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A Study on clinicopathology and surgical outcome of Parotid Gland Neoplasm

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Abstract:
Objectives :To analyze the demographic, clinicopathological and treatment aspects of parotid gland tumours.
Materials and Methods : Prospective institutional based observational study over a period of 2 years from January 2015 and December 2017 in the Department of ENT, Burdwan Medical College & Hospital, Burdwan.This study includes 100 cases who presented with parotid swelling during the study period. All the patients were examined carefully to roughly assess the extent of tumour after meticulous history taking. Fine needle aspiration cytology (FNAC), ultrasonography of neck and CT Scan of neck was done routinely, MRI of neck was done in selective cases.
Results : The age range of the patient affected was between 20 and 70 years with mean age of 41.5 years. Benign tumuors(82%) were 4.55 times more common (82%) than malignant tumours. The most common benign tumuor was pleomorphic adenoma(60.90%), and the commonest malignant tumour was mucoepidermoid carcinoma(72.22%). Slow progressively parotid swelling was the common presenting complaint (100%). Superficial parotidectomy was the most common surgery (67%) performed. The most common postoperative complication encountered was transient facial palsy (20%) followed by ear numbness(18%), wound infection(5%), parotid fistula (2%), Frey's syndrome (1%) and seroma (1%).
Conclusion: Parotidectomy is the main modality of treatment and is safe procedures. The most common postoperative complication is transient facial palsy. The systematic dissection using convergent technique & delecate handling of parotid tissues allows consistent identification of facial nerve trunk & reduces the chances of facial nerve injuries. Peri-auricular numbness can be reduced by the preservation of the posterior branch of the great auricular nerve.
Keywords: Parotid gland tumour; Facial nerve palsy; Parotidectomy

I. INTRODUCTION

Approximately 64%–80% of all primary epithelial salivary gland tumuors occur in the parotid gland and rest in other salivary glands [1]. The incidence of parotid tumuor is between 1 and 3 cases/100,000/year [2]. Approximately 85% of parotid neoplasms are benign. Malignant tumours vary greatly in behavior, from the indolent (acinic cell carcinoma) to the highly lethal (carcinosarcoma). The mucoepidermoid carcinoma continues to be the most common salivary gland malignancy (31%) [3]. Surgical excision is the main stay of treatment in parotid tumours. Fear of facial nerve injury may lead to inadequate surgery and a high recurrence rate.

II. MATERIALS AND METHODS

This study is a prospective institutional based observational study over a period of 2 years from January 2015 and December 2017 in the Department of ENT, Burdwan Medical College & Hospital, Burdwan. This study includes 100 cases who presented with parotid swelling during the study period. The patients of both sex, age more than 18 years were included in the study and patients who didn't give consent and not fit for general anesthesia were excluded from the study.

All the patients were examined carefully to roughly assess the extent of tumour after meticulous history taking. Routine hematological investigations, Fine needle aspiration cytology (FNAC) and CT Scan of neck was done routinely. Magnetic resonance imaging was done in selective cases only when malignancy was suspected.

Surgery was planned (either superficial parotidectomy or total parotidectomy or total parotidectomy with neck dissection and reconstruction) based on the clinical findings and specific investigation reports. The

resected specimens were sent for histopathological examination. Malignant cases were referred to Department of Oncology, Burdwan Medical College & Hospital, Burdwan for postoperative chemo-radiation.

Following surgery, all the patients were evaluated for early and late complications and follow-up for 2 years, every month for the 1st year, every 3 months in the 2nd year to detect morbidity and recurrence.

III. RESULTS

The age of the patient with parotid tumors in the study group ranged from 20 to 70 years with the mean age of 41.5 years. Most patients were in the third to sixth decades of life (71%) and more malignant cases are found in the seventh decade of life (42.6%) [Table 1]. Males were more commonly affected than females with a ratio of 1.27:1 [Table 2]. Left parotid gland (54%) was more commonly affected than the right parotid gland (46%) [Table 3]. Majority of the parotid gland tumour size encountered were between 4 and 6 cm (43%), followed by 2–4 cm (36%) and rest were >6 cm(21%) [Table 4].

Parotid gland tumours clinically presented with the complaints of slow progressive neck swelling (100%) below or in front of ear lobule, and second most common presentation was pain (26%), followed by fixity to skin, palpable lymphadenopathy, facial nerve palsy and ulceration with discharge from the swelling [Table 5].

Superficial parotidectomy was the most common surgery (67%) performed [Figure-1], followed by total conservative parotidectomy (31%) [Figure-2] and parotidectomy with modified radical neck dissection (MRND) & PMMC reconstruction (2%)[Figure-3][Table 6].

Benign tumours were more common (82%) than malignant tumour in the ratio of 4.55:1.The most common benign tumour was pleomorphic adenoma (60.9%), and most common malignant tumour was mucoepidermoid carcinoma(72.22%) [Table 7].

The most common postoperative complication was transient facial nerve palsy (20%). Total facial nerve palsy were 22%, among them 20% were transient and 2% were permanent. Two patients with permanent facial palsy had pre-operative facial palsy as carcinoma lesion was adhered with the facial nerve. The second most common post-operative complication was ear numbness(18%), followed by wound infection(5%), parotid fistula (2%) and Frey's syndrome (1%) and seroma (1%) [Table 8].

IV. DISCUSSION

In the study conducted, 100 cases of parotid gland tumors were evaluated. The age of the patient with parotid tumors in the study group ranged from 20 to 70 years with the mean age of 41.5 years. Study conducted by Biswas A K et al [4] revealed that mean age of the patients with parotid tumour was 44.1years which is consistent with our study. Males were commonly affected than females, with male-to-female ratio of 1.27:1 which is consistent with the study conducted by Lin et al [5] where male to female ratio is 1.12:1.

The most common clinical presentation was slow progressive neck swelling(100%). Pain in parotid gland was the second most common (26%) symptom and is more common in malignant tumors than benign tumors. The clinical features are comparable with study by Lin et al [5], Takahama Junior et al [6] and Drivas et al [7]. In this study, superficial lobe was involved in 67% of cases, the ratio of involvement of superficial to deep lobe was 2.16:1, which is consistent with studies by Lin et al [5].

In the present study, benign tumors accounted for 82% and malignant tumors accounted for 18%, these are in comparison with studies conducted by Takahama Junior et al [6] and Drivas et al [7] wherein benign tumours are more than malignant tumours. Pleomorphic adenoma(PA) was the most common benign tumour encountered in the present study, accounting for 60.97%, followed by Warthin's tumour (30.49%), Basal cell adenoma (BCA) (4.88%), cylindroma (2.44%) and hemangioma (2.17%). This is in concordance with the studies conducted by Drivas et al [7] and Takahama Junior et al [6] wherein Pleomorphic adenoma was the most common benign tumour followed by Warthin's tumour and Basal cell adenoma.

Muco Epidermoid Carcinoma (MEC) (72.22%) was the most common malignant tumour encountered followed by adenoid cystic carcinoma(11.11%), carcinoma ex-Pleomorphic adenoma (5.55%), and papillary adenocarcinoma(5.55%). These are in comparison with various studies by Takahama Junior et al [6] and Drivas et al [7] wherein Muco Epidermoid Carcinoma was the most common malignant tumor.

Facial nerve injury is the most common postoperative complication encountered following parotid surgery. In our study, transient facial nerve palsy was seen for 20% of cases, the incidence is less than that noted in various studies conducted by Takahama Junior et al [6] and Drivas et al [7]. The permanent facial nerve palsy was encountered in 2% of cases. The reported incidence of permanent facial weakness is 0%–17%, as per western literature. Drivas et al [7] encountered permanent facial palsy in 24.2% of cases in their study which is quite high. Systematic dissection using convergent technique and delecate handling of the parotid gland tissues reduce the facial nerve injury.

Second most common postoperative complication was ear numbness(18%) due to great auricular nerve palsy. Biswas A.K. et al [4] reported it 26.66%. So better peri-auricular sensation found in our study because of careful preservation of the posterior branch of the great auricular nerve.

Similarly the Frey's syndrome was seen in 1% of cases in our study, where the reported incidence is 9% in study by Takahama et al [6], 8.1% in Drivas et al [7] and as high as 50% in Marchese – Ragona et al [8] . This low incidence of Frey's syndrome in our study was probably due to use of SMAS layer [9,10] with the skin as a thick flap.

V. CONCLUSION

Main modality of treatment of parotid gland neoplasm is parotidectomy. It's a safe procedure and overall prognosis is good. Though recurrence is nil in our study but long term follow up is required as literature reveals approximately 3% pleomorphic adenoma recurs after 5 years & doubles after 10 years [11]. During parotid surgery, we should always elevate the skin flap with SMAS layer as a thick flap to prevent or reduce the Frey's syndrome and should try to preserve posterior branch of great auricular nerve to get better peri-auricular skin sensation. We can minimize permanent & transient facial nerve palsy by systematic dissection using convergent technique which allows consistent identification of facial nerve trunk and delicate handling of parotid gland tissues.

VI. TABLES & FIGURES

Table 1

Age distribution of benign & malignant parotid gland neoplasms

Age	Number of cases	Benign (%)	Malignant (%)
10-20	05	05	00
21-30	10	10	00
31-40	26	23	03 (11.56%)
41-50	25	22	03 (12%)
51-60	20	14	06 (30%)
61-70	14	08	06 (42.85%)
Total	100	82	18

Table 2

Gender distribution

Gender	Number of cases	Benign (%)	Malignant (%)
Male	44	37	07 (15.91%)
Female	56	45	11 (19.64%)
Total	100	82	18

Table-3

Side distribution of parotid gland neoplasm

Side	No. of Patients	Percentage (%)
Left	54	54%
Right	46	46%

Table-4

Size distribution of parotid gland neoplasm

Size	No. of Patients	Percentage (%)
< 4 cm	36	36%
4– 6 cm	43	43%
> 6 cm	21	21%

Table 5

Distribution of clinical features at presentation

Sign/Symptoms	No. of Patients	Percentage (%)
Slow progressive neck swelling	100	100 %
Pain	26	26 %
Fixity to skin	2	2 %
Palpable lymph nodes	2	2 %

Facial nerve palsy	2	2 %
Ulceration with discharge	2	2 %

Table 6
Distribution of surgical approches

surgical approches	No. of Patients	Percentage (%)
Superficial parotidectomy	67	67 %
Total parotidectomy	31	31%
Total parotidectomy with neck dissection & reconstruction	2	2 %

Table 7
Distribution of HPE report

Benign	No. of Patients (%)	Malignant	No. of Patients (%)
Pleomorphic adenoma	50(60.97%)	Muco Epidermoid Carcinoma High grade Low grade	13(72.22%) 5(38.46%) 8(61.53%)
Warthin tumor	25(30.49%)	Adenoid cystic carcinoma	2(11.11)
Basal cell adenoma	4(4.88%)	Carcinoma ex PA	1(5.55%)
Cylindroma	2(2.44%)	Papillary adenocarcinoma	1(5.55%)
Haemangioma	1(1.22%)	Basal cell adenocarcinoma	1(5.55%)

Table 8
Post-operative complications

Complications	No. of Patients	Percentage (%)
Facial palsy Temporary Permanent	22 20 2	22 % 20 % 2 %
Ear numbness Temporary Permanent	18 10 8	18 % 10 % 8 %
Wound infection	5	5 %
Seroma	1	1 %
Salivary fistula	2	2 %
Frey's syndrome	1	1 %

Figure-1:Steps of superficial parotidectomy.

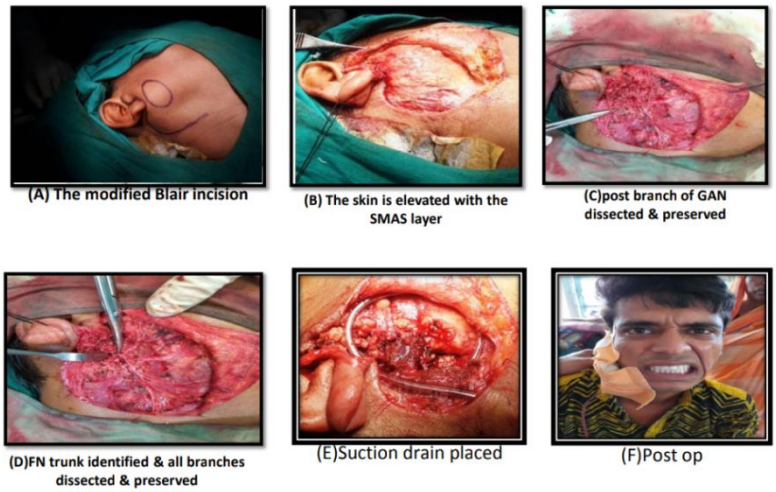
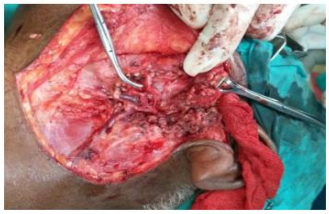


Figure 2: Steps of Total parotidectomy.



(A)FN branches dissected

(B) Those branches in proximity to the tumor fully dissected & released from the underlying tissues to allow mobilization of the tumor

(C)Deep lobe removed

(D)Post op

Figure 3: Steps of Total parotidectomy + MRND+PMMC reconstruction.

(A)Firm to hard parotid SOL with skin fixity

(B)Total parotidectomy done

(C)ND & PMMC flap done

(D)Post op

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