

# A Clinicopathological Study Of Parotid Tumors In A Tertiary Health Care Centre Of Assam

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## Abstract:

**Background:** Salivary gland tumors are the most complex and diverse of any organ in the body that constitutes 0.3% of all malignancies and 2%–6.5% of the head-and-neck tumor. Approximately 64%–80% of all primary epithelial salivary gland tumors occur in the parotid gland and rest in other salivary glands. The incidence of a parotid tumor is between 1 and 3 cases/100,000/year. Surgery is the main stay of treatment in parotid tumors. Fear of facial nerve injury may lead to inadequate surgery and a high recurrence rate.

**Materials and Methods:** A retrospective clinicopathological study was undertaken at Assam Medical College and Hospital amongst the patients presenting with a swelling in the parotid region. A detailed history and examinations were noted from the prerecorded hospital database along with appropriate investigations such as FNAC and USG of the swelling and CT/MRI of the region concerned whenever necessary. Patients were followed for operative intervention and post-operative complications, if any.

**Results:** The study comprised 32 patients with parotid gland tumors. The age range of the patient affected was between 18 and 75 years. Benign tumors are more common than malignant tumor. Slowly progressive parotid swelling was the common presenting complaint. Superficial parotidectomy was the most common surgery performed. The most common postoperative complication encountered was transient facial nerve palsy.

**Conclusion:** Parotidectomy is still a safe procedure for treating parotid tumors. Transient facial nerve palsy is the most common postoperative complication.

**Key Word:** Parotid gland tumors, parotidectomy.

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## I. Introduction

Salivary gland tumors are the most complex and diverse of any other organ in the body constituting 0.3% of all malignancies and comprises of 2%–6.5% of the head-and-neck tumor<sup>1</sup>. Primary epithelial salivary gland tumors occurring in the parotid gland comprises approximately 64%–80% and rest in other salivary glands<sup>2</sup>. The incidence of a parotid tumor is between 1 and 3 cases/100,000/year. Surgery being the main stay of treatment in parotid tumors, fear of facial nerve injury may lead to inadequate surgery and a high recurrence rate.

## II. Material And Methods

In the present study undertaken at Assam Medical College and Hospital amongst the patients presenting with a swelling in the parotid region, 32 cases were evaluated. A detailed history and examinations were noted from the pre-recorded hospital database regarding tumor location, number, size, shape fixity to surrounding structure, overlying skin, nerve involvement, and loco-regional lymphadenopathy along with appropriate investigations such as FNAC and USG of the swelling and CT/MRI of the region concerned whenever necessary. Appropriate surgical plans were formulated depending on the findings. Treatment modalities mainly included parotidectomy with or without chemotherapy. Patients follow up data were studied for operative outcomes, recurrence, and post-operative complications, if any. Data obtained were analyzed for clinical presentations, age and sex distribution, types of tumor and recurrence and metastasis.

**Study Design:** Retrospective hospital based observational study

**Study Location:** This was a tertiary care teaching hospital-based study done in Department of General Surgery, at Assam Medical College and Hospital, Dibrugarh, Assam

**Study Duration:** February 2022 to January 2024.

**Sample size:** 32 patients.

**Inclusion criteria:**

1. Patients presenting with a swelling in the parotid region,
2. Either sex,
3. Aged  $\geq 12$  years,
4. Patients who gave consent for study.

**Exclusion criteria:**

1. Pregnant women,
2. Patients with previous operative intervention for any parotid pathology,
3. Patients with incomplete medical records and insufficient follow up data.

**Methodology:**

A retrospective observational study was undertaken at the Department of General Surgery, Assam Medical College and Hospital, Dibrugarh, Assam, India, focusing on 32 cases presenting with parotid swelling between February 2022 and January 2024. Patient history, clinical examination findings, investigative outcomes, treatment approaches, and any ensuing complications were meticulously documented from existing hospital records using a standardized proforma. Data of patients presenting with complications like post-operative facial nerve palsy, hemorrhage, seroma, wound infection, during hospital stay or on follow up, were obtained from medical records. The gathered data underwent comprehensive analysis to fulfill the study objectives.

**Statistical analysis**

Data was analyzed using SPSS version 20 (SPSS Inc., Chicago, IL). Chi-square and Fisher exact tests were performed to test for differences in proportions of categorical variables between two or more groups. The level  $P < 0.05$  was considered as the cutoff value or significance.

**III. Results**

The study comprised 32 patients with parotid gland tumors. Affected patients were in the age range between 18 and 75 years with median age being 36.83 years. The ratio of benign to malignant tumors being 9.6:1, benign tumors constituted majority of the cases. Males were affected more commonly than females in ratio 1.46:1. The common presenting complaint was slowly progressive parotid swelling (100%), other complaints being pain (16.67%) and facial palsy (8.33%). Duration of swelling ranged from 2 months to 17 years. Right and left parotid involvement was equal and no cases presented with bilateral parotid involvement. Clinically swelling was firm, hard and rarely cystic consistency. Three case presented with facial nerve palsy and fixity to underlying tissue. Only one case had cervical lymphadenopathy and no cases presented with distant metastasis or during the follow up. Size of the tumors mostly measured between 2-4cm (50.0%), followed by 4-6 cm (41.67%) and one being more than 6cm (8.33%). Only one case presented with sudden increase in size. Superficial lobe is more commonly affected (91.67%). And only one case presented with deep lobe involvement (8.33%). Superficial parotidectomy was the most common surgery performed with preservation of facial nerve. Modified radical neck dissection was done in cases with positive neck nodes. The most common postoperative complication encountered was transient facial palsy (41.67%) that improved over a period of 3-6 months. Other complications include secondary wound infection (16.67%), Frey's syndrome (8.33%) and seroma (8.33%). Histopathology revealed mostly benign cases (91.67%) and one case being malignant (8.33%). None of the cases developed recurrence during limited follow up period. To know about the late recurrence of a tumor, long-term follow-up is necessary which was not possible in this study.

**Table no 1:** Age Distribution of cases presenting with parotid tumor

Age Group	Number of patients	Percentage
12-20	6	18.75%
20-30	5	15.63%
30-40	12	37.50%
40-50	5	15.63%

50-60	3	9.38%
60-75	1	3.13%

**Table no 2:** Sex distribution of cases presenting with parotid tumor

Sex	Number of patients	Percentage
Male	19	59.38%
Female	13	40.63%

**Table no 3:** Presenting symptoms of cases of parotid tumors

Sl. No	Presenting Symptoms	Number of cases	Percentage
1	Slowly progressing parotid swelling	32	100%
2	Pain	5	16.67%
3	Facial Nerve Palsy	3	8.33%
4	Skin Changes	0	0%

**Table no 4:** Size distribution of cases of parotid tumor

Sl. No	Size of swelling	Number of cases	Percentage
1	2cm to 4cm	18	50%
2	>4cm to 6cm	15	41.67%
3	>6cm	3	8.33%

**Table no 5:** Complications of cases of parotid tumor

Sl. No	Complications	Number of cases	Percentage
1	Transient facial nerve palsy	15	41.67%
2	Secondary wound site infection	6	16.67%
3	Frey's syndrome	3	8.33%
4	Seroma	3	8.33%

**Table no 6:** Benign vs Malignant distribution of cases

Sex	Number of patients	Percentage
Benign	29	90.62%
Malignant	3	9.38%

**Figure no 1:** A 52year male patient with right parotid tumor



**Figure no 2:** Modified Blair incision for parotidectomy

**Figure no 3:** Facial nerve branches during parotidectomy



**Figure no 4:** Post Parotidectomy

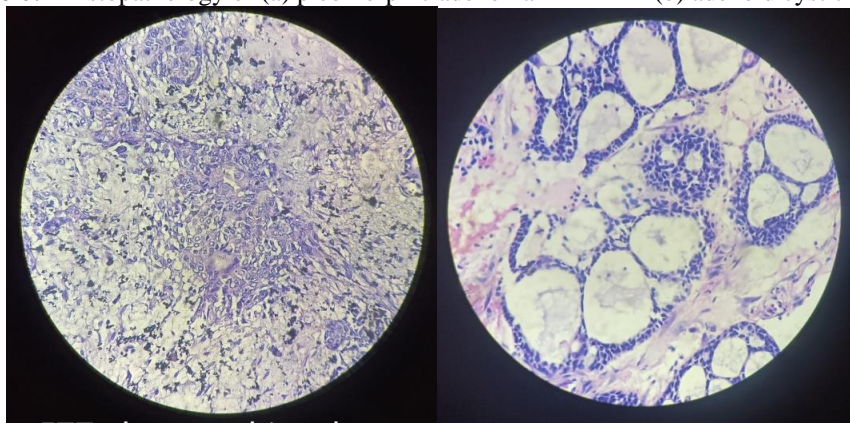


**Figure no 5:** Parotidectomy specimen



**Figure no 6:** Histopathology of (a) pleomorphic adenoma

(b) adenoid cystic carcinoma



**Figure no 10:** Post parotidectomy facial nerve palsy



#### **IV. Discussion**

Salivary gland tumors are the most complex and diverse of any other organ in the body constituting 0.3% of all malignancies and comprises of 2%–6.5% of the head-and-neck tumor<sup>1</sup>. There is a bimodal peak of incidence with respect to average age of onset of benign parotid tumors as noted by Smith et al in their study<sup>4</sup>. Most of the studies show that the benign tumor occurs at younger age group than malignant tumor<sup>5, 6, 7, 8, 9 and 10</sup>.

Males were commonly affected than females, with male-to-female ratio of 1.46:1 which was at par with other studies<sup>9, 11 and 12</sup>. The most common presenting complaint is slowly progressive parotid swelling, other complaints being pain (16.67%). Spiro found that pain is a common symptom in patients with malignant parotid gland carcinoma<sup>13, 14</sup>. Superficial lobe is more commonly affected (91.67%) and rests (8.33%) from deep lobe. Approximately 12%–25% of tumors are said to arise from deep lobe as per Foote et al.<sup>15</sup> and mostly measured between 2–4cm (50.0%). In the study by Edward et al., 75% of patients had an average tumor size of 2–4 cm<sup>11</sup>. The sudden increase in the size of the parotid swelling in a long-standing parotid tumor is an indication of malignant transformation, which was noted in one case in our study. FNAC provides preoperative diagnosis thus helping in planning the surgical management. A high overall accuracy rate for FNA evaluation of parotid masses, ranging from 90% to 95% is confirmed by recent studies<sup>16</sup>. The management of the parotid gland tumors depends on the type of tumor, location, and size of the tumor. The treatment of choice for benign tumors is superficial parotidectomy with preservation of the facial nerve. In general, the most common surgery performed is superficial partial parotidectomy with preservation of facial nerve. In this study, superficial parotidectomy was performed in (91.67%) of patients. Removal of the whole parotid lobe aims to attain adequate surgical margins and avoid rupture of the capsule, which reduces the recurrence rate<sup>17</sup>. Radiation therapy should be used in conjunction with surgery in high-grade malignancies, perineural invasion, positive surgical margins, tumors of the deep lobe and in patients with clinically positive neck nodes, which may reduce local recurrence rate and increase survival rates for patients with high-grade tumors<sup>18, 19 and 20</sup>. Spiro et al. suggested that a therapeutic approach with combined surgical and radiation therapy is more appropriate than surgical treatment alone to the control of local disease<sup>13, 14</sup>. Neck dissection is performed in the advanced stage of the tumor along with adjuvant radiotherapy and chemotherapy. In our study, in one case, total parotidectomy was done in malignant parotid tumors along MRND. Benign tumors are more common than malignant tumors in the parotid gland. In the present study, benign tumors accounted for 91.67% and malignant tumors accounted for 8.33%. Studies conducted by Drivas et al.<sup>10</sup>, Gierek et al.<sup>8</sup>, Mag et al.<sup>21</sup>, wherein benign tumors are more than malignant tumors. Pleomorphic adenoma is the most common benign tumor. This is in concordance with the studies conducted by Drivas et al.<sup>10</sup>, Gierek et al.<sup>8</sup>, Mag et al.<sup>21</sup>, and Takahama Junior et al.<sup>7</sup> and Drivas et al.<sup>10</sup>. In our study, temporary facial nerve palsy was seen for 8.33% of cases, the incidence is less than that noted in various studies conducted by Takahama Junior et al.<sup>7</sup> and Drivas et al.<sup>10</sup> Stretching the nerve during operation caused impairment of microcirculation to the nerve and consequent metabolic block, resulting in transient facial palsy<sup>22</sup>. Other postoperative complications include Frey syndrome, salivary fistulas, wound infection, seroma, and recurrence of tumor. There was no locoregional recurrence of tumors in our study. Follow-up should be done every 4 months once during 1st year with CT scan of the parotid and neck; in 2nd year every 6 months and chest CT should be done every year for lung metastasis. To know about late recurrence of a tumor, long-term follow-up is necessary which was not possible in this study. Low-grade malignant parotid tumors have good prognosis if they are treated early, with the 5-year survival of 70%–100%<sup>21</sup>. The 15-year survival for low-, intermediate-, and high-grade tumor as reported by Spiro is 54%, 31%, and 3%, respectively<sup>14</sup>.

## V. Conclusion

Benign tumors of Parotid are more common than malignant cases. Pleomorphic adenoma is the most common benign tumor of parotid gland. Successful management depends on accurate clinical assessment and diagnosis with appropriate use of FNAC and imaging. Parotidectomy with preservation of facial nerve is still a safe procedure for treating parotid tumors provided adequate resection done and capsule removed in a proper way. The type of parotidectomy is planned based on the intraglandular location of the tumour. Transient facial palsy is the most common postoperative complication. Long term follow-up is required to ascertain recurrence rates.

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