

Bangladesh J Otorhinolaryngol 2014; 20(2): 80-86

Original Article

Outcome of Surgery in different Parotid Neoplasms

Kazi Shameemus Salam¹, Belayat Hossain Siddiquee², Md. Mosleh Uddin³, Syed Farhan Ali Razib⁴, Ashim Kumar Biswas⁵

Abstract

Objective: To determine outcome of surgery in different parotid neoplasms.

Study design: Cross sectional study from August 2010 to July 2014.

Settings: Department of Otolaryngology and Head-Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.

Method: 60 postoperative patients of different parotid neoplasms were included in this study. 33 were males and 27 were females between 21 years to 80 years who were treated between August 2010 to July 2014. The study based on history, clinical examinations, radiological, laboratory, cytology reports and histopathological examination.

Results: Majority of the patients were within 41 to 70 years of age. Frequency of benign tumour were more in 4th and 5th decade 42(87.5%) and malignant tumour in 5th and 6th decade 8(66.7%). Common presenting features were pain 8(66.7%), skin involvement 3(25.0%), facial nerve palsy 3(25.0%), metastatic neck nodes 3(25.0%) in malignant cases. In benign cases 45(93.7%) were pleomorphic adenoma, 3(6.25%) Warthin's tumour. In malignant cases mucoepidermoid carcinoma were 7(58.3%), adenoid cystic carcinoma 3(25.0%). In benign parotid tumour, superficial parotidectomy were done in 45(93.75%) and total conservative parotidectomy 3(6.25%). In malignant tumour total conservative parotidectomy were done 5(41.7%), total radical parotidectomy done 4(33.3%), extended radical parotidectomy 3(25%). Histopathological study showed 45(93.75%) were in pleomorphic adenoma, 7(58.3%) mucoepidermoid carcinoma.

Key word: Parotid neoplasm, surgical outcome.

1. Assistant Professor, Department of Otolaryngology and Head-Neck Surgery, BSMMU
2. Professor and Chief, Head-Neck Surgery Division, BSMMU
3. Associate Professor, Dept. of Otolaryngology and Head-Neck Surgery, BSMMU
4. Assistant Professor, Dept. of Otolaryngology and Head-Neck Surgery, BSMMU
5. Assistant Professor, Dept. of Otolaryngology and Head-Neck Surgery, BSMMU

Address of Correspondence: Dr. Kazi Shameemus Salam, Assistant Professor, Department of Otolaryngology and Head-Neck Surgery, BSMMU, Mobile: 01711846700.

Introduction

The parotid gland is the largest gland among all the salivary glands. It is divided into superficial and deep lobes by the traversing facial nerve and its branches. The superficial lobe is the site mostly involved 90% by neoplasms. While the deep lobe tumours accounts for approximately 10% of the parotid tumours.¹ Salivary gland tumours represent about 3% of all the neoplasms of head and neck.² approximately 80% tumours are located in the parotid gland. 80% are benign in nature. 80% are pleomorphic adenomas followed by warthin's tumours are 4-14%.^{3,4} If there is clinical evidence of bilateral parotid

swelling warthin's tumour should be suspected, being the most frequent synchronous or metachronous bilateral histological type.^{5,6} Mucoepidermoid carcinoma is the commonest malignant tumour account for 4-9% of the salivary tumours.⁷

In the 19th century, enucleation was performed for parotid gland tumors which was had 25% recurrence rate. In the 20th century, the concept for more extensive surgery to reduce the high rate of recurrence came and superficial parotidectomy became popular as the minimum procedure. Today, the widely accepted procedure for benign parotid gland tumours is superficial parotidectomy while for malignant tumors, the option ranges from total to extended parotidectomy followed by post operative radiation for tumors with residual disease or positive lymph nodes.

Methods

This surgical audit was carried out at the Department of Otolaryngology and Head-Neck Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka from August 2010 to July 2014. All adult patients of both sexes who presented with parotid gland tumour and underwent parotidectomy were included. Patients with diseases such as parotitis, parotid abscess were excluded. Initial diagnosis was done by history, clinical examinations, laboratory, FNAC and radiological evaluations. Surgery, histopathological examination, complications and outcome was noted.

Results

Out of the total 60 patients with tumours of the parotid glands, the age ranged from 21 to 80 years. Majority of the patients 42(70.0%) were in the 4th and 5th decades in benign and 8(66.7%) were 5th to 6th decades in malignant cases. 33(55.0%) were males while 27(45.0%) were females. The ratio was 1.22:1. Swelling in the parotid region constitutes the most frequent presenting features found among all the patients in both cases followed by pain 8(66.7%), skin involvement 3(25.0%), facial nerve palsy 3(25.0%), metastatic neck nodes 3(25.0%), trismus 2(16.7%) in malignant cases. There were 48 patients of benign parotid tumour. Pleomorphic adenoma were 45(93.75%), Warthin's tumour 3(6.25%). 12 patients had malignancy. Mucoepidermoid carcinoma were 7(58.3%), adenoid cystic carcinoma 3(25.0%). Respectively 1(8.3%), 3(25.0%), 4(33.3%) and 4(33.3%) cases were stage I, stage II, stage III and stage IV. The most common surgical procedure were superficial parotidectomy 45(93.75%) and total conservative parotidectomy 3(6.25%) in benign cases. In malignant cases 5(41.7%) were total conservative parotidectomy, total radical parotidectomy 4(33.3%) and extended radical parotidectomy 3(25%). Histopathological study showed 45 were in pleomorphic adenoma, 7 mucoepidermoid carcinoma. There was no permanent facial palsy. Temporary facial palsy was in 5(10.4%) in benign cases In total radical or extended parotidectomy, permanent facial palsy were 7(58.33%) and temporary facial palsy 5(41.67%), numbness of ear 5(8.3%), infection 2, Frey's syndrome 1, temporary sialocele 1.

Table-I
Common clinical presentations

	No. of cases (n=60)	Benign (n=48)	Malignant (n=12)
1. Swelling in pre-auricular or retromandibular region	60	48	12
2. Pain	8	8	
3. Skin involvement	3	3	
4. Facial nerve paralysis	3	3	
5. Metastatic lymph node	3		3
6. Trismus	2		2

Table-II
Incidence of different types of parotid tumour (N=50)

	No	Percentage
Benign		
Pleomorphic adenoma (mixed tumour)	45	93.75
Warthin's tumour (adenolymphoma)	3	6.25
Malignant		
Mucoepidermoid carcinoma		
Low grade - 5	7	58.3
High grade - 2		
Adenoid cystic carcinoma	3	25.0
Adenocarcinoma	1	8.3
Carcinoma in ex-pleomorphic adenoma	1	8.3

Table-III
Staging for malignant parotid gland tumour

Stage	No of grading	Percentage
Stage - I	1	8.3
Stage - II	3	25.0
Stage - III	4	33.3
Stage - IV	4	33.3
Total	12	100.0

Table-IV
Surgical treatment of different parotid neoplasms

Types of surgery	No of cases	Percentage
Benign tumour		
Superficial parotidectomy	45	93.75
Total conservative partotidectomy	3	6.25
Malignant tumour		
Total conservative partotidectomy	5	41.7
Total radical parotidectomy	4	33.3
Extended radical parotidectomy with excision of local skin with neck dissection	3	25.0

Table-V
Histological grading for malignant parotid gland tumour

Grade	No of grading	Percentage
Grade - I	1	8.3
Grade - II	6	50.0
Grade - III	3	25.0
Grade - IV	2	16.7
Total	12	100.0

Table-VI
Complications of surgery

Complications	No of patients
Facial nerve palsy	
Benign	
Permanent facial nerve palsy	0
Temporary facial nerve palsy	5
Malignant	
Permanent facial nerve palsy	7
Temporary facial nerve palsy	5
Numbness of ear	5
Infection	2
Frey's syndrome	1
Temporary sialocele	1

Discussion

This series focused on parotid gland neoplasm which is the commonest site among all the salivary glands. It is involved by a variety of different benign and malignant conditions for which a wide range of surgical procedures are available.⁹⁻¹²

In this study, among 60 patients 26 were males and 22 were females in benign and 7 were males and 5 were females in malignant diseases. So these were a slight male predominance. Several published studies have reported more frequent involvement of females than males.¹³ Dorairajan from India reported male predominance.¹⁴

In this study, age ranged from 21 to 80 years. Majority of the patients 42(70.0%) were in 4th and 5th decade in benign and 5th and 6th decades in malignant disease. Several studies from the west have reported these disorders to be more common in relatively advanced age group.¹⁵

In this study one tumour was originated from the deep lobe of the parotid presented with a swelling of lateral pharyngeal wall. Sign of

malignancy were pain 8(66.7%), fixity to the skin 3(25.0%), facial nerve paralysis 3(25.0%), lymph node metastasis 3(25.0%) and trismus 2(16.7%). According to Thackray et al pain is infrequent in adenoid cystic carcinoma but in squamous cell carcinoma pain is observed in ¾ of the patients. There may be intractable pain due to involvement of nerve and base of the skull and there may be associated paralysis of the cranial nerve.^{16,17} Facial nerve paralysis occurs only 3(25.0%) in malignant cases. Benign tumours had no facial nerve involvement. Malignancy may involve the trunk or any branch of facial nerve. According to Eneroth's work involvement of the facial nerve in malignant parotid tumour is 40%.¹⁸

In this study pleomorphic adenoma was the commonest 45(93.75%) benign tumour affecting the parotid gland followed by Warthins tumour 3(6.25%). Most of the literature had reported pleomorphic adenoma was the commonest pathology affecting the parotid gland.¹⁹ The share of malignancy was about 12, Kara et al. had reported 24% malignancies in parotid gland disorders.¹² Takahama et al. have reported even higher frequency of malignancies upto 40%.¹⁵ In this series the commonest malignant tumour was mucoepidermoid carcinoma followed by adenoid cystic carcinoma. This findings was consistent with most of the literature.²⁰

Regarding investigations of my series FNAC was found to be very useful in parotid gland pathology. It was done in all 60 cases (100%) of which 55(91.7%) were positive and related with the study of Lindberg and Ackerman²¹, 5(8.3%) false negative. All were confirmed by histopathological examination.

CT scan is superior to MRI for evaluation of the bony structures, where as MRI may be more helpful in distinguishing between inflammatory conditions and salivary

neoplasms. CT scan is indicated in patients with diffuse enlargement of parotid gland, tumour extension beyond the superficial lobe or deep lobe parotid tumours that are difficult to evaluate clinically. If the parotid mass appears to be fixed to the deeper structures, it is appropriate to proceed with CT to evaluate the extension to parapharyngeal region of the disease. MRI is indicated in patients with facial nerve paralysis. Both imaging methods are helpful and accurate in distinguished deep lobe parotid tumours from other parapharyngeal masses. They are also useful for evaluating suspicious lymph nodes and periphery of the mass (encapsulated or irregular borders).

In this study, superficial parotidectomy was performed in 45(93.75%) and total conservative parotidectomy 3(6.25%) in benign disease. Total conservative parotidectomy 5(41.7%), total radical parotidectomy 4(33.3%), extended radical parotidectomy 3(25.0%) with comprehensive or modified neck dissection in 3(25.0%) in malignant diseases. About 20% of patients with malignant parotid tumour had presented with clinically detectable cervical lymphadenopathy (CN+).

Patients with advanced stage (Stage III or IV) disease, a large primary tumour, close margins, perineural spread, soft tissue extension, facial nerve dysfunction or cervical lymph node metastasis invariably require postoperative radiation therapy. In general, this means that postoperative radiation therapy is indicated for all patients except those with T₁ or T₂ malignant tumours of low-grade histology and clear margins.

Out of these 5(10.42%) patients were developed transient facial nerve palsy which gradually recovered and patients had no permanent facial nerve palsy in benign diseases after surgery. But in total

conservative, radical or extended radical parotidectomy 7(58.3%) patients were developed permanent facial nerve palsy while 5(41.7%) developed transient facial nerve palsy. The incidence of facial nerve palsy varies from 15-29% in the literature²²⁻²⁴. Conley states that approximately 50% of the patients had a mild temporary weakness of the facial nerve is rare but temporary paresis occurs in 10-20% cases with recovery time, varying from weeks to months.^{25,26} Numbness of the ear occurs in 5(8.3%) cases due to cutting of great auricular nerve. Recovery of sensation may be slow.

In the present series follow up could be made for 4 years none of the pleomorphic adenoma showed any recurrence. The warthin's tumour had no recurrence and facial nerve palsy.

There were 2 cases of facial nerve palsy and no recurrence in mucoepidermoid carcinoma, in adenocystic carcinoma 3 were facial nerve palsy and 1 recurrence. In adenocarcinoma 1 facial nerve palsy and 1 recurrence, carcinoma ex-pleomorphic adenoma 1 facial nerve palsy and no recurrence.

Conclusion

Parotid gland is the principle site of salivary gland tumours. Males are mostly affected. Majority of patients present with painless lump and pleomorphic adenoma is the commonest benign tumour, while mucoepidermoid carcinoma is the most common malignant tumour. Superficial parotidectomy were the most commonly offered surgical procedure and post operative risk of facial nerve palsy and recurrence were decreased.

References

1. Schibba JJ, Batsakis JG. The major salivary gland. In: Silverberg's principles and practice of surgical pathology, 2nd ed. Vol. 1, New York, Churchill Livingstone, 1995; 899.

2. Stell and Marran's Head and Neck Surgery. Tumours of major salivary gland. 4th edition 2000; 441-458.
3. Satko L, Stankop LL. Salivary gland tumours treated in the stomatological clinics in Bratislava. *J Craino Maxillofac Surg* 2000; 28: 56-61.
4. Hill AG. Salivary gland tumours in rural Kenyan Hospital. *East Afr Med J* 2002; 79: 8-10.
5. Maiorano E, LO Muzio L, Favia G, Piattellia A. Warthin's tumour: A study of 78 cases with emphasis on bilaterally multifocality and association with other malignancies. *Oral Oncol* 2002; 38: 35-40.
6. Belli E, Renzi G, Balestra FM, Matteinic, Becelli R. Bilateral parotid voluminous masses: A case report *J Carniofac Surg* 2004; 15: 165-169.
7. Smith WP, Langdon JD. Disorders of the salivary gland. In: Russel RCG, William NS, Bulstrode CJK (eds). *Bailey and Loves short practice of surgery*, 24th ed. London, Arnold 2004; p. 218-38.
8. Spiro RH, Huvos AG, Strong EWL. Cancer of the parotid gland: A clinicopathological study of 288 primary cases. *Am J Surg* 1995; 130: 452.
9. Koh JL, Kim HS, Park CI. Randomized clinical trial comparison partial parotidectomy versus superficial or total parotidectomy. *Br J Surg* 2007; 94: 1081-7.
10. Guntinas Lichius O, Gabriel B, Klussmann JP. Risk of facial nerve palsy and severe Frey's syndrome after conservative parotidectomy for benign disease: analysis 610 patients. *Acta Otolaryngol Laryngological* 2006: 1.
11. Auclair PL, Ellis GL, Gnepp DR, Wenig BN, Janey CG. Salivary gland neoplasms: general considerations. In: Ellis GL, Auclair PL, Gnepp DR, editors. *Surgical path of salivary glands*. Philadelphia: WB Saunders; 1991: 135-64.
12. Kara MI, Goze F, Rzigranli S, Polat S, Muderris S, Elagoz. S. Neoplasms of the salivary gland in a Tus adult population. *Med Oral Pathol Oral Cir Bucal* 2010; 15: 880-5.
13. Malik KA. Parotid gland tumours: a six years experience *Pak J Surg* 2007; 23: 133-5.
14. Dorairajan N. Salivary gland tumours: a 10 years retrospective study of survival in relation to size, histopathological examination of the tumour and nodal status. *Int Surg* 2004; 89: 140-9.
15. Takahama Junior A, Almeida OP, Kowalski LP. Parotid neoplasms: analysis of 600 patients attended in a single institution. *Braz J Otolaryngol* 2009; 75: 497-50.
16. Satko I, Stanko P, Longauerova I. Salivary gland tumours treated in the stomatological Clinics in Bratislava. *Craniomaxillofac Surg* 2000; 28: 56-61.
17. Thackray AC (1968) proceedings of the Royal Society of Medicine 61: 1089.
18. Eneroth CM, Zajicek J (1966). Aspiration biopsy of salivary gland tumour, (III). *Acta Cytologica*; 10: 440-453.
19. Silas OA, Echejoh GO, Manasseh AN, Mandong BM. Patterns of malignant salivary gland tumours in JOS University Teaching Hospital (JUTH). JOS: a ten years retrospective study. *Niger J Med* 2009; 18: 282-5.

20. Li LJ, Li Y, Wen YM, Liu H, Zhao HW. Clinical analysis of salivary gland tumour cases in west China in past 50 years. *Oral Oncol* 2008; 44: 187-92.
21. Subhashraj K. Salivary gland tumours: a single institution experience in India. *Br J Oral Maxillofac Surg* 2008; 46: 635-8.
22. Vargas PA, Gerhaid R, Filho A, Decastro IV VJ. Salivary gland tumours in Brazillian population: a retrospective study of 124 cases. *Rev Hosp Clin Fac Med Sao Paulo* 2002; 57: 271-6.
23. Thakur J. Bilateral parotid tuberculosis. *J Glob Infect Dis* 2011; 3: 296-9.
24. Lindberg LG, Ackerman M. Aspiration cytology of salivary gland tumours. Diagnostic experience from six years of routine laboratory work. *Laryngoscope* 1976; 86: 584-594.
25. Renchal A, Gleance EN, McGurk M. An analysis of the treatment of 114 patients with recurrent pleomorphic adenoma of the parotid gland. *Am J Surg* 1996; 172: 710-14.
26. Conley J, Clairmont A. Facial nerve involvement recurrent benign pleomorphic adenoma. *Arch Otolaryngol* 1979; 105: 247-51.