

Table 2: Association of pain and different SGTs. Adenoid cystic had the most cases associated with pain

Presen ce of pain	Pleomo rphic adenom a	Mucoepide rmoid carcinoma	carcino ma ex pleomo rphic	Acic nic cell	Aden oid cystic	Salivar y duct carcin oma	polymorp hous adenocarci noma	ductal papill oma	Adenocarc inoma NOS	papillary mucinou s cystade noma	
positiv e	0	2	2	0	5	0	1	0	2	0	12
Negati ve	11	3	4	2	2	1	1	1	0	1	26
Total	11	5	6	2	7	1	2	1	2	1	38

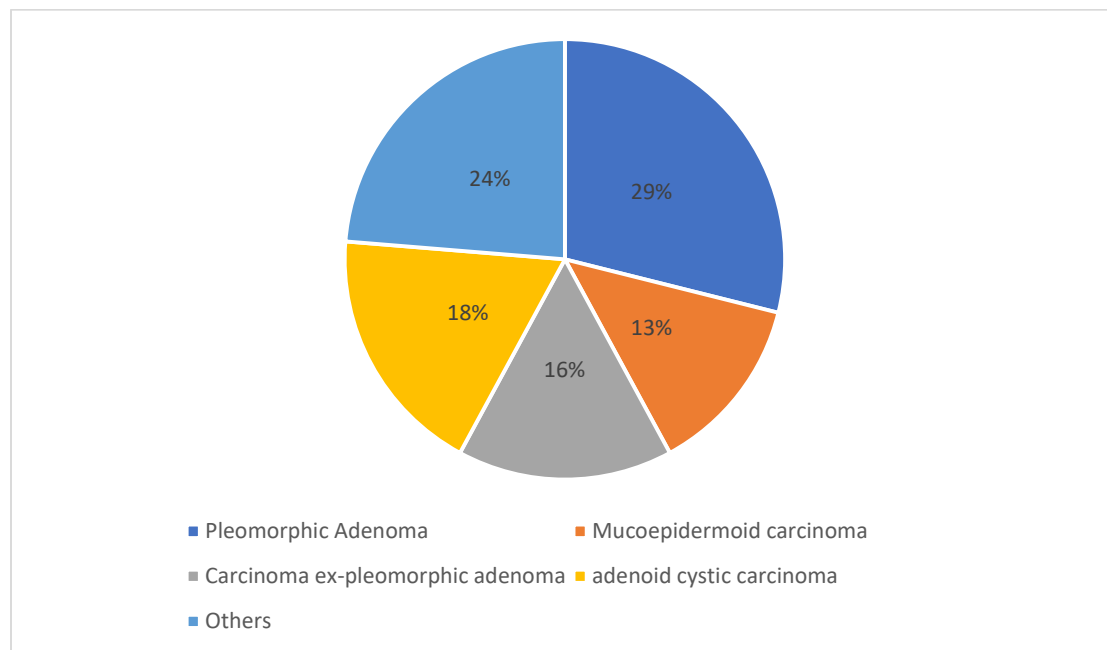


Figure 1: Distribution of SGTs. Pleomorphic adenoma is the most common SGT in this series. Adenoid cystic carcinoma is the most common malignant SGT.

DISCUSSION

Salivary gland tumours (SGTs) are relatively uncommon, constituting approximately 1% of all tumours diagnosed at our institution during the study period. This study represents the diagnostic experience of the Oral and Maxillofacial Pathology Unit, Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), which serves Ile-Ife and its surrounding suburban and rural communities.

Among the 38 histologically confirmed cases, malignant tumours accounted for 66%, while benign tumours comprised 34%. This distribution contrasts with reports by Alsanie *et al.*², who found benign lesions in 65% and malignant ones in 35% of cases. The inverse pattern observed in this study may reflect delayed health-seeking behaviour, possibly due to the absence of pain in early benign lesions.

Pain has been identified as a strong motivator for hospital presentation in similar populations.¹¹

The mean age of patients was 47.1 years. Patients with benign tumours presented at a slightly older age (mean = 51.4 years) compared to those with malignant tumours (mean = 47.1 years), similar to findings by Alsanie *et al.*², who reported mean ages of 52 and 57.4 years for benign and malignant lesions, respectively. The youngest patient in this series was 3 years old and presented with mucoepidermoid carcinoma, underscoring that salivary gland malignancies can occur even in early childhood.

The parotid gland was the most commonly affected site, consistent with earlier studies identifying it as the predominant site for both benign and malignant SGTs.^{2,3,7,12} Among intraoral sites, the palate was most frequently involved.¹² No tumours were recorded in the sublingual gland, while other affected sites included the lips, maxillary sinus, and tongue. A slight female preponderance was observed, which is consistent with previous reports.^{2,2} The basis for this gender difference remains uncertain, although hormonal factors have been suggested and warrant further investigation.

Pleomorphic adenoma was the most frequently diagnosed tumour, predominantly affecting the parotid gland. It demonstrated a marked female predilection (male-to-female ratio 1:4.5) and a mean age of 32.5 years, in agreement with prior studies.^{2,6,13} Its indolent growth pattern and lack of pain may contribute to delayed presentation, particularly in low-resource settings.

Adenoid cystic carcinoma was the second most common tumour overall and the most prevalent malignant SGT in this series. This finding differs from several reports that identified mucoepidermoid carcinoma as the leading malignant type.^{7,14,15} The high incidence of adenoid cystic carcinoma may be related to its pronounced symptomatology—particularly pain, which was present in over 70% cases in this study—consistent with its well-documented perineural invasion tendency. Spiro *et al.*¹⁶ similarly reported pain in nearly half of their cases. In this series, adenoid cystic carcinoma most frequently involved the parotid gland and the palate, with a mean patient age of 38.3 years and a male-to-female ratio of 1:1.3.

Carcinoma ex pleomorphic adenoma was the third most frequent malignant tumour. Affected patients were older (mean = 57.5 years) and often had long-standing swellings (mean duration = 93.5 months) or recent onset of pain (in 50% of cases). These findings

correspond with existing literature, which associates prolonged tumour duration and pain with malignant transformation of pleomorphic adenoma.^{17–19} The occurrence of malignant change in previously benign lesions underscores the importance of long-term follow-up and timely surgical management of all salivary gland swellings.

Collectively, the predominance of malignant lesions in this series may reflect sociocultural and systemic factors, including delayed presentation, limited access to care, and lack of awareness regarding the significance of persistent, painless swellings. Targeted health education within rural and peri-urban communities is therefore essential to promote earlier detection and improve prognostic outcomes.

CONCLUSION

Salivary gland tumours are rare and display varied clinical features. Pleomorphic adenoma was the most common type, while adenoid cystic carcinoma was the leading malignant tumour. SGTs occurred slightly more in females and mainly affected the parotid gland and palate. The high rate of malignancy and frequent association with pain highlight the importance of early diagnosis, public awareness, and timely access to specialist care to improve outcomes.

Source of Support

Nil.

Conflict of Interest

None declared

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