

# A study on post operative outcome of Lateral Temporal Bone Resection for squamous cell carcinoma of bony part of external auditory canal

Purushothaman P K, Balaji C R K, Punitha M

Dept of ENT, Head and Neck Surgery, SRM Medical College Hospital and Research Centre, SRM Nagar, Potheri – 603203, Kancheepuram District, Tamil Nadu, India.

**Abstract-** Objective: This is to analyze the outcome of treatment given to three cases of squamous cell carcinoma of bony part of external auditory canal .

Study design: Retrospective analysis over a period of 2 years  
Study place: SRM Medical College Hospital & Research Centre, Kattankulathur

Study number: A total of three patients with squamous cell carcinoma in temporal bone.

Results: The outcome was better in patients who underwent lateral temporal bone resection in early stages of tumor followed by radiotherapy.

Conclusion: Lateral Temporal Bone Resection with post operative radiotherapy and chemotherapy offer a good prognosis in patients with squamous cell carcinoma limited to bony part external auditory canal.

**Index Terms-** Lateral temporal bone resection, squamous cell carcinoma, external auditory canal

## I. INTRODUCTION

Malignant tumors involving the external auditory canal and temporal bone are exceedingly rare and the most common type is squamous cell carcinoma. They comprise <0.2% of head and neck neoplasms. This is an aggressive disease whose prognosis depends on the stage of disease at the time of presentation and the primary treatment. Other primary histologic types of neoplasms arising in the external auditory canal and temporal bone include adenocarcinoma, adenoid cystic carcinoma, mucoepidermoid carcinoma, basal cell carcinoma, ceruminous carcinoma, and rhabdomyosarcoma. The following is a retrospective analysis of three patients who presented to our hospital with squamous cell carcinoma of the temporal bone limited to bony part of external auditory canal without involving the tympanic annulus and cartilaginous part of external auditory canal

## II. MATERIALS AND METHODS

The case histories of three patients who underwent lateral temporal bone resection were analyzed. All three patients were males who lived in a tropical climate with moderate amount of sun exposure. The first patient was a 45 year old carpenter, who presented with signs of right facial nerve palsy and history similar to right CSOM. The second patient was a 56 year old

electrician and the third patient, a 59 year old tailor, both had intact facial nerve clinically. The third patient also had uncontrolled Diabetes Mellitus which was later controlled by insulin. All three patients presented with signs and symptoms of otorrhea, otalgia, hearing loss, aural fullness & bleeding from the ear. All the patients were subjected to otoscopic examination and examination under microscope showed proliferative lesion occupying the bony part external auditory canal and biopsy taken from lesion , histopathological examination, CECT temporal bone, MRI of Brain, Ear and Neck with contrast and general blood investigations were done .



**Image 1 :** Pre op photograph of proliferative growth seen in the bony part of the external auditory canal.



**Image 2 :** Post operative photograph of lateral temporal bone resection done

USG Abdomen & Chest X ray was done to rule out metastasis. The lesions were staged with University of Pittsburgh TNM staging method for EAC carcinoma , frequently

used system based on radiological findings correlating both histological examination and clinical outcomes [9, 10]. The first patient had stage T3N0M0 tumour eroding the full thickness of the osseous external auditory canal while the second and third were in stage T2N0M0 tumour without full thickness involvement erosion of osseous external auditory canal. Lateral temporal bone resection was performed in all three patients.

### III. DISCUSSION

Squamous cell carcinoma is the most common pathology, which accounts for 0–90 percent of neoplasms of the temporal bone. Squamous cell carcinoma of the temporal bone and external auditory canal is a rare tumor with a reported incidence of between 1 to 6 cases per million population per year [1,2] and is often associated with chronic otitis media and exposure to radiation therapy [1,2]. The diagnosis of squamous cell carcinoma of the temporal bone and external auditory canal is based on histological examination of tissue of the tumor from the ear and the treatment depends on the staging of the tumor which includes lymph nodes metastasis, facial nerve involvement and distant metastasis. The preferred treatment consists of a combination of en bloc surgical resection of the primary tumor with tumor-free surgical margins and postoperative chemotherapy and radiotherapy. The surgery that are performed Sleeve resection, the lateral temporal bone resection (LTBR), modified lateral temporal resection, a subtotal temporal bone resection (STBR) and total tempoaral bone resection

In our analysis all three cases were subjected to all examinations. Otoloscopic examination showed a proliferative lesion occupying bony part of EAC. There was history of chronic right ear discharge in the 1<sup>st</sup> case. HRCT of the temporal bone showed an ill-defined, moderately enhanced, soft tissue mass involving EAC with adjacent bone erosion. Magnetic resonance imaging of the temporal bone was done. Histological examination revealed well-differentiated squamous cell carcinoma, characterized by sheets of cells with large cells with pleomorphic, hyperchromatic nuclei and individual cell keratinization, and keratin pearl formation in all the three cases. All three cases underwent Lateral Temporal Bone Resection. In the 1<sup>st</sup> case facial nerve weakness was persistent. Subsequent two patient had similar finding as proliferative growth attached to floor and posterior wall of external auditory canal when examining under microscope. The 3<sup>rd</sup> patient had uncontrolled Diabetes Mellitus which well controlled preoperatively. In all three cases facial nerve was skeletonised. Blind sac closure was done in all cases.

All three patient had post operative radiotherapy to improve the survival and reduce the incidence of local recurrence[6,7]. Lewis et al., in series of 132 patients, found that post operative radiation increased the 5 year survival rate from 28.5 to 35.5 % [5]. Prasad et al., in a several published series showed improvement in survival with adjuvant radiotherapy [8].

Venkatesh et al concluded that lateral temporal bone resection using otologic microsurgical technique with soft tissue resection is an effective way of achieving control of temporal bone malignancies [4]. Poor prognostic factors include the extent of the disease at presentation, positive margin, dural and cranial nerve involvement, and facial nerve paralysis. The overall 5-year

survival rate of individuals with squamous cell cancer of the temporal bone ranges between 40% and 70% but can reach 20% in advance stage diseases [3].

### IV. CONCLUSION

All the three patients were followed up for 1 year and have shown no recurrence of disease. According to the analysis done there is a male preponderance and is more common in the age group of 40 – 60 years. SCC of the temporal bone is very rare but has a poor prognosis. Lymph node involvement and facial nerve palsy are associated with a poorer outcome. As they can be mistaken for CSOM, a high index of suspicion is necessary. Biopsy may be done to arrive at an early diagnosis. These tumors must initially be treated by surgery followed by radiotherapy, radiotherapy postoperatively improve survival rate and reduces rate of recurrence. Here early detection is mandatory.

### REFERENCES

- [1] Arena S, Keen M. Carcinoma of the middle ear and temporal bone. *Am J Otol* 1988;9:3516
- [2] Manolidis S, Pappas D Jr, Von Doersten P, et al. Temporal bone and lateral skull base malignancy: Experience and results with 81 patients. *Am J Otol* 1998;Suppl19:1-15
- [3] D. Lobo, J. L. Llorente, and C. Suárez, "Squamous cell carcinoma of the external auditory canal," *Skull Base*, vol. 18, no. 3, 2008; pp. 167–172.
- [4] M. D Venkatesh, Lateral temporal bone resection in Malignancy of External auditory canal: our approach *Indian Journal of Otolaryngology and Head & Neck Surgery*, September 2008, Volume 60, Issue 3, pp 202-206
- [5] Lewis JS. Surgical management of tumors of the middle ear and mastoid. *J Laryngol Otol* 1983;97:299-311.
- [6] Kennedy SE, Wood BG, Malignancies of the external ear canal and temporal bone: Surgical techniques and results. *Laryngoscope* 1987;97:158-64.
- [7] Austin JR, Stewart KL, Fawzi N. Squamous cell carcinoma of the external auditory canal: Therapeutic prognosis based on a proposed staging system. *Arch Otolaryngol Head and neck surg* 1994;120:1228-32.
- [8] Prasad S, Janecka IP. Efficacy of surgical treatments for squamous cell carcinoma of the temporal bone: A Literature review. *Otolaryngol Head neck surg* 1994;110:270-80
- [9] Arriaga M, Curtin H, Takahashi H, et al. Staging proposal for external auditory meatus carcinoma based on external auditory meatus carcinoma based on preoperative clinical examination and computed tomography findings. *Ann Otol Rhinol Laryngol* 1990;99:714-21.
- [10] Arriaga M, Curtin H, Takahashi H, et al. The role preoperative CT scan in staging external auditory meatus carcinoma: Radiologic-pathologic correlation study. *Otolaryngol Head Neck Surg* 1991;105:6-11.

### AUTHORS

**First Author** – Purushothaman P. K, MS(ENT), Professor, SRM medical college hospital and research centre,

[entpurush@gmail.com](mailto:entpurush@gmail.com)

**Second Author** – Balaji C.R.K, MS(ENT), Assistant professor, SRM medical college hospital and research centre,

[crk\\_balaji@yahoo.co.in](mailto:crk_balaji@yahoo.co.in)

[crkbalaji@hotmail.com](mailto:crkbalaji@hotmail.com)

**Third Author** – Puntha. M, Postgraduate resident, SRM medical college hospital and research centre,

[punithamurugan@gmail.com](mailto:punithamurugan@gmail.com)

**Correspondence Author** - Purushothaman P. K, MS(ENT),  
Professor, SRM medical college hospital and research centre,  
[entpurush@gmail.com](mailto:entpurush@gmail.com)