Clinical Retrospective Analysis of 9 Cases of Intraparotid Facial Nerve Schwannoma

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Purpose: The management of intraparotid facial nerve schwannoma (IFNS) is challenging because it is extremely rare and often misdiagnosed as pleomorphic adenoma or another parotid tumor. The purpose of this study was to report on the authors' experience in the treatment of IFNS and to review the literature regarding the diagnosis and management of IFNS.

Materials and Methods: From January 1997 through October 2015, 916 consecutive parotidectomies were performed at Shenzhen People's Hospital (Shenzhen, China). Of 916 parotid tumors samples, 9 cases of IFNS confirmed by histopathology were identified and analyzed retrospectively. In addition, 161 published cases from 1956 through 2015 were systematically reviewed.

Results: Nine cases of IFNS were identified from 916 parotid tumors samples and accounted for 0.98% of all parotid tumors. All these patients with IFNS underwent tumor removal and parotidectomy with preservation of facial nerve (FN) continuity. The mean follow-up period was 6.2 years (range, 1 to 16 yr). Facial function improved gradually from House-Brackmann grade (HBG) II to III immediately postoperatively to HBG I during the subsequent 3 to 9 months in all cases. Tumor recurrence with stylomastoid foramen involvement was observed in 1 case 3 years after surgery. The others remained free of recurrence. Of 161 IFNS cases reported in the literature, 17 cases with facial paresis were found to have intra-temporal involvement, but no facial paresis was found in patients with intraparotid involvement only.

Conclusions: An IFNS is easily misdiagnosed as pleomorphic adenoma or Warthin tumor preoperatively; the correct diagnosis for IFNS depends mainly on intraoperative observation of the gross relation between the tumor and the FN or excision frozen biopsy examination. The integrity of the FN should be preserved for patients with IFNS and without facial paresis, whenever possible.

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Facial nerve schwannomas (FNSs) are benign, generally slow-growing tumors derived from the myelin-producing Schwann cell sheath. They can arise from any segment of the FN from the cerebellopontine angle to the peripheral branches, and only 6.8 to 9% of cases occur in the parotid gland.[1,2] Intraparotid FNSs (IFNSs) are extremely rare; they account for 0.2 to 1.5% of all parotid gland tumors.[2,3] IFNSs are often misdiagnosed as pleomorphic adenoma clinically,[3-6] because current diagnostic modalities are not sensitive. In practice, most IFNSs are recognized intraoperatively based on the tumor's intimate association with the FN or the

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results of frozen biopsy examination.[7] If these tumors are encountered during parotidectomy, then the surgeon is faced with the dilemma of selecting the most appropriate treatment strategy. Therefore, the purpose of this study was to analyze 9 cases of IFNS treated in the authors' hospital and to review the literature regarding the preoperative diagnosis and management of IFNS.

Materials and Methods

From January 1997 through October 2015, 916 consecutive parotidectomies were performed at the Department of Oral and Maxillofacial Surgery, Shenzhen People's Hospital, Second Clinical Medical College of Jinan University (Shenzhen, China). Analysis of the database identified 9 cases of IFNS from 916 parotid tumor samples. All these patients with IFNS were diagnosed by histopathology from their surgical specimens. Data, including presentation, computerized tomography (CT) and magnetic resonance imaging (MRI), management strategy, intraoperative findings, clinical outcomes, and basic demographic data, were collected. FN function was reported using the House-Brackmann (HBG) FN grading system. Patients with exclusively intracranial or intra-temporal tumors were excluded. In addition, 161 cases of IFNS recorded in 58 articles[2-59] with full text in the literature from 1956 to 2015 were reviewed to gain insight into the diagnosis and management of IFNS.

This study was approved by the institutional review board of Shenzhen People's Hospital.

Results

Nine cases of IFNS were identified from 916 parotid tumor samples and accounted for 0.98% of all parotid tumors. The mean age at diagnosis was 35.8 years (range, 13 to 49 yr; 6 women and 3 men). Six cases had a right-side lesion and 3 had a left-side lesion. All patients presented with a painless parotid mass and did not have FN palsy or hearing loss. Preoperative CT or MRI was performed in all patients. All lesions exhibited hypointense signal intensity on T1-weighted MRI images and heterogeneous hyperintensity with cystic degeneration on T2-weighted images. CT showed a low-density mass with a sharp margin. Five cases were diagnosed as pleomorphic adenoma and 4 cases as Warthin tumor preoperatively.

Demographic data and a clinical summary of patients with IFNS are presented in Table 1. All patients underwent tumor removal and parotidectomy with preservation of FN continuity under general anesthesia. The diagnosis of schwannoma was made intraoperatively in 5 cases by excision frozen biopsy examination and in 4 cases by direct observation of the tumor's intimate association with the FN. The final diagnosis was verified histopathologically by paraffin slice for all cases. All tumors were located in intraparotid without

Table 1. SUMMARY OF PATIENTS WITH INTRAPAROTID FACIAL NERVE SCHWANNOMAS

Case	Gender	Age (yr)	Side	History (yr)	Mass (cm)	Involved Nerve	Surgical Methods	Follow-Up (yr)
1	F	46	L	3	4 × 2.5 × 1.8	Bifurcation of main trunk and branches	Total parotidectomy and tumor removal	10
2	F	34	R	2	3 × 2.5 × 1.5	Main trunk	Total parotidectomy and nerve sparing	16
3	F	38	R	3	7 × 6 × 5	Not identified	Partial parotidectomy and tumor enucleation	8
4	M	40	L	2	2.5 × 2.5 × 2	Zygomatic and temporal branches	Superficial parotidectomy and tumor removal	2
5	M	28	R	2	3 × 2.5 × 2	Main trunk and marginal branch	Total parotidectomy and nerve sparing	4
6	F	42	R	5	3 × 2.5 × 1.5	Main trunk	Total parotidectomy and nerve sparing	Recurrence 3 yr after surgery
7	F	49	L	10	4 × 4 × 2	Main trunk	Total parotidectomy and tumor removal	2
8	M	32	R	1	3 × 2 × 1	Main trunk	Total parotidectomy and nerve sparing	10
9	F	13	R	0.5	2.5 × 2 × 2	Buccal and marginal branches	Superficial parotidectomy and tumor removal	1

Abbreviations: F, female; L, left; M, male; R, right.

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