



Review Article

A Review of Our Experience of Surgery for Parotid Gland Neoplasms

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ABSTRACT

Introduction: The aim of the study was to analyse patients presenting with parotid gland Swelling at our centre, treatment given and complications of surgery.

Materials and methods: A retrospective analysis of medical records of patients operated by a single surgeon for parotid gland tumours were analysed from year 2005-2012.

Results: For the above mentioned period 75 patients were operated of which 62 patients were primarily operated by us and 13 patients were operated elsewhere and later referred to us after recurrence. All patients underwent preoperative diagnosis by Fine needle aspiration cytology by an experienced pathologist and the sensitivity of diagnosing malignant lesion as malignant was 90.9% (20/22) (excluding 4 recurrent cases). The surgeries performed were superficial parotidectomy (34 patients), total parotidectomy (22 patients), partial superficial parotidectomy (4 patients), radical parotidectomy (3 patients), wide excision of recurrence (4 patients) and revision total parotidectomy with nerve conservation for recurrent cases in 8 patients. Ten patients of 72 patients (excluding 3 patients who underwent radical parotidectomy) developed facial nerve palsy 7 patients had temporary nerve palsy, 2 patients had palsy of cervico- facial trunk and one patient who was operated for recurrence had complete facial nerve palsy. Three patients developed recurrence (two cases of pleomorphic adenoma and one case of undifferentiated carcinoma) after a mean follow up period of 28 months (Range 6 months- 64 months). Summary and Conclusion: Surgery of parotid gland is nothing but surgery of Facial nerve and in experienced surgeon's hands the risk of facial nerve palsy is minimum with good oncological control.

Key words: Parotid gland tumors, Pleomorphic adenoma, Salivary gland tumors

INTRODUCTION

Salivary gland neoplasms constitute 2-6.5% of head and neck malignancies of which Parotid gland tumors alone constitute

for 70- 85 %. [1-5] Of the parotid gland neoplasms 80-85% are benign and most of them occur in superficial lobe. [4] Parotid gland surgery is of particular interest for

most of the head and neck surgeons because proper identification, dissection and preservation of all branches of Facial nerve are vital for the management of these patients. Most of these patients present with long standing painless swelling in the preauricular region. [6] Presence of pain, skin involvement, recent increase in size, facial nerve paresis/paralysis and presence of lymph node metastases are indicators of malignancy.

Parotid gland has varied pathology with various inflammatory, benign and malignant lesions involving it. Most common tumor of Parotid gland is pleomorphic adenoma and surgery is the main mode of treatment for them. Various incisions were been described for parotid surgery of which most commonly used are modified Blair and facelift incisions. The extent of resection deviated in many studies, includes extracapsularenucleation, extracapsular dissection, partial superficial parotidectomy, superficial paritidectomy, conservative total parotidectomy, radical parotidectomy and extended radical parotidectomy. [4,7] Intracapsularenucleation which was performed earlier is obsolete now days with emphasis on extracapsular dissection to decrease the risk of local recurrence. [8-11]

The management of parotid neoplasms still remains challenging because of infrequency, inconsistent classification, diverse histology, varied biological behavior and prognosis of these tumors. Various complications have been described in literature and most of them are due to close vicinity of the nerves like facial nerve, auriculotemporal nerve with otic ganglion and greater auricular nerve with the gland. The aim of the present study is to study the clinicopathological features, surgical techniques and complications of a single surgeon who performed parotidectomy at our center.

MATERIALS AND METHODS

We retrospectively analyzed medical records of patients who had undergone parotidectomy at our center from the year 2005-2012. All the surgeries were performed in a single department. Patient demographics, clinical presentation, fine needle aspiration cytology (FNAC), type of surgery performed and the complications were analyzed for the above mentioned period.

RESULTS

Seventy five patients underwent surgery for parotid lesions in the study period of which 49 were female and 26 were male. Right side tumors were present in 41 patients and left side in 34 patients. Sixty two patients were operated primarily by us and 13 patients were operated outside who developed recurrence. All patients presented with swelling in parotid region 1 month – 20 years (Range 14.5 months)(Fig. 1). General clinicopathological characters were described in Table.1. Of 13 patients who were operated elsewhere and developed recurrence (Fig.2a & 2b), eight patients underwent revision total parotidectomy, four patients underwent wide excision and one patient underwent radical parotidectomy.

One patient was a case of recurrent acinic cell carcinoma was diagnosed in second trimester of pregnancy and surgery was performed during second trimester. Two cases were non neoplastic benign lesions; one was a case of Kimura's disease and the other benign lymphoepithelial lesion in a known case of HIV infection. Imaging was performed in 10 patients of whom one had dumbbell shape tumor in a case of long standing pleomorphic adenoma involving both superficial and deep lobes (Fig. 2c & 2d).

All patients underwent FNAC of the lesion prior to surgery. Of the patients with

malignancy, there were 22 patients presented primarily to our center and four were recurrent cases. There were two false negative results in which a malignant lesion

was diagnosed as benign (2/22=9%) but there were no false positives. Hence the sensitivity of diagnosing a malignant as malignant was 90.9%.

Table. 1: Clinicopathological features and treatment given for the patients:

Characteristics	Number of patients (Total N = 75)
Age	
Mean± S.D	40.6 ± 5.6 years
Range	6-77 years
Clinical presentation	
Swelling	75
Pain	15
Skin involvement	3
Facial Nerve paralysis	3
Neck nodes	3
Recurrent (Initially operated elsewhere)	13(9 cases pleomorphic adenoma, 3 cases mucoepidermoid carcinoma, 1 case acinic cell carcinoma)
Histopathological Examination	75
Benign tumors	47
Pleomorphic adenoma	43
Warthinstumor	2
Oncocytoma	2
Non neoplastic tumor like lesions	2
Kimurai's disease	1
Benign lympho epithelial lesion	1
Malignant tumors	26
Mucoepidermoid carcinomas	14
Adenocarcinoma	2
Adenoid cystic carcinomas	2
Malignant mixed tumours (carcinoma ex mixed tumor)	2
Acinic cell adenocarcinoma	2
Undifferentiated carcinomas	2
Salivary duct carcinomas	2
Type of Surgery performed	
. Superficial parotidectomy	34
. Partial superficial parotidectomy	4
. Total parotidectomy	22
. Radical Parotidectomy	3
. Wide excision (Recurrence)	4
. Revision total parotidectomy with nerve preservation (Recurrence)	8
Cervical Lymph nodes	15
. Sampling	2
. Supraomohyoid neck dissection	10
. Functional neck dissection	3
Reconstruction	
. Deltopectoral flap	1
. Anterior Cervical rotation flap	2
. Pectoralis major myocutaneous flap	1

MEC- Mucoepidermoid carcinoma

Of the patients who took initial treatment at our center, 62 patients underwent surgery as described in Table 1. Three patients underwent radical parotidectomy with excision of nerve of which one was a case of recurrent

mucoepidermoid cancer. Facial branches were dissected after identifying the facial trunk. Postoperative complications of surgery were described in Table .2.

Of the patients who underwent primary surgery at our center(60 patients, excluding

recurrent and radical parotidectomy cases), seven developed facial nerve palsy of which five had temporary palsy, two had permanent palsy but involving cervicofacial division only. Of two patients with cervicofacial division palsy, in one patient the trunk is divided intentionally for oncological clearance. Five patients with temporary facial nerve palsy recovered within one year. Among 12 patients who underwent recurrent surgery, three patients developed facial nerve palsy; two had temporary and other permanent palsy

involving all branches. Three patients of 75 cases developed Frey’s syndrome which was managed conservatively. One patient developed parotid fistula which resolved on conservative management. The mean follow up period was 28 months (Range 6 months – 64 months) and three patients developed recurrence. Two cases of pleomorphic adenoma (one case primarily operated by us and other was a recurrent case) and one case of undifferentiated carcinoma developed recurrence.

Table. 2: Postoperative complications following Parotidectomy:

Complications	Number of patients (75)
Patients who underwent primary surgery	62
Facial Nerve palsy	7
Temporary	5
Permanent	2
All branches	0
Partial (MM, Cervical, Buccal branch)	2
Freys syndrome	3
First bite syndrome	2
Sialocele(Salivary fistula)	1
Recurrence	3(2 patients pleomorphic adenoma, 1 patient undifferentiated carcinoma)
Patients who underwent surgery after recurrence operated elsewhere	13
Facial Nerve palsy	3
Temporary	2
Permanent	1

MM- Marginal Mandibular nerve



Fig.1a

Fig.1b

Fig.1c

Fig. 1a A 42 year old male showing a 4 x 3 cms lobulated swelling in the right parotid region diagnosed as pleomorphic adenoma

Fig. 1b A 50 year old female with long standing left pleomorphic adenoma with no facial nerve palsy

Fig. 1c A 55 year old female with long standing left pleomorphic adenoma with recent rapid increase in size and facial nerve palsy diagnosed as carcinoma ex pleomorphic adenoma

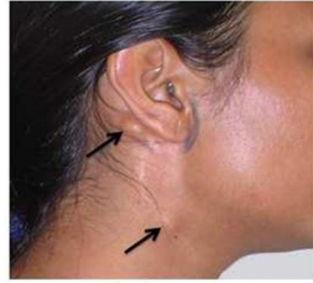


Fig. 2a



Fig. 2b



Fig. 2c

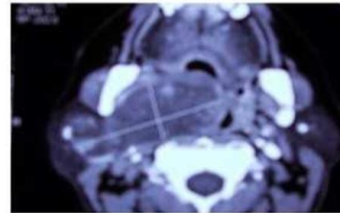


Fig. 2d

Fig. 2a Recurrent pleomorphic adenoma on right side with multiple nodules along the previous surgical scar
 Fig.2b Left Recurrent mucoepidermoid carcinoma in a 30 year old female with skin involvement and facial nerve palsy
 Fig. 2c A 26 year old male with left parotid gland tumor long standing for 5 years pushing the soft palate and tonsil medially
 Fig.2d A contrast enhanced computer tomography scan of the same patient showing mildly enhancing mass involving both superficial and deep lobes

DISCUSSION

Parotid gland tumors are uncommon malignancies of head and neck region. Surgery of parotid gland tumors remains in dissecting and preserving facial nerve and its branches, though oncological clearance is the priority. Historically, in early 20th century intracapsular enucleation of the tumor was performed after incising the parotid fascia, but they were associated with increased recurrences. [12] Later various hypothesis had been proposed for the increased risk of local recurrence seen particularly in pleomorphic adenoma, that the tumor may not be encapsulated in all cases, intraoperative rupture, multicentricity and improper surgical technique as the important causes for recurrence. [13,14] The hypothesis of multicentricity for pleomorphic adenoma had been disproved by Foote and Frazell where in 447 specimens they could not find a single multicentric case of pleomorphic adenoma. [15] Martin (early 1950s) and Patey and Thackray described superficial parotidectomy for pleomorphic adenomas of

parotid gland based on surgical and pathological findings where they found tumor satellites missed by enucleation. [16,17] This led to description of new technique superficial or lateral parotidectomy, that is removal of all the parotid tissue lateral to facial nerve to decrease the local recurrence. Superficial parotidectomy was described as “Grand biopsy” by Conley in 1975. [18] Later fine needle aspiration cytology was applied in various malignancies which created interest for cytopathologists in parotid swellings. A meta-analysis performed for FNAC in parotid lesions found that the sensitivity and specificity for diagnosing a malignant lesion was 0.80 (95% CI, 0.76-0.83) and 0.97 (95% CI, 0.96-0.98) respectively. [19] Recently newer techniques like extracapsular dissection in which only few mm of normal parotid tissue is excised with tumor and partial superficial parotidectomy in which 1-2 cms of normal parotid tissue is excised without dissecting the facial nerve were described with good results. [20-26] In our study, the sensitivity of FNAC to detect malignancy was 90.9%. The

wide range of difference in interpretation is due to the need of an expert cytopathologist in diagnosing it, as it is a rare tumor.

In the present study, the overall incidence of parotid tumors were more common in females compared to males compared some studies where the incidence is more common in males. [27,28] Except for Warthinstumor which was persistently seen more common in males, other tumors have varied incidence in different studies. [29] The incidence of benign tumors reported in literature varied from 65.8-85.3% in large studies. [15,30] In the present study, the incidence of benign tumors was 64.3% (47/73) excluding benign non neoplastic lesions (2 cases). Mucoepidermoid carcinoma is the most common malignant neoplasm in our study which correlates with the literature. [30,31] Assessing the co-existent risk factors in developing parotid swelling, one case of benign lymphoepithelial lesion was associated with HIV infection. [32] Another case of acinic cell carcinoma occurred in a pregnant lady with similar cases reported in literature favouring a hormonal dependency of this cancer. [33] Two cases of carcinoma ex pleomorphic adenoma in two long standing cases of pleomorphic adenoma (20 years and 15 years) correlated with reports in literature. [34]

Three patients had facial nerve palsy at presentation and all underwent radical parotidectomy. Facial nerve dysfunction was the most common complication seen in (11.6%;7/60) who were operated primarily and when operated for a patient with recurrent disease the risk of facial nerve palsy was 25% (3/12) (excluding patients who underwent radical parotidectomy). The risk of facial nerve palsy was reported to be 11-65% temporarily and 0-19% permanently. [11] Also few studies have shown lower risk of facial nerve palsy with extracapsular dissection or partial superficial parotidectomy when compared to superficial

or total parotidectomy. [7,35] Another important complication that may occur after parotidectomy is Freys syndrome. The risk is 2-40% in patients who undergo superficial or total parotidectomy and 0-5% after extracapsular dissection. In the present study, clinically manifested Frey's syndrome was seen in 4 % (3/75), is in relation to the results in literature.

Adjuvant radiotherapy was considered for 22/29 malignant cases which includes high grade tumors, T3, T4 tumors, lymph node positive cancers, recurrent cancers (4 cases), and close microscopic margin (2 cases). Three cases developed recurrence of which 2 were pleomorphic adenoma and one was a case of undifferentiated carcinoma. Re-excision of the disease was considered for patients with recurrent pleomorphic adenoma and for patient with recurrent undifferentiated carcinoma best supportive care was considered due to development of pulmonary metastases.

CONCLUSION

The present data correlates with the clinical presentation, type of malignancies and surgical complications reported in literature. A good knowledge of anatomy to identify facial trunk and its variations with a meticulous dissection plays a major role in proper preservation of facial nerve and its function which is the most vital part of the surgery.

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