



PROSPECTIVE STUDY OF MAJOR SALIVARY GLAND SWELLINGS: DIAGNOSIS, MANAGEMENT, AND OUTCOMES IN A TERTIARY CARE SETTING

Surgery

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ABSTRACT

Background: Salivary gland tumours constitute a significant subset of head and neck neoplasms, accounting for approximately 3–6% of all tumours in this anatomical region. The major salivary glands — namely the parotid, submandibular, and sublingual glands — are commonly involved in a variety of pathological conditions, ranging from benign lesions to aggressive malignant tumours. These tumours are characterized by diverse histopathological subtypes and a wide spectrum of clinical presentations, which can range from asymptomatic, slow-growing masses to painful, rapidly enlarging swellings with features such as facial nerve involvement or regional metastasis in malignant cases. Due to this diversity, accurate clinical evaluation, supported by imaging modalities (such as ultrasonography, CT scan, or MRI) and cytological/histopathological diagnosis, is essential for appropriate classification and treatment planning. The management of major salivary gland swellings requires a multidisciplinary approach to ensure accurate diagnosis, timely intervention, and optimal patient outcomes. **Aim:** This study is undertaken with the aim of evaluating the Clinical profile of patients with major salivary gland swellings, Diagnostic methods utilized (including imaging and cytology), Treatment modalities employed and Outcomes observed in patients managed at our institution. **Methods:** A total of 15 cases were selected based on inclusion criteria. Each patient underwent detailed history-taking, clinical examination, and diagnostic tests, including FNAC and imaging such as ultrasound or CT after obtaining informed consent. Surgical treatment was performed, and the decision on the procedure was made intraoperatively by the attending surgeon. Resected specimens were sent for histopathological examination to confirm the diagnosis. Postoperative care included monitoring surgical drains and suture removal on the fifth day. Malignant cases were referred to a higher center for further treatment, and all patients were advised to follow a structured follow-up schedule to detect complications or recurrence. **Results:** The majority of salivary gland tumors were benign and occurred more commonly in females (53.3%) than males (33.3%), with malignant tumors found only in females (13%). Most benign tumors were seen in the 31–40 age group, while malignant tumors appeared only in patients over 40 years of age. The parotid gland was the most frequently affected site, accounting for over 70% of all tumors, including all malignant cases, whereas the submandibular gland contributed only benign tumors, and no cases involved the sublingual gland. Swelling was the most common presenting symptom (15) while pain was less frequent, and no cases of facial palsy or recurrence were reported. Superficial parotidectomy was the most commonly performed procedure followed by excision, total parotidectomy, and radical parotidectomy. Histopathological examination revealed pleomorphic adenoma as the most common tumor type, with only single cases of Warthin tumor and mucoepidermoid carcinoma, and no cases of acinar cell carcinoma. **Conclusion:** Salivary gland tumors are most common in the parotid gland, particularly among females in their 3rd to 5th decades, with pleomorphic adenoma being the predominant type. Diagnosis is effectively aided by clinical examination and FNAC, which shows high accuracy. Surgery, mainly superficial parotidectomy, is the primary treatment, and long-term follow-up is essential due to the risk of recurrence and possible malignant transformation.

KEYWORDS

Major Salivary Glands; Parotid, Submandibular, Sublingual Glands; Parotidectomy

INTRODUCTION:

- Salivary gland tumours constitute a significant subset of head and neck neoplasms, accounting for approximately 3–6% of all tumours in this anatomical region.
- The **major salivary glands** — namely the **parotid, submandibular, and sublingual glands** — are commonly involved in a variety of pathological conditions, ranging from benign lesions to aggressive malignant tumours.
- These tumours are characterized by diverse histopathological subtypes and a wide spectrum of clinical presentations, which can range from asymptomatic, slow-growing masses to painful, rapidly enlarging swellings with features such as facial nerve involvement or regional metastasis in malignant cases.
- Due to this diversity, **accurate clinical evaluation**, supported by **imaging modalities** (such as ultrasonography, CT scan, or MRI) and **cytological/histopathological diagnosis**, is essential for appropriate classification and treatment planning.
- The management of major salivary gland swellings requires a multidisciplinary approach, involving collaboration between otolaryngologists, head and neck surgeons, radiologists, pathologists, and oncologists, to ensure accurate diagnosis, timely intervention, and optimal patient outcomes

Aims And Objective:

To study the clinical profile of patients presenting with salivary gland swellings concerning age and sex distribution, and site of occurrence.

- To study their modes of clinical presentation.
- To study the methods and efficacy of surgical management of major salivary gland tumors

MATERIALS AND METHODS:

Study Design: Prospective study.

Study Setting: Department of General Surgery, Akash Institute of Medical Sciences and research Centre.

Study Period: July 2023 to December 2024.

Sample Size: 15 patients.

Inclusion Criteria: All patients above 15 years were chosen for the study who presented with tumors of salivary glands, and were then diagnosed based on clinical and relevant investigations.

Exclusion Criteria: Patients also diagnosed to have the following were excluded - congenital conditions, inflammations, and autoimmune disorders.

Methodology:

The primary source of data included patients diagnosed with major salivary gland swellings who were admitted to the surgical wards during this period. Informed written consent was obtained from all patients prior to their participation in the study. A total of 15 cases were included based on predefined inclusion criteria.

Each patient underwent a thorough history-taking, clinical evaluation, and necessary diagnostic investigations, including Fine Needle Aspiration Cytology (FNAC) and relevant imaging studies such as ultrasonography or CT scan. The definitive surgical decision was taken by the attending surgeon during the operative procedure. Resected specimens were sent for histopathological examination (HPE) to confirm the diagnosis and assess the nature of the lesion Surgical

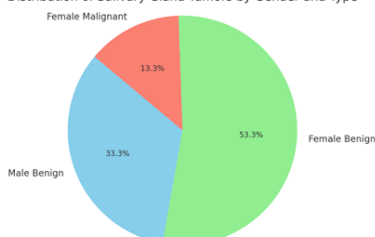
drains were monitored and removed once the daily output was less than 20 ml, and sutures were typically removed on the fifth postoperative day. In cases where malignancy was confirmed, patients were referred to a higher centre for further management, including postoperative radiotherapy. The decision regarding adjuvant treatment was guided by the final HPE report.

Patients were advised to follow up after 15 days, then monthly for one year to monitor for complications or early signs of recurrence.

RESULTS:

1. Distribution of salivary gland tumours by Gender and Type:

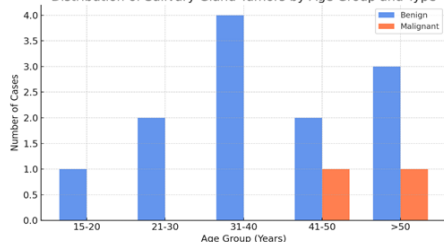
Distribution of Salivary Gland Tumors by Gender and Type



- Female Benign: 53.3%
- Male Benign: 33.3%
- Female Malignant: 13.3%.

2. Distribution Of Salivary Gland Tumors By Age And Type;

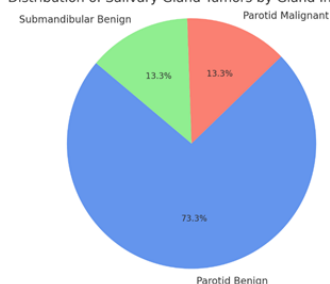
Distribution of Salivary Gland Tumors by Age Group and Type



The highest number of benign salivary gland swellings was observed in the 31–40 years age group, followed by the >50 years group. Malignant tumors were seen only in patients above 40 years of age, specifically in the 41–50 and >50 years groups.

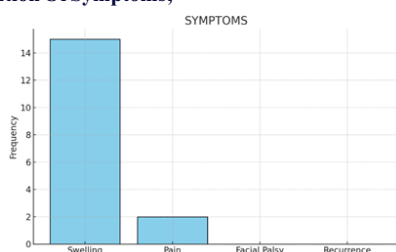
3. Distribution Of Salivary Gland Tumors By Gland Wise;

Distribution of Salivary Gland Tumors by Gland Involved



The majority of salivary gland tumors occurred in the parotid gland, with benign parotid tumors making up over 70% of all cases. Malignant tumors were exclusively found in the parotid gland, accounting for about 13%, while the submandibular gland contributed the remaining benign cases. There were no tumors observed in the sublingual gland in this study.

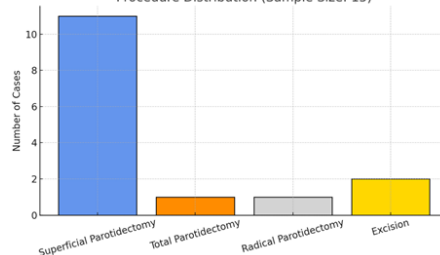
4. Distribution Of Symptoms;



The histogram shows that **swelling** is the most common symptom, occurring 15 times. **Pain** is reported much less frequently, with only 2 cases. Both **facial palsy** and **recurrence** have no recorded occurrences in the data.

5. Distribution Of Procedures Done;

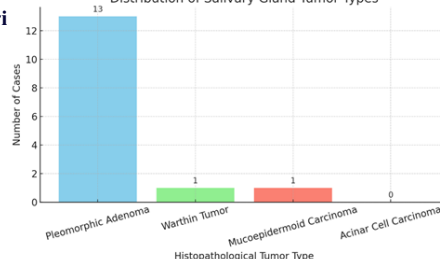
Procedure Distribution (Sample Size: 15)



The bar chart shows that **Superficial Parotidectomy** is the most commonly performed procedure, with 11 cases. **Excision** follows with 2 cases, while **Total Parotidectomy** and **Radical Parotidectomy** account for 1 and 1 cases, respectively.

6. Distri

Distribution of Salivary Gland Tumor Types



The bar chart shows that **Pleomorphic Adenoma** is the most prevalent histopathological type, with 13 cases. **Warthin Tumor** and **Mucoepidermoid** each occur only once. There are **no recorded cases of Acinar Cell Carcinoma**.

DISCUSSION:

The current study shows a female predominance in salivary gland tumours, particularly benign ones, with 53.3% of benign tumours occurring in females. In contrast, Cawson et al report a more balanced gender distribution, with a slight male predominance overall, though pleomorphic adenoma remains more frequent in females. According to Parkin et al., cancer registries have shown variable gender trends globally, depending on geography and smoking prevalence, particularly in Warthin tumours.

In this study, malignant tumours were more common in males than females, comprising 13% of cases and occurring only in those over 40 years of age. This is consistent with textbook data, which indicates that malignant tumours tend to occur later in life, usually after the fifth decade. The age group most commonly affected by benign tumours in the study was 31–40 years, which aligns with the typical age range for pleomorphic adenoma described by Cawson et al.

The parotid gland was the most commonly involved site in both benign and malignant tumours, making up over 70% of cases in this study. This matches the classic distribution pattern described in textbooks, which states that 80–85% of salivary gland tumours arise in the parotid. The study did not report any tumours in the sublingual gland, which is also rare in global epidemiological studies. Malignant tumours were exclusively seen in the parotid in this study, a finding that is supported by literature, where most salivary gland malignancies arise in the parotid or minor salivary glands.

The most frequent symptom reported was swelling, recorded in 15 cases, which is typical for salivary gland tumours as per textbook descriptions. Pain, facial palsy, and recurrence were notably absent or rare, indicating a predominance of low-grade or benign lesions in the study population. This symptom profile matches classical teaching that benign tumours are usually painless and slowly growing.

The most common surgical procedure performed was superficial parotidectomy (11 cases), in line with recommended practice for superficial lobe benign parotid tumours. The study recorded only one radical parotidectomy, which is generally reserved for aggressive or

extensive malignant tumours.

On histopathological examination, pleomorphic adenoma dominated with 13 cases, consistent with global data and textbook consensus that it is the most common salivary gland tumour. Only one case each of Warthin tumour and mucoepidermoid carcinoma were noted, with no acinic cell carcinoma reported. This contrasts slightly with Cawson's series, which typically includes more diversity among malignant tumours, such as adenoid cystic and acinic cell carcinomas. Parkin et al.'s global cancer data confirm that malignant salivary gland tumours are rare and often underrepresented in small regional studies.

Overall, the findings of this study are largely consistent with international and textbook data, particularly in terms of site distribution, age, histopathology, and symptomatology, with minor variations in gender distribution and tumour diversity.

Limitation

1. Less sample size.
2. Single center study.
3. Short duration of study.

CONCLUSION:

Salivary gland tumours are most commonly observed in the 3rd to 5th decades of life, with a higher prevalence in females. The parotid gland is the most frequent site of involvement, and the majority of these tumours are benign in nature. Among benign tumours, pleomorphic adenoma is the most commonly encountered histological type.

Clinically, swelling is the most common presenting symptom. A thorough history and physical examination, supported by Fine Needle Aspiration Cytology (FNAC), provide a reliable approach to diagnosis. FNAC has shown good accuracy in differentiating between benign and malignant lesions.

Surgical intervention remains the cornerstone of treatment, with superficial parotidectomy being the most frequently performed procedure. Long-term follow-up is essential, as some salivary gland tumours have the potential for late recurrence. Importantly, long-standing benign tumours may undergo malignant transformation if left untreated.

Early diagnosis and timely referral are crucial, as the prognosis for salivary gland tumours is generally favourable when managed appropriately. Increasing community awareness can further aid in improving outcomes through early detection and intervention.

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