A Review of Parotid Tumours and Their Management: A Ten-Year-Experience

S Shashinder, MS, I P Tang, MD, P Velayutham, MBBS, N Prepageran, FRCS, K G Gopala, FRCS, S Kuljit, MS, M M Anura, MS, Sheldon Y C Chong, MBBS

Department of Otorhinolaryngology, Faculty of Medicine, University of Malaya, 50630 Kuala Lumpur, Malaysia

SUMMARY

To review the demographics, management and outcome of patients undergoing parotidectomy at a tertiary center. A total of 76 patients who underwent parotidectomies from January 1996 to December 2005 at the ORL department of our center were reviewed. All clinical, operative, postoperative, histology data were gathered and reviewed. Fine-needle aspiration cytology (FNAC) was diagnostic in 90% of patients with a sensitivity of 76% and specificity of 96%. Twenty-one patients had malignant tumours and the rest had benign or inflammatory lesions. There were a total of 48 superficial and 28 total parotidectomies performed. Facial nerve palsy occurred in 30 (39%) patients with 4% permanent palsy and 35% temporary palsy. The recurrence rate of pleomorphic adenoma was 2.6%. FNAC and CT scan were performed prior to the surgery were useful guidance in planning the operation but clinical judgment is more important. The most common surgery performed was superficial parotidectomy and the most common cause was due to pleomorphic adenoma. The incidence of complications and recurrence of tumour are comparable to other international studies. Prior knowledge of anatomy and careful planning is needed to decrease the incidence of facial nerve palsy.

KEY WORDS:
Parotidectomy, Parotid gland, Complications, Outcome

INTRODUCTION

Parotid gland tumours constitute 80% tumours of the salivary glands and represent 3% of head and neck tumours. Eighty percent of parotid gland tumours are benign and occur in the lower part of the gland. Four-fifths of the parenchyma of the gland lies lateral to the facial nerve in the superficial lobe and 90% of parotid neoplasms present in the superficial lobe[1].

The relationship of the facial nerve to the parotid gland is responsible for many of the difficulties and complications of parotid surgery. Patients may develop facial disfigurement if the facial nerve is damaged during surgery. The aim of this study was to review the demographics, management and outcome of the patients undergoing parotidectomy at a tertiary centre from January 1996 to December 2005.

MATERIALS AND METHODS

A retrospective study was performed on all parotidectomies carried out at the department of Otorhinolaryngology-Head & Neck Surgery at our centre from January 1996 to December 2005. A total 76 patients who underwent parotidectomy were identified. All medical records were retrieved from the record office. The following data were collected and reviewed: patient's age, race (according to national identity card), site of tumour, FNAC results, histological diagnosis, investigations, type of surgery, surgeon, postoperative complications and follow up. The data was processed using the SPSS program and specificity and sensitivity were calculated for patients who underwent FNAC.

RESULTS

There was 76 patients underwent parotidectomy from January 1996 to December 2005. Twenty-nine of the patients were males and 47 patients were females. The mean age of presentation was 52 years with the range of 10 to 84 years. All the patients had fine needle aspiration cytology performed prior to surgery. It was found that the fine-needle aspiration was diagnostic in 90% of patients with a sensitivity of 76% and specificity of 96% (Table I). All patients had CT scan performed before the operation to assess the extent of the lesion and help in planning of treatment.

Final histopathological examination revealed six patients had inflammatory changes of the parotid gland, 49 patients had benign parotid tumors and 21 patients had malignant parotid tumours. The different types of benign and malignant tumours were shown in Table II. Of the malignant tumours, the mucoepidermoid variety was the most common and accounted for 38%. On the other hand, 75% of benign parotid disease had a histological diagnosis of pleomorphic adenoma.

Forty-eight of 76 patients underwent superficial parotidectomy and 28 patients underwent total parotidectomy. Among the 48 patients who underwent superficial parotidectomy, 44 patients had benign parotid tumours and four had malignant parotid tumours. On the other hand, among 28 patients who underwent total parotidectomy, 12 patients had benign histological findings and 16 patients had a malignant parotid tumour. The 12 patients with the benign parotid tumours who underwent total parotidectomy with facial nerve sparing were because the tumour involved the deep lobe in addition to the superficial lobe. Four patients with malignant tumours had superficial parotidectomies performed as CT scan showed tumour in the superficial lobe only and on table frozen section showed clear margins. Fourteen patients with

This article was accepted: 20 December 2008
Corresponding Author: Ing Ping Tang, Department of Otorhinolaryngology, Faculty of Medicine, University of Malaya, 50630 Kuala Lumpur, Malaysia
Email: ingptang@yahoo.com

Table I: Patients' Demographic, Clinical, Operative and Postoperative Data

Variables	No.
Number of patients	76
Male / Female	29/47
Side of tumour (left/right)	39/37
Age in years at first visit (mean)	52(range 10-84)
Race (Malay/Chinese/Indian) according to national identity card	24/39/13
FNAC –benign/malignant	58/18
Histology- inflammatory/benign/malignant	6/49/21
Parotidectomy- superficial/total	48/28
Mean of follow-up after surgery (months)	8 (range 1- 42)

Table II: Histology of Parotid Disease

Histological findings	No. patients
Malignant	**21**
Mucoepidermoid tumour	8
Acinic cell carcinoma	3
Adeno carcinoma	3
Adenoid cystic carcinoma	2
Lymphoma	1
Squamous cell carcinoma	1
Sarcoma	1
Malignant lymphoepithelial lesion	1
Malignant oncocytoma	1
Benign	**49**
Pleomorphic adenoma	37
Warthin's tumour	8
Myoepithelioma	2
Recurrent pleomorphic adenoma	2
Inflammatory	6
Total	**76**

Table III: Complications Post Parotidectomy

Complications	No.	(%)
Haematoma	1	
Wound Infection	4	
Facial Nerve Palsy		
Complete palsy	**3**	**4%**
Benign tumours/ inflammatory	1	
Malignant tumours	2	
Partial palsy	**27**	**35%**
Benign / inflammatory	17	
Malignant tumours	10	
Recurrence	6	8%

malignant parotid tumours had a total parotidectomy with sparing of the facial nerve as the tumour did not involve the facial nerve macroscopically. Two patients with malignant parotid tumours had total parotidectomy with facial nerve resection. Five patients had radical neck dissection performed with their total parotidectomy because of neck node metastasis.

Table III shows a summary of complications seen in the patients post operatively. One patient developed a postoperative hematoma which settled with evacuation. Four patients developed wound infection following the operation. The infection resolved by conservative treatment with antibiotics. Thirty (39%) patients had facial nerve palsy. Three (4%) patients had complete facial nerve palsy (House Brackman Grade 6[2]) of which two were malignant conditions who underwent total parotidectomy with facial nerve resection. Twenty-seven (35%) patients had partial facial nerve palsy (most of them House Brackman Grade 3 or 4[2]). Four patients with malignancy and two patients with pleomorphic adenoma developed local regional recurrence. The mean follow up period after surgery was eight months with the range of one to 42 months.

DISCUSSION

The estimated incidence of parotid tumour is approximately 2.4 per 100 000 per year[3]. The mean age of presentation at our center was 52 years and was comparable with other series[4,5]. Although right sided tumours are more commonly reported than the left[6,7,8], this study showed the opposite-left sided tumour being more common. There were more females in our study compared to studies by Saleh M *et al*[8] and Wong DSY[5] in which a male preponderance was reported. In this study, 50% of patients with parotid tumour were of Chinese ethnicity but this data could not be used to indicate that parotid tumours were more common in this ethnic group as the hospital is located in a community where the Chinese form the majority of population.

Parotid gland tumours are the most common salivary gland tumours accounting for about 80% of salivary gland neoplasm[3] with pleomorphic adenoma being the commonest among them[4]. Benign tumours accounted for 65% of parotid tumour in this study. Pleomorphic adenoma accounted for 75%, followed by Warthin's tumour (16%) and myoepithelioma (4%). Malignant tumours accounted for 27% of patients presenting with a parotid mass in this study. The incidence of malignant parotid tumours was higher compared to the other published data[5,6,8,9,10]. Mucoepidermoid tumour was the commonest malignant tumour of the parotid gland in this study representing 10% of 76 patients. This finding is similar to international studies[8,9].

FNAC was diagnostic in 90% of patients with a sensitivity of 76% and specificity of 96% comparable to other similar studies[8, 11]. We found FNAC was useful in planning the patients for surgery. However, the authors wish to stress that most patients we had operated upon using clinical judgment and FNAC was only used for guidance.

All the patients had CT scan performed before the operation to assess the extent of tumour and planning of further treatment. CT scan of the tumour is very useful in patients with problems in assessment especially those involving the deep lobe, suspected malignant tumours with local infiltration, recurrence cases and tumour extension to the inaccessible areas such as the retromandibular fossa or parapharyngeal space.

The incidence of temporary facial palsy in our study was about 35% and is lower than studies reported by Laccorreye[12] and Mehle[16]. Some centers have reported an incidence as low as 18%-20%[4,11]. The marginal mandibular nerve was the most frequently involved branch of the facial nerve because of its close proximity to the tail and inferoposterior part of the parotid - the area most frequently affected by the tumours and manipulated the most during parotid surgery.

Permanent facial nerve palsy was seen in patients undergoing parotidectomy that had a malignant tumour or underlying inflammation and was seen in 4% of our cases. Of the three patients who had complete facial nerve damage, one had advanced mucoepidermoid tumour with involvement of the facial nerve, one patient had adenoid cystic carcinoma with facial nerve involvement and the third had chronic inflammatory changes of the parotid gland. The incidence of permanent facial nerve damage in this study is similar to other reported studies which report the incidence of 0-10%[13,14,15].

Facial nerve monitoring and stimulator were used in nearly all cases, but only to act as a guide as a thorough knowledge of facial nerve anatomy was very important in identifying the facial nerve trunk. Patients with malignancies tend to undergo total parotidectomy with or without facial nerve sparing as compared to patients with benign tumours. Total parotidectomy with or without facial nerve sparing for malignant parotid tumours is usually required[11]. Some of our cases had inadequate documentation by the caregiver in term of severity and follow-up of the facial nerve palsy. In the future, improved documentation not only will promote both higher quality follow-up data but also be of value if medico-legal challenge should occur.

The recurrence rate of pleomorphic adenoma in this study was 2.6% (two cases). Recurrence rates reported in the literature vary but rates of less than two percent were reported in many larger series[3,11]. Surgery for recurrence pleomorphic adenoma of the parotid gland is technically difficult and once a tumour has recurred, the risk of further disease increases to 15 percent[11].

Average range of follow-up in this series was eight months and was less than other published studies in developed nations[4,8]. This maybe due to poor understanding of the disease by the patient and, in particular their lack of appreciation of the need for follow-up.

CONCLUSION

The current study is small and covering ten-year duration. It shows a higher proportion of malignant cases as compared to other studies. FNAC and CT scan were performed prior to the surgery were useful guidance in planning the definite operation but clinical judgment was considered more important. The incidence of complications and tumour recurrence are comparable to other international studies but the data may well be affected by the limitations of patient follow-up. Prior knowledge of anatomy and careful planning is needed to decrease the incidence of facial nerve palsy.

REFERENCES

1. Witt RL. The significance of the margin in parotid surgery for pleomorphic adenoma. Laryngoscope 2002; 112: 2141-54.
2. House JW. Facial nerve grading systems. Laryngoscope 1983; 93: 1056-69.
3. Debets JM, Munting JD. Parotidectomy for parotid tumours: 19-year experience from the nertherlands. Br J Surg 1992; 79: 1159-61.
4. Bova R, Saylor A, Coman WB. Parotidectomy: Review of treatment and outcomes. ANZ J Surg. 2004; 74: 563-8.
5. Wong DS, Li GK. The role of fine-needle aspiration cytology in the management of parotid tumours: A critical appraisal. Head Neck 2000; 22: 469-73.
6. Dulguerov P, Quinodoz D, Cosendai G, Piletta P, Marchal F, Lehmann W. Prevention of Frey syndrome during parotidectomy. Arch Otolaryngol Head Neck Surg 1999; 125: 833-9.
7. Dulguerov P, Marchal F, Lehmann W. Postparotidectomy facial nerve paralysis: posibble etiologic factors and results with routine facial nerve monitoring. Laryngoscope 1999; 109: 754-62.
8. Al Salamah SM, Khalid K, Khan IA, Gul R. Outcome of surgery for parotid tumours: 5-year experience of a general surgical unit in a teaching hospital. ANZ J Surg 2005; 75: 948-52.
9. Kamal SA. Othman EO. Diagnosis and treatment of parotid tumour. J Laryngol Otol 1997; 111: 316-21.
10. Ethunandan M, Pratt CA, Macpherson DW. Changing frequency of parotid neoplasms: Analysis of 560 tumours treated in a district general hospital. Ann R Coll Surg Engl. 2002; 84: 1-6.
11. Harney M, Walsh P, Conlon B, Hone S, Timon C. Parotid gland surgery: a retrospective review of 108 cases. J Laryngol Otol 2002; 116: 285-7.
12. Laccourreye O, Brasnu D, Jouffre V, Cauchois R, Naudo P, Laccourreye H. Dysfunction of the facial nerve following total conservative paroticdectomy for pleomorhic adenoma. Ann Otolaryngol Chir Cervicofac 1995; 112: 63-8.
13. Breaux JL Jr, Archie JP Jr. Parotid tumours: A ten-year experience in a community hospital. South. Med. J. 1980; 73: 1671.
14. Hwang SY, Brett RH. An audit of parotidectomy in Singapore: A review of 31 cases. Med J Malaysia 2003; 58: 273-8.
15. Guntinas-Lichius O, Kick C, Klussmann JP, Jungehuelsing M, Stennert E. Pleomorphic adenoma of parotid gland: a 13-year experience of consequent management by lateral or total parotidectomy. Eur Arch Otorhinolaryngol 2004; 261: 143-6.
16. Mehle ME, Kraus DH, Wood BG, Benninger MS, Eliachar I, Levine HL, Tucker HM, Lavertu P. Facial nerve morbidity following parotid surgery for benign disease: the Cleveland Clinic Foundation experience. Laryngoscope 1993; 103: 386-8.