

## Parotidectomy- A Challenge To Preserve The Facial Nerve.

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### Abstract

*Total conservative parotidectomy or superficial parotidectomy has the risk of facial nerve paralysis and preservation of facial nerve is a real challenge. 24 patients have undergone total conservative parotidectomy and 16 patients have undergone superficial parotidectomy with preservation of integrity and function of the facial nerve and its branches. 35 patients were suffering from neoplastic conditions of which 26 were pleomorphic adenoma, 4 were mucoepidermoid carcinoma, 3 were carcinoma (pleomorphic adenoma) and 2 were adenoid cystic carcinoma & 5 patients were of non-neoplastic conditions of which 3 were chronic parotitis & 2 were congenital parotid fistula. The aim of the study was to observe the efficiency of preservation of facial nerve in parotidectomy done 40 patients.*

### Introduction

The parotid gland is the largest of the salivary glands that produce saliva<sup>1</sup>. The gland lies under the angle of the jaw just beneath the ear. Surgery of the parotid gland may become necessary in the presence of infection and tumor. Of historical interest is that surgery on the parotid gland was the first operation to be performed under ether gas anesthesia in Boston in 1846. Tumors of the parotid gland are 80% benign and 20% malignant<sup>2</sup>. Recurrence of a benign tumor after excision occurs in only 10% of the patients however, the surgical procedure

to remove the tumor, a parotidectomy, is difficult and risky due to the proximity of the gland and the facial nerves which control movement of the face<sup>3,4</sup>. 80% of parotid tumors are benign, of which 80% are pleomorphic adenomas, and 80% arise from the superficial lobe of the parotid<sup>2,3</sup>. There is a greater chance of malignancy in the submandibular and sublingual glands with 50% being benign. Other benign tumors included in the differential diagnosis include Warthin's Tumor, acidophilic cell adenoma, and monomorphic adenoma<sup>4,5</sup>. Adequate resection of benign salivary gland lesions provides a 97-98% control rate. Transformation to a malignant tumor is seen in only 2-5% of cases and is usually associated with tumors that have been present for 10-15 years. Warthin's tumor is the second most common benign lesion in the parotid gland. These represent 2-10% of all parotid gland tumors. Unlike the pleomorphic adenomas, they are more common in men and mostly in the 40-70-year-old age group. They are more common in whites than the blacks<sup>2,4</sup>. The most common malignant tumor of the parotid gland is the mucoepidermoid carcinoma, which can be classified as low grade or high grade. Other malignant lesions include adenocarcinoma,

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squamous cell carcinoma, malignant degeneration of a pleomorphic adenoma, and adenoid cystic carcinoma. Signs and symptoms of parotid malignancy include facial nerve paralysis, pain, or facial paresis<sup>4,5,6</sup>. Treatment of malignant salivary tumors include local surgical excision and consideration of neck dissection. Low-grade mucoepidermoid cancers of the salivary glands are very curable. Squamous cell, high-grade mucoepidermoid, and malignant mixed tumors are less curable with five-year survivals in the range of 50%. Adenoid cystic carcinoma is idler, with a 10-year survival in the range of 10-25%<sup>6,7</sup>. Malignancy arising in a minor salivary gland tends to be more aggressive in nature<sup>7,8</sup>.

### Methodology

The prospective study includes patients suffering from parotid diseases to be treated surgically, randomly selected and operated by the authors, from January 1989 to April 2003. Patients were treated in the ENT department of Dhaka Medical College, Dhaka, Women Medical College Hospital, Uttara, Dhaka, Dhaka National Medical College Hospital, and Dhaka & Holy Family Red Crescent Medical College Hospital Dhaka, Dhaka community Hospital, Dhaka.

Altogether 40 patients, male and female of ages ranging from 12-70 years belonging to different socioeconomic conditions and professions were studied. The diagnosis were established after consideration of history, examination of the parotid glands and the opening of the parotid duct, examination of the neck, general examination, radiological examination including sialogram in some cases, laboratory investigations and histopathological examination.

A thorough and careful history was taken from each and every patient to have the maximum information regarding his / her illness. As to the complaints, mode of onset, progress and duration in particular was asked for, each of the complaints, detailed information about the dietary habit, smoking, drinking, and chewing habit were obtained. Every patient was inquired of about personal profession, Family history for affection by similar disease to any other

member of the family. History of viral disease especially mumps, history of radiation or any other operation under general anesthesia were also taken into account.

Examination of the parotid regions & neck was done thoroughly & as to the swelling of parotid -site, size, no, duration, tenderness, rise of temperature, fixation with underlying and overlying structures. Examination of facial nerve functions was done scrupulously.

A complete general examination by an anesthesiologist was done carefully to assess the cardiovascular and respiratory reserve status in every individual case.

### Investigations

A full hematological and biochemical profile including screening test for diabetes, tuberculosis, (MT, AFB) syphilis (VDRL, TPHA) was done. FNAC was done in 20 cases. Parotid sialogram was done in 8 patients. Liver function tests including HbsAg, ECG, and renal function tests were done in selected cases. X-ray chest was done in every patient as a prerequisite of general anesthesia.

### Histopathology

Tissues collected from excised lesions after proper preservation with description and labeling were sent to histopathologist at the earliest convenient time for histopathological confirmation of diagnosis

### Results

#### Age and sex distribution

Out of 40 patients, age varying from 12-70, most of the patients presented between 30-60 years with a male female ratio of 3:1.

Table showing age and sex distribution: n=40

Age	Male	Female
10-20	2	0
21-30	3	1
31-40	8	2
41-50	8	3
51-60	5	6
61-70	1	1

40 cases (male 27, female 13) with parotid diseases, age at presentations for male were 42(15-67) and female were 45(15-70) years.

#### Clinical presentations

Presenting symptoms were gradually increasing swelling of the parotid region for 5-8 years in 10 cases with a history of recent enlargement for few months in 3 cases, 2-5 years in 14 cases and 1 year or less in 11 cases and in 3 cases repeated infection with swelling for 5 years, and in 2 cases had discharging sinus since birth. No facial nerve paralysis was present at presentation.

#### Treatment

All 40 patients were treated surgically either by -superficial parotidectomy or total conservative parotidectomy under general anesthesia. A standard parotid incision<sup>3</sup>—starting vertically in the preauricular skin crease and descends to the point where the lobule joins the skin of the face at which point it inclines backward to the tip of the mastoid and then downwards and forwards into the cervical skin crease about two fingers breadth below the margin of the mandible. Skin flap is elevated to uncover the area, which the parotid gland occupies. The posterior extremity of the gland is separated from the external auditory canal the mastoid process and sternomastoid muscle so that sufficient space is created to find the trunk of the facial nerve using the tympanomastoid sulcus as the starting point. The nerve is now followed into the parotid gland. The part of the parotid gland superficial to the facial nerve is then peeled off the nerve together with the tumor<sup>3,4</sup>. The deep lobe is now easy to remove as the nerve trunk and branches are now separated from the parotid. And in deep lobe tumor, after superficial parotidectomy after identification and separation of nerve trunk and branches the deep lobe with tumor was removed easily.

Preservation of integrity of facial nerve and its branches was the challenge accepted during the operation and in 37 patients facial nerve was intact with full preservation of functions of all

branches with no weakness of facial movements. In 3 patients there was weakness of marginal mandibular branch of the facial nerve.

#### Discussion

Fewer than 3% of all neoplasms originate in the salivary glands (open cancer statistics, 1983) and at least 75% of these tumors are benign<sup>3,4,9,10,11</sup>. Malignant salivary gland tumors are uncommon. Salivary gland tumors are more common in the parotid gland than in any of the other glands<sup>2,3,4,5,6,7</sup>. In our 40 patients, most 32 (80%) of the patients were presented between 31-60 years of age with a peak age of incidence in 4<sup>th</sup> and 5<sup>th</sup> decade compared to others<sup>6</sup> which is consistent with them. But not with some<sup>7</sup>, where peak age of incidence was in 8<sup>th</sup> and 9<sup>th</sup> decade, most likely due to high survival population of study. Males are found more affected with a ratio of 2: 1 in our study but in others female are slightly more affected than males<sup>8,9,10</sup>. In 35 parotid tumors 26(77%) were pleomorphic adenoma, 4(11%) were mucoepidermoid carcinoma, 3(8%) were carcinoma ex pleomorphic adenoma, 2(4%) were adenoid cystic carcinoma., these findings are consistent with others<sup>1,3,5,7,9</sup>. Long standing and recurrent parotitis treated by courses of antibiotics for 4-5 years were diagnosed and selected as chronic parotitis and we had 3 such cases. 2 cases of congenital parotid fistula referred by pediatricians were included in this study. Tumors were slow growing with long quiescent periods is also observed in our study<sup>5,7,8,9,11</sup>. Surgical treatment was done in all 40 patients of our series. The operation of enucleation, which has largely been abandoned in favor of parotidectomy, resulted in an unexpectedly high rate of recurrence, often as high as 40% over a 20- 25 years period<sup>3,11</sup>. Superficial parotidectomy was done in 16 patients and total conservative parotidectomy was done in 24 patients. Patients were selected randomly and patients with small superficial mobile tumors were selected for superficial parotidectomy and deep lobe tumors and less mobile or immobile large parotid tumors

were selected for total conservative parotidectomy. Standard parotid incision was used to explore the parotid with the tumor and the facial nerve trunk was exposed at its exit in the tympanomastoid sulcus taking all cares not to injure the nerve and after that upper and lower division of the trunk is identified and followed upto the exit of the nerve branches from the gland by peeling the parotid gland lobules superficial to the gland along with the tumor if it is in the superficial lobe of the gland and in case of deep lobe tumor after superficial parotidectomy and freeing the nerve and branches the deep lobe with the tumor was removed between the branches of upper and lower divisions<sup>34</sup>. This stage of surgery is very tedious work needs skill, concentration and patience. Difficulties are mostly encountered in cases of chronic sialoadenitis of the parotid gland as in places the branches are found to be lost in the sea of fibrous tissue and following the nerve branches needs more attention and concentration of the surgeon and meticulous and cautious dissection allows to trace the nerve and to preserve those<sup>11</sup>. Congenital parotid fistula usually do not create any further difficulty except the nerve and branches are slender as patients are younger. Magnification by loops (2.5 times) is useful and was used to trace the nerve and branches when encountered difficulty in dissection. Facial nerve function was found intact in all branches in 37 patients and in 3(p<0.001) patients the marginal mandibular branch weakness was present.

### Conclusion

Parotidectomy- total conservative or superficial runs the risk of facial nerve paralysis or weakness of branches, which one can overcome by following standard procedure of surgical technique.

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