

## Management of parotid tumor

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### Abstract

**Objective:** To describe the clinical & pathological presentations and treatment options of parotid swelling in adult patients.

**Design:** Descriptive case series study.

**Place and Duration of Study:** Surgical units of Bahawal Victoria Hospital Bahawalpur, from August 2010 to July 2015.

**Subjects and Methods:** All patients of either sex & age above 20 years presented with parotid swelling to surgical units were included in the study. Clinical presentations, preoperative investigations, operative procedure, histopathology report, postoperative complications and further management (radiotherapy & chemotherapy) given were recorded.

**Results:** 65 patients presented with parotid swelling. Commonest presentation was a painless lump over the parotid region in 83.07% & painful lump 16.93% patients. Majority of tumours were benign (pleomorphic adenoma 83.07%). Malignant tumours were mucoepidermoid carcinoma 7.05%, adenoid cystic carcinoma 4.61% & acinic cell carcinoma 5.26%.

**Conclusion:** Benign tumours (pleomorphic adenoma) are the commonest tumour in adult patients. Superficial parotidectomy is the operation for benign tumours & total conservative parotidectomy for malignant tumours.

**Key words:** pleomorphic adenoma, mucoepidermoid carcinoma, adenoid cystic carcinoma, acinic cell carcinoma, superficial parotidectomy

### Introduction

Three pairs of major salivary glands and minor salivary glands excrete saliva into the mouth. The largest pair--the parotid glands empty into the oral cavity next to the upper first molars via Stenson's ducts. Salivary glands produce the saliva used to moisten the mouth, initiate digestion, and help to protect teeth from decay.<sup>1,2</sup>

Neoplasms that arise in the salivary glands are relatively rare. They represent a wide variety of both benign and malignant tumour. The diagnosis and treatment of salivary gland neoplasm remain complex and challenging problems for the head and neck surgeon.<sup>2,3</sup> A painless salivary mass is the most common sign and is evaluated by fine-needle aspiration biopsy. Imaging with

CT and MRI can be helpful.<sup>4</sup> About 85% of salivary gland tumors occur in the parotid glands, followed by the submandibular and minor salivary glands, and about 1% occurs in the sublingual glands.<sup>5,6</sup>

The most common benign tumour is a pleomorphic adenoma. Malignant transformation is possible, this usually occurs only after the benign tumor has been present for 15 to 20 yr.<sup>1</sup> If malignant transformation occurs, the cure rates are very low, despite adequate surgery and adjuvant therapy. Other benign tumors include monomorphic adenoma, oncocytoma, and papillary cystadenoma lymphomatosum. These tumors rarely recur and rarely become malignant.<sup>2,4</sup>

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Table 1: *Clinical presentations of parotid tumour*

Clinical feature	No of patients	Percentage
Swelling	65	100
Painless swelling	54	83.07
Painful swelling	11	16.93
Facial nerve palsy	3	4.61
Fungating growth	1	0.65
Neck lymph node	1	0.65

Table 2: *Diagnosis of parotid tumour*

Histological type	Diagnosis on FNAC*	Diagnosis on H/P*
Pleomorphic adenoma	87.69	83.07%
Mucoepidermoid carcinoma	4.61	7.05
Adenoid cystic carcinoma	4.61	4.61
Acinic cell carcinoma	3.09	5.27

\*FNAC=Fine Needle Aspiration Cytology

\*H/P= Histopathology

Malignant tumors are less common and are characterized by rapid growth. They are firm to hard, nodular, and can be fixed to adjacent tissue. Pain and facial nerve involvement are common. Eventually, the overlying skin or mucosa may become ulcerated or the adjacent tissues may become invaded.<sup>4,7</sup> Acinic cell carcinoma, a common parotid tumor, occurs in people in their 40s and 50s. This carcinoma has a more indolent course, as well as an incidence of multifocality. Mucoepidermoid carcinoma is the most common salivary gland cancer. Intermediate and high-grade mucoepidermoid carcinomas may metastasize to the regional lymphatics, which must be addressed with surgical dissection or postoperative radiation therapy. Adenoid cystic carcinoma is a slowly growing tumour. Symptoms include severe pain and, often, facial nerve paralysis. It has a propensity for perineural invasion and spread, with disease potentially extending many centimeters from the main tumor mass. Lymphatic spread is not a common feature of this tumour.<sup>1,2,8</sup>

Surgery, followed by radiation therapy, is the treatment of choice for resectable disease. Less aggressive tumours may be treated by surgery alone. Great care must be taken to avoid dam-

age to the facial nerve within this gland. More aggressive tumours may need to be treated by a combination of surgery and radiotherapy. Currently, there is no effective chemotherapy for salivary cancer.<sup>3,5,9,10</sup>

### Patients & Methods:

This was a descriptive case series study. It was conducted in surgical department, BV Hospital Bahawalpur. Total 65 consecutive cases of parotid tumour were included in this study from August 2010 to July 2015 of both gender & age between 20-60 years. Patients having recurrent parotid tumour were excluded from the study.

Diagnosis of parotid gland disease depends on the careful history taking, a physical examination and laboratory tests. CT scan or a MRI (magnetic resonance imaging) is helpful to see extent of disease. Fine needle aspiration cytology tell histological type of tumour either or malignant.

The treatment protocol was superficial parotidectomy for benign lesion of the superficial lobe. Total conservative parotidectomy was done in case of benign lesions of the deep lobe and malignant lesions of either lobe without facial nerve involvement. Radiotherapy was given to the patients where the disease turned out to be malignant. All patients were followed up to 6 months after their surgery and asked to report back if any problem occurred related to the operation.

The data of each patient is noted on a proforma & the data was analyzed by computer software SPSS Version 16.

### Results:

Total 65 patients presented with parotid tumour were included in the study during the period of 01-8-2010 to 31-7-2015. Out of these 28 (43.07%) were female and 37 (56.93%) were male. The male to female ratio was 1.32: 1. the age ranges from 24 to 60 years with the maximum patients 48(73.84%) falling in the age group 35 to 48 years.

The commonest presentation was swelling or a lump in the parotid region (100%). Majority of patients had painless swelling 54 (83.07%). Only 11 (16.93%) patients had painful swelling. 3 (4.61%) patients presented with facial nerve palsy at the time of presentation. The most common finding on clinical examination was a firm to hard non-tender lump of variable size in the parotid region (Table no: I). on fine needle aspiration cytology pleomorphic adenoma in 57(87.69%) patients, mucoepidermoid carcinoma in 3(4.61%) patients, adenoid cystic carcinoma in 3(4.61%) patients & acinic cell carcinoma 2(3.09%) patients. Definitive histological diagnosis was established on biopsy postoperatively.

Superficial parotidectomy with preservation of facial nerve was performed in 60(92.31%) patients with parotid tumour. Total parotidectomy with sacrifices of facial nerve was performed in 5(7.69%) patients' malignant parotid tumour. In 60(92.31%) patients the tumour is arising from the superficial lobe, 3(4.61%) patients the tumour arising from the deep lobe and in 2(3.08%) patients' tumour involving both lobes of parotid gland.

The most common histopathological type of parotid swelling on biopsy in our study was due to pleomorphic adenoma 83.07%, mucoepidermoid carcinoma 7.05%, adenoid cystic carcinoma 4.61% & acinic cell carcinoma 5.26%.

Temporary facial nerve weakness was the most common problem in 50(76.92%) patients. 5(7.69%) patients developed permanent facial nerve weakness. 10 (15.38%) patients did not develop weakness of facial nerve. Frey's syndrome developed in 22(33.85%) patients. Parotid fistula developed in 5(7.69%) patients, seroma in 12(18.46%) patients and haematoma in 2(3.09%) patients.

### Discussion:

Salivary gland disorders are not a major public health problem. Neoplasm of the salivary glands account for 3% of tumors in the United States. It accounts for 6% of head and neck neoplasms.

Normal salivary glands are made up of several different types of cells, and tumors can start in any of these cell types.<sup>2,3</sup>

In our study there was male preponderance and the male to female ratio was 1.32: 1. Majority of patients (73.84%) presenting with parotid tumour falling in the age group 35 to 48 years. This is supported by two other studies.<sup>1,5</sup> In our study all patients have swelling in the parotid region at time of presentation. 83.07% patients have painless swelling while 16.93% patients have associated pain with the swelling. 4.61% patients have facial nerve palsy & one patient has a fungating growth at time of presentation.

Superficial parotidectomy is the treatment of choice for most benign tumors in the superficial lobe and make every effort to preserve the facial nerve.<sup>5</sup> In order to preserve the facial nerve, it is important to try to determine the proximity of the nerve to the capsule of the tumor prior to surgery. Results of a retrospective review showed that malignant tumors were likely to have a positive facial nerve margin.<sup>9,11</sup> In our study 60(92.31%) patients the tumour is arising from the superficial lobe & superficial parotidectomy with preservation of facial nerve was done. 3(4.61%) patients the tumour arising from the deep lobe and in 2(3.08%) patients' tumour involving both lobes of parotid gland so total parotidectomy with sacrifices of facial nerve done.

Avoid enucleation (except for Warthin tumors and lymph nodes), since it greatly increases the likelihood of recurrence (up to 80%) and nerve damage.<sup>9</sup> Deep lobe tumors demand total parotidectomy with preservation of the facial nerve. For recurrences, postoperative radiotherapy may be administered, with local control rates exceeding 95%.<sup>13,14</sup>

Of the benign epithelial tumors, the mixed tumor (pleomorphic adenoma) is the most common in many studies.<sup>8,11,12</sup> The most common histopathological type of parotid swelling on biopsy in our study was due to pleomorphic adenoma 83.07%. Mucoepidermoid carcinomas

are the most common type of salivary gland cancer. Most start in the parotid glands. These cancers are usually low grade, but they can also be intermediate or high grade. Low-grade tumors have a much better prognosis than high-grade ones.<sup>5,14,15</sup> In our study mucoepidermoid carcinoma was present in 7.05% patients. Adenoid cystic carcinoma is usually slow growing and often appears to be low-grade when looked at under the microscope. Still, it's very hard to get rid of completely because it tends to spread along nerves. These tumors tend to come back after treatment (generally surgery and radiation).<sup>17,18</sup> Adenoid cystic carcinoma was present in 4.61% patients in our study. Most acinic cell carcinomas start in the parotid gland.<sup>2,16</sup> They tend to be slow growing and tend to occur at a younger age than most other salivary gland cancers. They are usually low grade & acinic cell carcinoma was present in 5.26% patients in our study.

Parotidectomy can be performed with little morbidity and no mortality. Most serious complications result from damage to the facial nerve (either temporary or permanent paralysis). Injury to the greater auricular nerve results in hypesthesia of the ear. A slight loss of fullness and an increased prominence of the angle of the mandible may occur after superficial parotidectomy.<sup>3,15,16,19</sup> In our study temporary facial nerve weakness was the most common problem in 50(76.92%) patients and 5(7.69%) patients developed permanent facial nerve weakness. 10 (15.38%) patients did not develop weakness of facial nerve. Uncommon sequelae include salivary fistula, seroma, hematoma, and infection. In our study parotid fistula developed in 5(7.69%) patients, seroma in 2(3.09%) patients.

Frey (auriculotemporal) syndrome results from aberrant regeneration of auriculotemporal nerve fibers to sweat glands in the skin.<sup>1,5,18,20</sup> The result is sweating on the affected side of the face during mastication. The incidence of this complication is variable and may be decreased by interposing a layer of tissue between the cut salivary tissue and the skin. This has been shown to reduce the incidence of Frey syndrome (gustatory sweating). In our study Frey's syndrome developed in

22(33.85%) patients.

### **Conclusion:**

The majority of parotid gland tumours are benign. Benign and malignant epithelial parotid tumours can be diagnosed by their clinical presentation & fine needle aspiration cytology. Superficial parotidectomy with preservation of facial nerve is the operation of choice for benign tumours of superficial lobe of parotid. Facial nerve can be saved in total conservative parotidectomy for benign tumour in deep lobe and early malignant tumour. Patients with high-grade lesions with facial weakness from malignant infiltration and those with lymphatic metastasis have a significantly worse prognosis than those without.

### **Role and contribution of authors:**

Dr Sheikh Atiq-ur-Rehman, FCPS(Surgery), MRCS(Eng), Assistant Professor Surgery, Quaid-e-Azam Medical College, Bahawal Victoria Hospital, Bahawalpur wrote the initial writeup.

Dr Umair Masood, FCPS(Surgery), District Surgeon, DHQ Hospital, Bahawalnagar, gathered the references and helped in collecting data.

Dr Fayyaz Ahmad, FCPS(Surgery), Senior Registrar Surgery, Quaid-e-Azam Medical College, Bahawal Victoria Hospital, Bahawalpur, helped in writing the discussion

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Dr Anjum Sohail Ansari, FCPS(Surgery), Associate Professor of Surgery, Quaid-e-Azam Medical College, Bahawal Victoria Hospital, Bahawalpur, gave the final touch to the writeup, result and conclusion.

**Conflict of interest:** None

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