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A Review Of Parotid Tumours In Negeri Sembilan, Malaysia

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ABSTRACT

Background/Objective: Parotid tumours represent one of many groups of tumours in the field of Otorhinolaryngology. However, a local demographical evaluation of parotid tumours and its annual incidences has never been undertaken. This study intends to review local demography in relation to incidence of parotid tumour seen in Otorhinolaryngology (ORL) clinic, Hospital Tuanku Ja'afar Seremban, Negeri Sembilan from the year 2007 till 2012. **Methods:** A retrospective demographical study on parotid cases seen in ORL clinic, Hospital Tuanku Ja'afar Seremban between 2007 till 2012 involving 56 cases. Data that was collected include patient details, facial nerve involvement on presentation, type of surgery performed, site of tumour, facial nerve injury post operation and final histopathological diagnosis. **Results:** An average of 10 cases per year was noted from 2007 to 2012. Male to female ratio was found to be 1.4:1. Age range of sample population were 9 to 79 years old with a mean age of 47 at time of diagnosis. Superficial lobe was found to be the most common tumour site (63%). Majority of cases consists of benign tumours in 51 out of 56 cases with Warthin's tumour and Pleomorphic Adenoma being the most common histopathological finding. Post operative facial nerve injury were noted in 17 cases in which 13 cases were temporary while 4 others were permanent.

Key Words: Parotid Neoplasm, Demography, Review

INTRODUCTION

Parotid tumours represent one of many groups of tumours in the field of Otorhinolaryngology. The process of diagnosis and management is influenced by the presentation of patient at first detection, behavior of different pathologies, timing and accuracy of fine needle aspiration cytology (FNAC) and computer tomography (CT) imaging.

Fewer than 3% of all neoplasm arise from salivary glands with majority (75%) of it benign in nature.[1] Majority of tumours arise in parotid gland (~80%) compared to submandibular and sublingual glands. Features of rapid growth, restricted mobility, fixation with overlying skin, and facial nerve involvement indicate probability of malignancy of the parotid gland tumour. Tumours can be classified as benign and malignant as listed below[1,2] :

Benign

- Pleomorphic Adenoma
- Warthin's Tumour
- Oncocytoma (Oxyphilic Adenoma)
- Monomorphic Tumours
- Sebaceous Tumours
- Benign Lymphoepithelial Lesion
- Papillary Ductal Adenoma (Papilloma)

Malignant

- Mucoepidermoid
- Acinic cell
- Adenoid cystic
- Polymorphous Low Grade Adenocarcinoma
- Papillary Cyst Adenocarcinoma
- Mucinous Adenocarcinoma
- Adenocarcinoma
- Carcinoma ex-Pleomorphic Adenoma
- Malignant Mixed Tumour
- Squamous Cell Carcinoma
- Undifferentiated Carcinoma

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Distant hematogenous metastases occurs most frequently in the lungs (80%) followed by bone (15%), liver and other sites (5%).[2] There is marked predilection for female gender in benign tumours,[1,3] however no racial preponderance.[3]

Salivary gland neoplasm in children are rare[5] in which 8% of pediatric head & neck tumours are from salivary gland tumours.[4,5] All different types of tumours are found in pediatric cases as in adults but differ in terms of incidence.[5] However it is noted that majority of the pediatric cases who present with salivary gland enlargement/swelling which was rather benign looking were actually inflammatory (eg. chronic sialadenitis, obstructive sialadenitis) and non-inflammatory (eg. hemangioma, lymphangioma, mucocele) diseases of the salivary gland.[5-11] The most common benign tumour among pediatric population is Pleomorphic Adenoma.[5,12,13]

Proper diagnosis requires swift detection and intervention by clinicians in addition to accurate interpretation of investigations taken by pathologists. However, a local demographical evaluation of parotid tumours and its annual incidences has never been undertaken before. This study intends to review local demography in relation to incidence of parotid tumour seen in Otorhinolaryngology (ORL) clinic, Hospital Tuanku Ja'afar Seremban, Negeri Sembilan from the year 2007 till 2012.

METHODS

A retrospective demographical study on parotid tumour cases seen in ORL clinic, Hospital Tuanku Ja'afar Seremban was done for cases seen between January 2007 till December 2012. These cases include referrals from district hospital and private hospitals in Negeri Sembilan. Data that was collected include patient details, facial nerve involvement on presentation, type of surgery performed, site of tumour, facial nerve injury post operation and final histopathological diagnosis. The data was traced from patient's files and online pathological reports and updated onto a data checklist sheet. Collected data were then compiled into SPSS version 19 program for analysis.

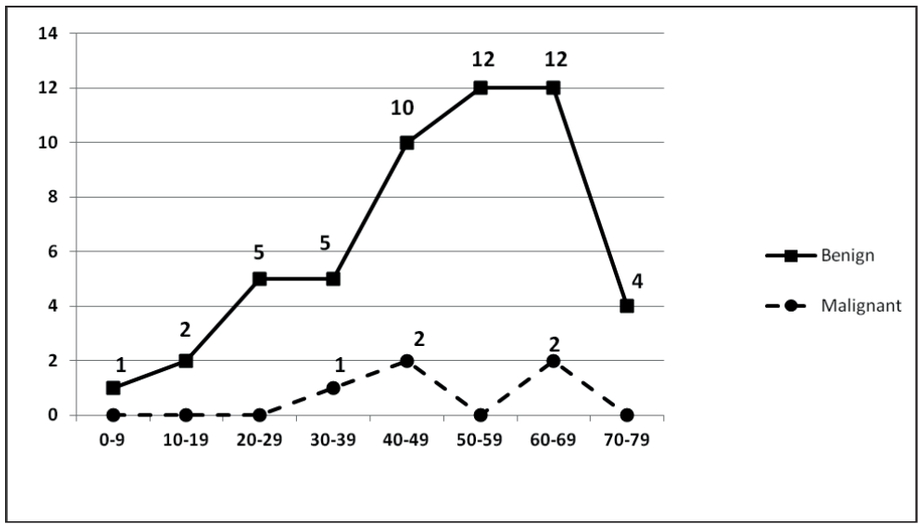
RESULTS

During the period from January 2007 till December 2012, 56 patients were treated for parotid tumours and underwent total & superficial parotidectomy in Otorhinolaryngology Department, Hospital Tuanku Ja'afar Seremban. Another 4 patients were noted to have inflammatory growths of the parotid based on the histopathological result and were excluded from the study.

Age & Gender

At the time of first presentation, age range was from 9 years to 79 years with mean age of 47. Overall peak incidence of parotid tumours was in the seventh decade (25%), followed by sixth decade (21%) and fifth decade (21%) as shown in Figure 1.Study population consists of 33 males (59%) and 24 females (41%) with a male to female ratio of 1.4:1.

FIGURE 1
Distribution of patients according to age group



Histopathological Results

Histopathology of the sample population revealed majority of them had benign lesions with 51 cases (91%) and malignant lesions with 5 cases (9%). Table 1 shows the overall histopathological results for the sample population.

TABLE 1
Histopathology Result of Patients Involved in this Study

Tumour type	Histopathology (HPE)	Amount	Group Percentage (%)	Overall Percentage (%)
BENIGN	Warthin's Tumour	19	37.2	33.9
	Pleomorphic Adenoma	18	35.2	32.1
	Basal Cell Adenoma	5	9.8	8.8
	Benign Lymphoepithelial Cyst	2	3.9	3.6
	Lipoma	2	3.9	3.6
	Cystadenoma	1	2.0	1.8
	Follicular Hyperplasia	1	2.0	1.8
	Myoepithelioma	1	2.0	1.8
	Oxyphilic Adenoma	1	2.0	1.8
	Parotid duct Cyst	1	2.0	1.8
Subtotal		**51**	**100.0**	**91.0**
MALIGNANT	Basal cell Adenocarcinoma	1	20.0	1.8
	Epithelial-Myoepithelial Carcinoma	1	20.0	1.8
	Lymphoepithelial Carcinoma	1	20.0	1.8
	Mucoepidermoid Carcinoma	1	20.0	1.8
	Salivary Duct Carcinoma	1	20.0	1.8
Subtotal		**5**	**100**	**9.0**
TOTAL		**56**	**-**	**100**

Type of Surgery

Most patients underwent superficial parotidectomy which accounts for 46 cases (82%) while 10 other patients underwent total parotidectomy (18%) as shown in Table 2.

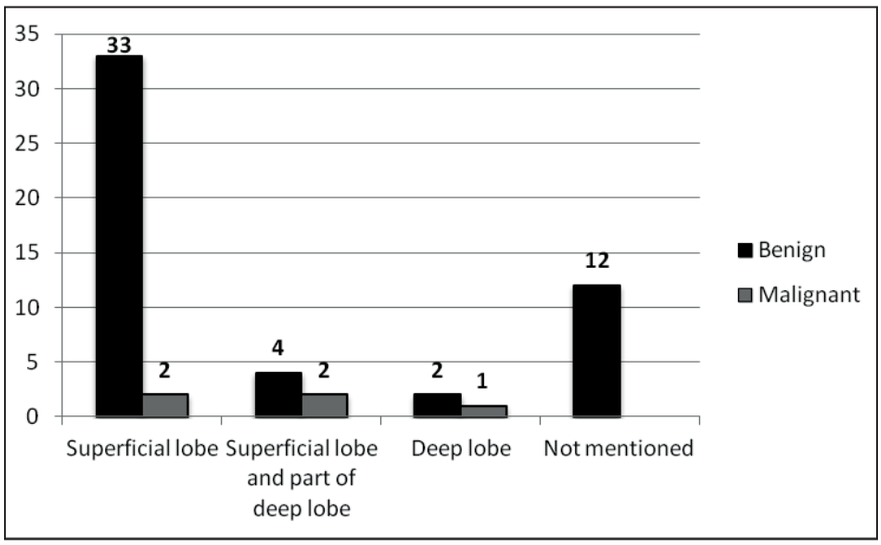
TABLE 2
Types of Surgery Based on Tumour Type

Type of Surgery	Type of Tumour	
	Benign	**Malignant**
Superficial Parotidectomy	46 (90%)	-
Total Parotidectomy	5 (10%)	5 (100%)

Site of Tumour

Site of tumour was noted on operating table and were documented into operating notes. Tumour site include superficial lobe (63%), deep lobe (5%), superficial lobe and part of deep lobe (11%) and cases in which site of tumour was not documented (21%) as shown in Figure 2.

FIGURE 2
Site of tumour according to tumour type



Facial Nerve Involvement Pre Op

None had any documented facial nerve involvement pre-operatively.

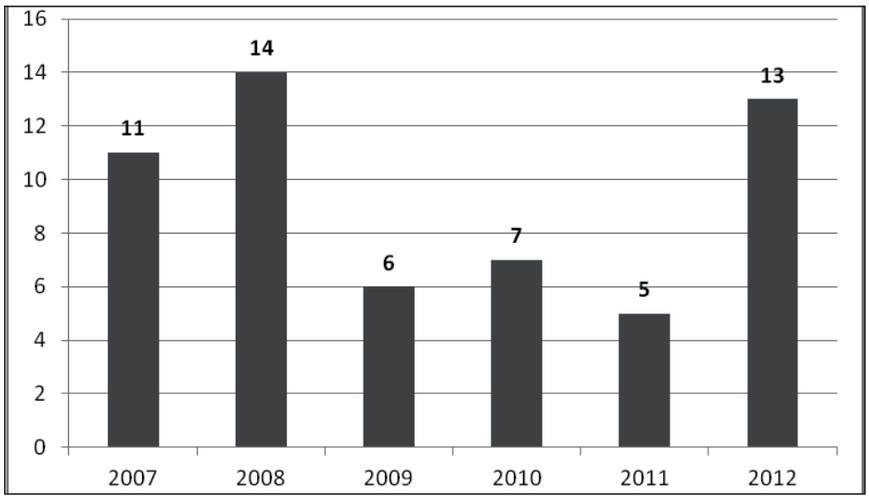
Facial Nerve Injury Post Op

Post operative facial nerve injury were noted in 17 patients (30%) in which 13 of them had only temporary facial nerve palsy and had full recovery within 3 months. The other 4 patients had permanent facial nerve injury in which 2 of them involved malignant growths and 2 cases of benign growths.

Annual Case Distribution

The total cases of operated parotid tumour cases was noted to increase between 2007 and 2008 with 11 cases in 2007 and 14 cases in 2008 as shown in Figure 3. This was followed by a decrease to 6 cases in 2009, 7 cases in 2010 and 5 cases in 2011. In 2012, amount of cases increased to 13 cases.

FIGURE 3
Distribution of patients according to year



Tumour Recurrence

There were no incidence of tumour recurrence.

DISCUSSION

Age Group Distribution

Among cases of benign parotid tumours, highest incidence was noted in seventh decade (24%) and sixth decade (24%) followed by fifth decade (20%) as shown in Figure 1. This was consistent with some studies such as Dunn EJ et al (1976) and Subhash Raj K (2008) which showed peak incidence of benign parotid tumour at fifth and sixth decades of life.[14,15]

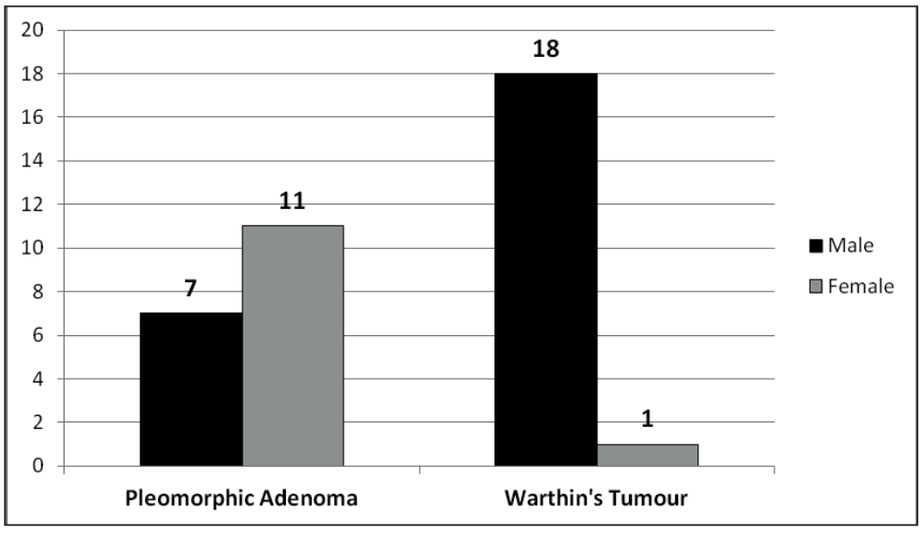
Malignant parotid tumours were mostly noted at seventh decade (40%) although some studies show highest incidence at sixth decade.[15]

Gender & Race Distribution

In benign parotid tumours, gender distribution was more towards the male with 32 cases (62.7%) compared to female with 19 cases (37.3%) as shown in Figure 6. The ratio is inconsistent with other study findings which show slight female preponderance among benign parotid tumour patients.[14-16] This maybe influenced by the high number of Warthin's tumour patients as these tumours have a male gender preponderance[1] which is also seen in this study and shown in Figure 4.

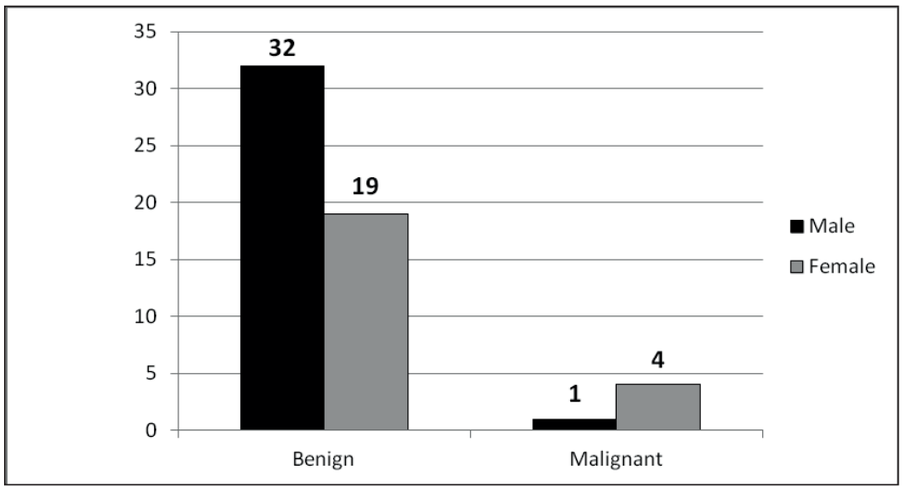
Malignant parotid tumours consisted of 1 male (20%) patient and 4 female (80%) patients. Study population consist of majority of Malays (50%), followed by Chinese (34%), and Indians (16%) and showed no significant racial preponderance to parotid gland tumours (p=0.11).

FIGURE 4
Gender distribution of Pleomorphic Adenoma & Warthin's tumour patients



study population consist of majority of Malays (50%), followed by Chinese (34%), and Indians (16%) and showed no significant racial preponderance to parotid gland tumours (p=0.11).

FIGURE 6
Distribution of patients according to gender & type of parotid growth



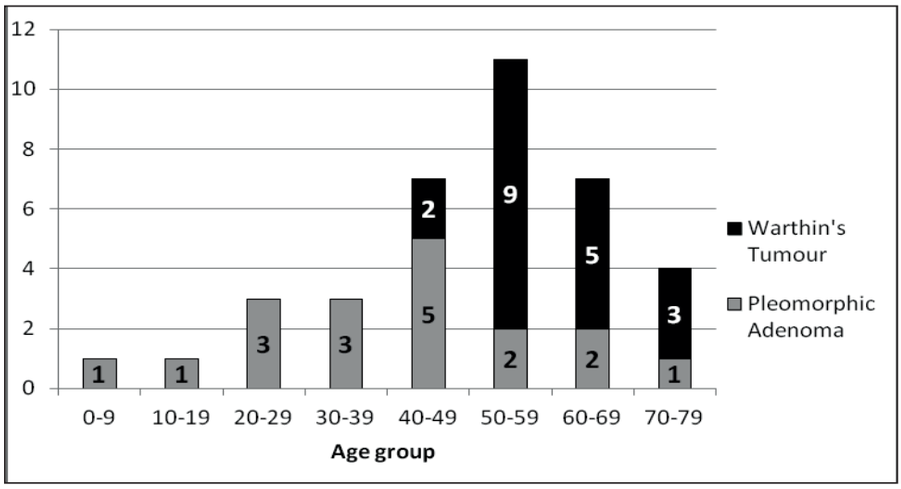
Histopathological Distribution

The sample population consists of benign and malignant parotid tumours. Breakdown of histopathological findings is shown in Table 1. Benign parotid tumours were most common with Warthin's tumour (37.2%) and Pleomorphic adenoma (35.2%) noted to be the most frequent among benign parotid lesions. This finding is inconsistent with other studies as pleomorphic adenoma are usually the most common non-vascular benign parotid tumour followed by Warthin's tumour.[1,5]

Histopathological finding of malignant parotid growths showed various types of malignancy (Table 1) and no single predominant type. Based on Malaysian Cancer Statistics in 2007, there were a total of 85 incidences of parotid malignancies in that year with adenocarcinoma being the most common histopathological type followed by squamous cell and mucoepidermoid carcinoma.[17]

Warthin's tumour patients were mostly male (18 cases) compared to female (1 case) with a male to female ratio of 18:1 which was found to be significant ($p>0.05$). This gender distribution is consistent with most studies that showed this tumour had a male preponderance. Male predilection of up to 10:1 were quoted in some series although more recent studies showed ratio of about 1.5:1.[1] Warthin's tumour was found to be most common at sixth decade of life (47%), followed by seventh decade (26%) and eighth decade (16%) as seen in Figure 5. It deviates slightly from more frequent peak incidence of seventh decade but also known to develop earlier in adult life.[1]

FIGURE 5
Age distribution of Pleomorphic Adenoma & Warthin's tumour patients



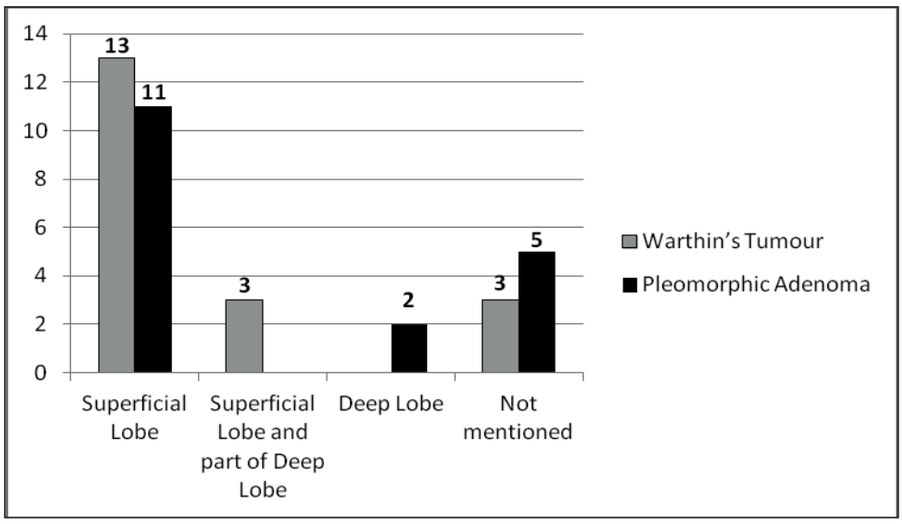
However, in Pleomorphic Adenoma, there were more female patients with 7 males and 11 females. Female to male ratio was found to be significant at 1.6:1 ($p>0.05$) and this finding is common as it is known that Pleomorphic Adenoma has a female predominance of about 1.4.[1,12] Pleomorphic adenoma had the highest incidence at fifth decade (28%), followed by fourth decade (17%) and third decade (17%) as seen in Figure 5 which is statistically significant ($p=0.03$). This is typical finding for this type of tumour [1,3] even those found on minor salivary glands.[3]

Site of Tumour

Parotid tumours usually involve superficial lobe or deep lobe or sometimes both lobes in certain cases as illustrated in Figure 2. In this study, benign parotid tumours were mostly noted at superficial lobe (64.7%) followed by both superficial & part of deep lobe (7.8%) and deep lobe (3.9%). Despite that, this finding was not significant ($p=0.11$) as there were a some cases in which the site were not mentioned (23.5%) in benign parotid cases. According to literature, majority of parotid tumours occur in superficial lobe which encompasses 80% of the gland parenchyma while 10% arise from deep lobe.[20-22] In reference to deep lobe tumours, 80-90% are pleomorphic adenomas which are benign.[21]

Site of tumour were mainly involving superficial lobe for both Warthin's tumour and Pleomorphic adenoma. Sites for Warthin's tumour include 13 cases (68.4%) involving superficial lobe, 3 cases (15.8%) involving superficial lobe & part of deep lobe with 3 cases (15.8%) in which the location was not reported. In cases of Pleomorphic adenoma, there were 11 cases (61.1%) involving superficial lobe and 2 cases (11.1%) involving deep lobe with 5 more cases (27.8%) in which the location was not reported. This distribution, as shown in Figure 7, was not found to be significant ($p=0.25$).

FIGURE 7
Site of tumour Warthin's tumour and Pleomorphic Adenoma



Malignant tumour were also found to be more towards superficial lobe as 1 case (20%) was in deep lobe, 2 cases (40%) were at superficial lobe and part of deep lobe and 2 cases (40%) from superficial lobe. This is shown in Figure 2.

Post operative Facial nerve Injury

Facial nerve paralysis is one of the complications that can arise from parotidectomy operations. Incidence of facial nerve paralysis is higher in total than in superficial parotidectomy.[23-25]

In this study, the 13 cases which involved facial nerve paresis all had marginal mandibular palsy and had recovered within 3 months. This is consistent with some studies in which marginal mandibular branch was found to be the most at risk for injury[23,25] and recovery in majority of cases takes place within 3 months after surgery.[23]

Among benign parotid tumours, there were 2 cases which involved permanent facial nerve paralysis despite facial physiotherapy. In these cases, the facial nerve was preserved and no injury was anticipated. The occurrence of facial nerve paralysis in patients undergone superficial parotidectomy due to benign tumour is noted at 8%[23,26] and

may be related to stretch injury or surgical interference with the vasa nervorum which supply blood to interior part of facial nerve and its covering.

In this study, there were 2 cases malignant parotid tumour which revealed tumour infiltration of the facial nerve intraoperatively and cannot be separated. As a result, the facial nerve had to be sacrificed and caused permanent facial nerve paralysis.

CONCLUSION

The incidence of parotid growths referred to this centre was found to be an average of 10 cases per year from 2007 to 2012. The patients were predominantly male and majority of cases consists of benign tumours in 51 out of 56 cases with Warthin's tumour and Pleomorphic Adenoma being the most common histopathological finding. Superficial lobe was found to be the most common tumour site (63%) and superficial parotidectomy was the most common surgery done. Post operative facial nerve injury were noted in 17 cases in which 13 cases were temporary while 4 others were permanent.

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