

<https://doi.org/10.48047/AFJBS.6.15.2024.3987-3994>



African Journal of Biological Sciences

Journal homepage: <http://www.afjbs.com>



Research Paper

Open Access

Facial nerve schwannoma: Case report

Dr. Jagadish Chandra¹, Dr. M. Vijaya Kumar ², Dr. Ashwin K Harekal³, Dr. Vinayakrishna K ⁴, Dr. Mufaddal Patanwala⁵

¹Professor & MDS in Department of Oral & Maxillofacial Surgery, Yenepoya Dental College, Mangalore, Karnataka, India. jagadishmds@rediffmail.com

²Vice chancellor & MBBS, DNB, MCh (Surgical Oncology) in Department of Surgical Oncology, Yenepoya Medical college, Mangalore, Karnataka, India. vicechancellor@yenepoya.edu.in

³Senior lecturer & MDS in the Department of Oral & Maxillofacial Surgery, Yenepoya Dental College, Mangalore, Karnataka, India. a.k.harekal@gmail.com

⁴Additional Professor & MDS in the Department of Oral & Maxillofacial Surgery, Yenepoya Dental College, Mangalore, Karnataka, India. drvinnykolari@gmail.com

Corresponding Author:

Name: Dr. Ashwin k Harekal, Department of Oral & Maxillofacial Surgery, Yenepoya Dental College, Derlakatte, Mangalore, Karnataka, 575018

E-mail Address: a.k.harekal@gmail.com

Article History

Volume 6, Issue 15, 2024

Received : 03 May 2024

Accepted : 28 Aug 2024

Published: 07 Sep 2024

[doi:10.48047/AFJBS.6.15.2024.3987-3994](https://doi.org/10.48047/AFJBS.6.15.2024.3987-3994)

Introduction:

Facial nerve schwannoma or FNS is the commonly seen primary tumour of the FN i.e., facial nerve even though there is very less estimated prevalence.^[1] FNS is a slow-growing benign tumour made up of Schwann cells that can exist for years before causing symptoms.^[2] The clinical features of FNS may vary based on the anatomy and extended course of facial nerve. The clinical manifestation seen most often is due to dysfunction of facial nerve due to mass compression, which is commonly accompanied by loss of hearing, discomfort, vertigo and sometimes a parotid mass formation.^[3] There have been little over 600 instances recorded in the literature till date. Since majority of case studies includes lower sample size i.e., patients count and variety of treatment results, there are no clear guidelines for managing FNS.^[4] FNS management is very difficult, however there are various alternatives available.^[3] The various feasible treatment options include observation of patient, excision of facial nerve with or without fascicle sparing procedure, stereotactic radiation therapy and decompression of facial nerve. The complete cure can be achieved only with complete surgical resection but the outcome of surgical resection may vary in wider sense.^[5] Henceforth, a case of intraparotid schwannoma was presented in this article with 57-year-old woman who reported to Oral and maxillofacial surgery department of Yenepoya dental college. We also do a literature review on preoperative symptoms, surgical treatment, and outcomes. The patient was presented with House-Brackmann grade V palsy after first day of post operative procedure which was then changed to HB grade 4 after one month of rehabilitation and medical therapy follow up. It was one of the rare scenario which made us to come up with this case report with detailed review on its diagnostic and surgical intervention.^[6]

Patient Information:

In August 2023 a 57-year-old female reported to Oral and Maxillofacial Surgery department of Yenepoya dental college, Mangalore with the presentation of swelling on the right side of the face since 1 1/2 years. Patient was apparently asymptomatic 1 1/2 years back following which she noticed a swelling in the lower left back jaw region which has increased and attained the present size. 2 months back patient consulted at a private clinic in Puttur, where FNAC and USG was done which was suggestive of myeloepithelial growth. Patient reported to a district hospital where CECT Neck was done which was suggestive of well circumscribed enhanced denser soft tissue region with non-enhanced areas of cystic/ necrosis with few septations. Following which patient reported to Yenepoya dental college for further management.

Clinical Finding:

On examination, extraorally there was a swelling of 3x3 cm extending superioinferiorly 0.5cm below the ala-tragal line and extending 2cm below the lower border of mandible and anteroposteriorly from the antgoneal notch extending to the tip of mastoid process. the swelling had well defined borders. Skin over the swelling appeared to be normal in color. Facial nerve motor function was not affected.



Fig 1. Frontal profile of patient



Fig 2. Lesion noted on the left side

The nature of the swelling was non-tender, firm and not compressible on palpation. Restricted mobility was elicited. Swelling was non pulsatile. Skin over the swelling- pinchable. There was no local rise in temperature. Lymphnodes were not palpable. Intraorally mouth opening was adequate and stensons duct opening was patent.

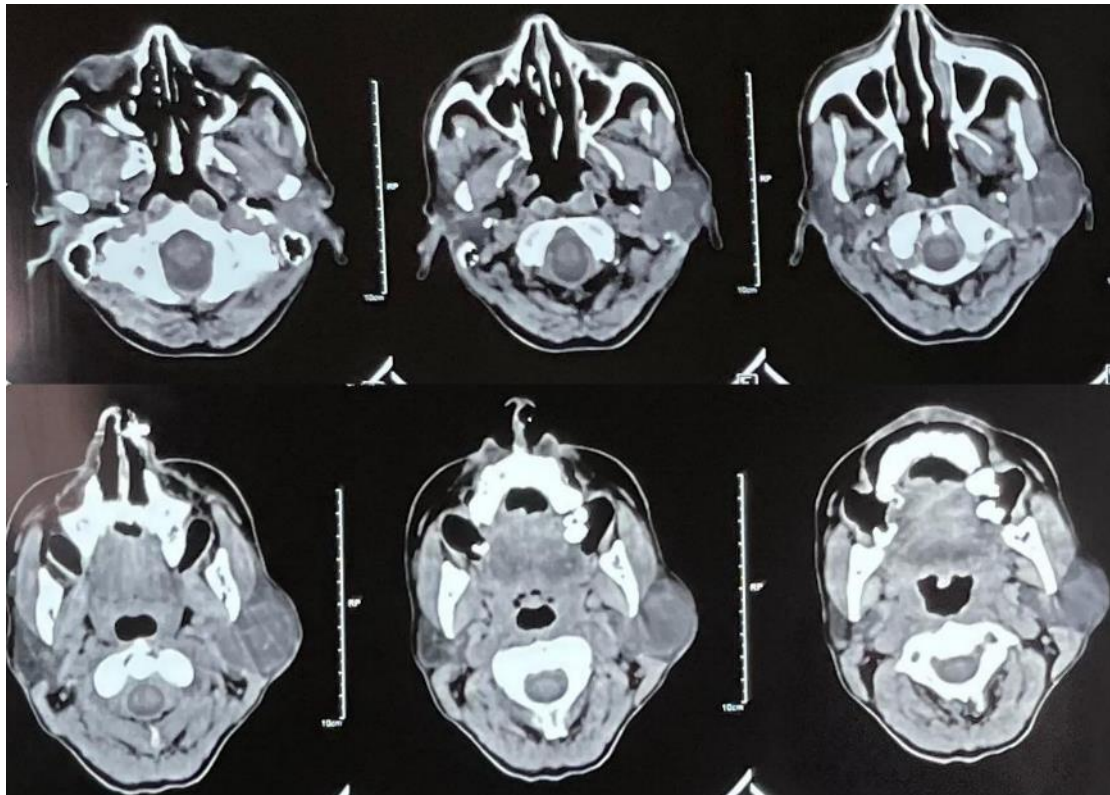
Diagnostic assessment:

Fig 3 . USG neck

USG neck was done and showed a mixed echotexture lesion measuring about 29 x 33 mm at superficial aspect of left parotid gland likely to be benign. Usg guided FNAC of the swelling were suggestive of a benign spindle cell lesion. CECT neck showed a well circumscribed enhanced denser heterogeneous soft tissue region with non-enhanced hypodense area suggestive of cystic/necrotic areas with few septations within, measuring 3.7 x 3.3 x 4.2cm noted epicentered in the left parotid gland including the superficial and deep lobe. Patient was planned for superficial parotidectomy under GA.

Therapeutic Intervention:

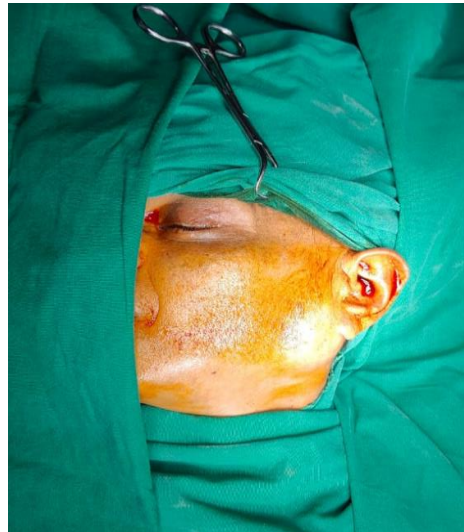


Fig 4 . Patient painted and draped

Patient was painted and draped under aseptic precautions. Modified Blair's incision was given. Incision started anterior to the tragus which run closer vertical to the ear lobule, then curved along the ear lobule margin to the middle mastoid which run along the post-auricular region, then curved back down through the border of the sternocleidomastoid of the superior cervical crease 2cm below the mandible angle region. Ear lobe was moved out with traction with the use of suture. The flap raise was done in the anterior region superficial to parotid fascia by holding using skin hooks to anterior border of the parotid. Supraplatysmal flap raised and dissection carried out to identify greater auricular nerve and was preserved. Posterior skin flap was elevated to raise the sternocleidomastoid muscle. Level 2 lymph nodes identified and were enlarged. Removal of level 2 lymph nodes done. Dissection is carried out to lift the gland from the sternocleidomastoid muscle to identify the posterior belly of digastric. Further dissection carried out to free the parotid gland from the external auditory canal cartilage. The fibrous attachments were relieved from the gland through blunt dissection of the bony cartilaginous junction of auditory canal. Tragal pointer was felt and identified. External auditory canal cartilage identified. Parotid is retracted laterally and facial nerve is identified. Facial nerve trunk identified using retrograde approach using Hamilton baileys approach by tracing buccal and marginal mandibular nerve. Facial nerve was adherent to the tumour mass. Tumour was freed from its attachments and excision of tumour mass was carried out. Facial nerve branches identified and preserved. Facial nerve was cut during excision of tumour and anastomosis of facial nerve was carried out using 8-0 prolene. Haemostasis achieved. Left tarsorrhaphy done using 5-0 prolene sutures. Drained placed. Incision closed in layers using 3 - 0 vicryl and 5 - 0 prolene.

Follow up and outcomes:

The patient was presented with House-Brackmann grade V palsy after first day of post operative procedure which was then changed to HB grade 4 after one month of rehabilitation and medical therapy follow up.

On 6 month follow up , patient was evaluated and advised electrical stimulation and facial stimulation exercises.



Fig 5. 6 Month follow up

DISCUSSION: The first IFNS was done and published in 1949. From 1949 till now, its almost 70 years but still the favourable diagnosis criteria and the surgical intervention have not been established with utmost clarity.^[7] A study by O’Keefe recommended total resection along with facial nerve which was based on the early presentation of facial paralysis.^[8] But several studies concluded that most of the schwannomas with peripheral nerve origin present as benign painless mass devoid of any neurological manifestations with less recurrence rate and so they need nerve sparing procedures. There were numerous management techniques but the researchers mostly recommend conservative therapy.^[9]

As per the earlier researches, the occurrence of facial nerve paralysis preoperatively is about 10.5 – 20 %.^[10] FNSs are nearly invariably slow growing, well defined tumours, and the majority of patients manifest with the painless enlargement of preauricular region.^[11,12] The clinical manifestation of IFNS is same with benign parotid tumours. Even with intra-parotid FNS, nearly 20% of patients only show symptoms.^[13] Hence, the diagnosis of FNS based on clinical findings is very difficult.

There is only limited usage of pre-operative imaging in detection of intra-parotid schwannoma. Even though CT and MRI scans are successful in identification of intra-temporal schwannoma, they are not clear in finding out intra-parotid lesions. Chung et al made a study of intra-parotid schwannomas in four patients with four different radiologic examination and found out that the location of tumour on the extratemporal facial nerve can be a course for schwannoma.^[14,15] FNAC provide distinct microscopic picture but cannot be used as diagnostic parameter for evaluation of parotid schwannoma. Bretlau et al found that the firm attachment of cells in neurogenic tumours make it difficult to diagnose through cytology. He also found FNAC to be

not effective in diagnosis of IFNS which was due to the absence of Verocay bodies or the presence of only non-characteristic spindle cells.^[16]

Since the schwannoma is difficult to diagnose preoperatively, intraoperative diagnosis while performing parotidectomy is necessary. The intra-operative manifestation of intra-parotid schwannomas of the study group were insignificant from that of other benign tumours because most of them look yellow and rubbery. Hence, the most diagnostic finding of IFNS is intraoperative difficulty in location of the facial nerve. Also, the tumours closely involved with FN or difficult dissection from facial nerve while performing superficial parotidectomy were mentioned.^[17]

As surgical intervention of facial nerve schwannoma inevitably resulted in facial nerve palsy complication, the treatment planning with normal facial nerve or mild paresis with operation is controversial. Several researches were there in which the patients were treated with conservative measures and follow up were done for about 10 years. There was continued normal facial function and no evidence of tumour growth was in about 5 patients. However, the appropriate timing for surgical treatment of IFNS were not mentioned.^[18]

The most basic therapy was to excise the tumor mass. Facial nerve excision can be decided based on the case scenario. Marchioni et al. divided intraparotid FNS as four categories based on morphological and pathological examination. This was designed to help clinicians in assessing treatment and prognostic aspects. Type A tumours can be removed without causing any damage to the facial nerves. This sort of tumour nearly never results in preoperative facial palsy. Type B tumours necessitate a partial excision of the facial nerve with peripheral or distal division. Immediate repair with a nerve graft or neurorrhaphy is typically undertaken. The success depends on the afflicted branch rather than the manner of reconstruction. Type C tumour necessitate sacrifice of the facial nerve main trunk whereas type D tumour necessitate resection of the facial nerve main trunk along with either temporofacial or cervicofacial branches.^[19]

As there is ongoing debate in selection of treatment plan to decide between conservative therapy and surgical resection, the surgeon should take into consideration the amount of detrimental functional loss that facial paralysis may result other than keeping the tumour as it is.^[19]

The prognosis of surgery for the FNS is excellent but there are certain morbidities such as facial paralysis, CSF leakage, loss of hearing loss, meningitis, and recurrence of lesion. The major and common complication associated with surgical resection is facial paralysis while treating FNS. Hence, care should be taken mostly to protect the structural integrity of the facial nerve in most cases.^[20]

Simon goldie et al concluded that the facial palsy can be improved when treated with ES i.e., electrical stimulation. Ikaram *et al.* found no association between House Brackmann scores of patients who underwent ES and without any treatment. Whereas, Tucany *et al* found

improvement in House Brackmann scores when adding ES treatment with physical therapy and corticosteroids in patients having acute Bells palsy.

CONCLUSION

The schwannoma was typically diagnosed with finding of a hard tumor mass with limited mobility in the parotid gland. A case management of schwannoma presenting as parotid mass without pain has been discussed in this report. In specific, the surgeon attempting superficial parotidectomy surgery finds difficulty in locating the facial nerve. In order to make an attempt to resect the tumour damages or severes the face nerve, which must be repaired, resulting in a loss in facial nerve function.

REFERENCES:

1. European Archives of Oto-Rhino-Laryngology <https://doi.org/10.1007/s00405-021-06765-x>
2. Lipkin AF, Coker NJ, Jenkins HA, Alford BR (1987) Intracranial and intratemporal facial neuroma. *Otolaryngol Head Neck Surg* 96:71–79
3. Yetiser S (2018) Large intratemporal facial nerve schwannoma without facial palsy: surgical strategy of tumor removal and functional reconstruction. *J Neurol Surg A Cent Eur Neurosurg* 79:528–532
4. Perez R, Chen JM, Nedzelski JM (2005) Intratemporal facial nerve schwannoma: a management dilemma. *Otol Neurotol* 26:121–126
5. Quesnel AM, Santos F. Evaluation and Management of Facial Nerve Schwannoma. *Otolaryngol Clin North Am.* 2018 Dec;51(6):1179-1192. doi: 10.1016/j.otc.2018.07.013. Epub 2018 Sep 18. PMID: 30241764
6. Nair D, Pai PS, Joseph ST, Moiyadi AV. Schwannomas along Different Segments of Facial Nerve: Case Series with Review of Literature. *International Journal of Head and Neck Surgery* 2011;2:103–8. <https://doi.org/10.5005/jp-journals-10001-1061>
7. Gross BC, Carlson ML, Moore EJ, et al. The intraparotid facial nerve schwannoma: a diagnostic and management conundrum. *Am J Otolaryngol.* 2012;33:497–504.
8. O’Keefe JJ. Neurinoma of the facial nerve in the parotid gland. *Ann Otol Rhinol Laryngol.* 1949;58:220–225
9. Kreeft A, Schellekens PP, Leverstein H. Intraparotid facial nerve schwannoma. What to do? *Clin Otolaryngol.* 2007;32:125–129.
10. Shijun Li, Xuguang Lu, Shang Xie, Zimeng Li, Xiaofeng Shan & Zhigang Cai (2019): Intraparotid facial nerve schwannoma: a 17-year, single-institution experience of diagnosis and management, *Acta Oto-Laryngologica*, DOI: 10.1080/00016489.2019.1574983
11. Moghimi M, Nabieian M, Zarmahi S. Schwannoma of the parotid gland: a case report.
12. J Shahid Sadoughi *Univ Med Sci* 2014;22:1299-303. Salemis NS, Karameris A, Gourgiotis S, Stavrinou P, Nazos K, Vlastarakos P, et al. Large intraparotid facial nerve schwannoma: case report and review of the literature. *Int J Oral Maxillofac Surg* 2008;37:679-81.

13. Irfan M, Shahid H, Yusri MM, Venkatesh RN. Intraparotid facial nerve schwannoma: a case report. *Med J Malaysia* 2011;66: 150-1.
14. Chen JM, Moll C, Wishmann W, et al. Magnetic resonance imaging and intraoperative frozen sections in intratemporal facial schwannomas. *Am J Otolaryngol* 1995;16:68-74. *Otolaryngology– Head and Neck Surgery Volume 130 Number 5 CAUGHEY et al*
15. Chung SY, Kim DI, Lee BH, et al. Facial nerve schwannomas: CT and MR findings. *Yonsei Med J* 1998;39:148-53.
16. Bretlau P, Melchior H, Krogdahl A. Intraparotid neurilemmona. *Acta Otolaryngol* 1983;95:382-4.
17. Barnes L, Peel RL, Verbin RS. Tumors of the nervous system. In: Barnes L, editor. *Surgical pathology of the head and neck*. New York: Marcel Dekker; 1985. p. 553, 662-3.
18. Liu R, Fagan P. Facial nerve schwannoma: Surgical excision versus conservative management. *Ann Otol Rhinol Laryngol* 2001;110:1025-29.
19. Marchioni D, Alicandri Ciufelli M, Presutti L. Intraparotid facial nerve schwannoma: literature review and classification proposal. *J Laryngol Otol* 2007;121:707-12.
20. Yamaki T, Morimoto S, Ohtaki M, et al: Intracranial facial nerve neuroma: Surgical strategy of tumor removal and functional reconstruction. *Skull Base* 49:538-546, 1998