

# Mucoepidermoid Carcinoma in Infratemporal Fossa - A Case Report

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**Abstract:** *Of all the malignant neoplasms of salivary glands, Mucoepidermoid carcinoma (MEC) considered to be one of the most common. Among the major salivary glands, the most common site of MEC is the parotid gland. Mucoepidermoid carcinoma of the parotid origin have been reported to extend intracranially to the temporal bone and cerebellopontine angle<sup>1</sup>. But the occurrence of mucoepidermoid carcinoma in the infratemporal fossa is a rare case. In this paper, the authors present a case of mucoepidermoid carcinoma affecting the right infratemporal fossa in a 40-year-old male patient. The patient has undergone a gross total resection of the tumour. The epidemiology, clinical features, radiographic findings and treatment are discussed in this article.*

**Keywords:** Mucoepidermoid carcinoma, Infratemporal fossa, Modified malar osteotomy, Weber Fergusson incision

## 1. Introduction

Mucoepidermoid carcinoma (MEC) is a very common malignant salivary gland tumor, which is composed of a mixture of cells, including mucus producing epidermoid or squamous and intermediate type cells. The mean age of occurrence of MEC is 44.5 years. MEC is mostly seen in the parotid gland for about 44.1%, and upto 25% in the minor salivary glands. Low, Intermediate, and high grade neoplasms accounted for 61.7%, 26.5%, and 11.8% of tumors, respectively<sup>2, 3, 4, 5</sup>

MEC shows a wide range of biological behaviors, wherein the high grade MEC is a highly aggressive tumor, while the low grade counterpart shows a more benign nature. The main treatment of MEC, like in most types of salivary gland malignancies, is surgical resection followed by postoperative radiotherapy. The size of the salivary gland is indirectly proportional to the incidence of malignancy of that gland. The smaller glands present increased risk of developing into a malignant lesion<sup>6</sup>

The macroscopic appearance of the lesion varies with the grade of the tumor. The main therapeutic method in the treatment of MEC, is surgical resection and postoperative radiotherapy which seems to be quite efficient<sup>7</sup>

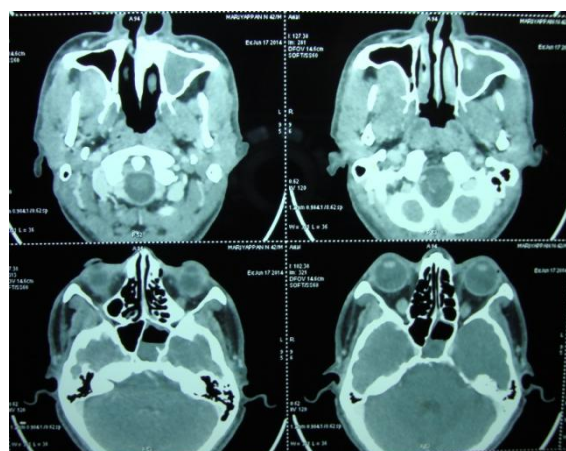
## 2. Case Report

A 40 year male pt reported to our unit of oral and maxillofacial surgery complaining of difficulty in mouth opening since 1 year (figure 1). Difficulty in mouth opening had gradually increased over time with associated difficulty in mastication but no associated history of pain. Patient gives no history of trauma but gives a history of gradual weight loss over the past six months. Patient has no known medical comorbidities. He was a known smoker (beedi and

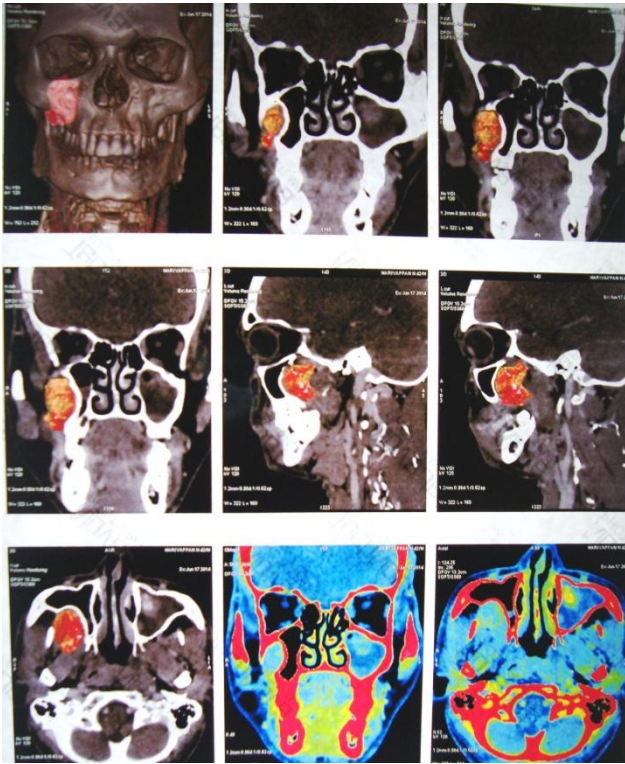
cigarette) since 20 years and quit one year back on his own. He is an occasional alcoholic.

On clinical examination, no evident cause for trismus was appreciable both intra-orally and extra-orally.

For further examination, pre-operative plain and contrast CT was taken one week before the surgery, which showed positive involvement of a lesion on the right side infratemporal fossa region. It showed a fairly well defined hypodense lesion measuring 3.1×1.7 cm seen posterior to the posterior wall of right maxillary sinus completely occupying retromaxillary fat. It shows minimal enhancement on IV contrast study. The posterior wall of right maxillary sinus is smoothly displaced anteriorly. Hyperdense area seen in the left maxillary sinus. Soft tissue planes of the nasopharynx including the adjacent muscles, vascular, retro and parapharyngeal spaces are normal. No obvious lesion seen in the pharynx or larynx.

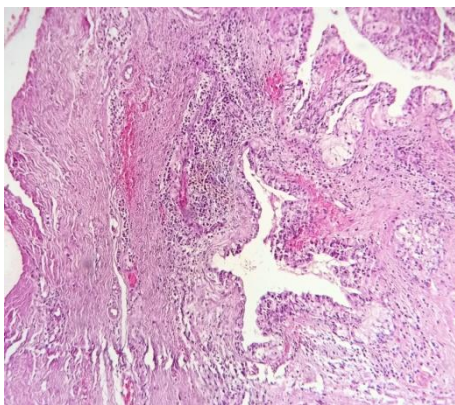


**Figure 1:** Preoperative CT image showing an enhanced mass occupying the right infratemporal fossa



**Figure 2:** Preoperative 3D reconstruction with contrast CT imaging of the mass occupying the right infratemporal fossa

Considering the above mentioned clinical features and radiological examination, the provisional diagnosis of mucoepidermoid carcinoma of the right infra-temporal fossa with differential diagnosis of leiomyoma, fibroma or pseudo-tumour. Intraoral fine needle aspiration cytology was done.



**Figure 3**

The histopathological section shows part of tumour mass composed of multiple small and large cystic spaces lined by cuboidal and abundant PAS positive mucous cells secreting mucous like material. Chronic inflammatory cell infiltrate is seen around tumour mass. Superficial surface show overlying parakeratinised stratified squamous epithelium. Underlying stroma is fibrocellular with small and large blood vessels, extravasated RBCs and presence of tumour mass in deeper stroma suggested low grade mucoepidermoid carcinoma

### 3. Surgical Procedure

Bronchoscopic associated nasoendotracheal intubation was done followed by painting and draping. Under standard aseptic conditions, a Weber Fergusson incision with infraorbital extension was placed on the right side of the face. A large flap was raised and then reflected to yield adequate exposure of the anterior maxilla, infraorbital rim, zygomatic process of maxilla and zygomatic bone, the masseter, coronoid process and the mandibular ramus. Modified malar osteotomy was then done and the zygomatic arch was elevated allowing adequate exposure of the external aspect of the tumour. Malar bone was pedicled onto the masseter. After the exposure of the tumour, surgical specimen was easily removed in-toto. Temporalis myotomy along with bilateral coronoidectomy was done. Mouth opening about 42 mm was achieved. After firmly packing the surgical cavity with betadine soaked gauze, zygomatic arch was returned and fixed to the infraorbital rim and frontal process of zygomatic bone with the miniplates. Contralateral maxillary sinus was then exposed, sinus exploration and lavage was also done. Hemostasis was achieved. Closure was done. Patient was then extubated uneventfully and shifted to the recovery room. Postoperative radiotherapy was also done afterwards.

### 4. Discussion

Of all the malignancies of the parotid and minor salivary glands Mucoepidermoid carcinoma is known to be one of the most common. It manifests most often during the second to seventh decades of life and exhibits a slight female predilection of about 60.2%. MEC was first described by Volkman in 1895 and later was again described by Masson and Berger in 1924 and further elaborated upon by Stewart in 1945 as mucoepidermoid tumor. MEC may arise from pluripotent reserve cells of the excretory ducts of salivary glands which have the potential to differentiate into squamous, columnar and mucous cells<sup>8, 9</sup>. The clinical presentation of MEC of the minor salivary gland present as a bluish, or red-purple fluctuant smooth surfaced mass that is often clinically mistaken as mucocoele. The palate is the most common site for minor salivary gland involvement which accounts for 55%. In our present case, infra-temporal fossa is involved which is a very rare location. The size and location of the lesion also caused the patient trismus<sup>8</sup>.

The treatment of tumor that are identified in the infra-temporal fossa are challenging to the head and neck surgeon. Histopathology of the tumour and assessment of its extension are the first essential parameters in management. CT scan is essential for lesions that are bony in origin or where bony changes arise as a result of spread or expansion of growth. MRI scan with contrast can better evaluate the soft tissues and is helpful in evaluating intracranial extension or intramuscular infiltration. It sometimes may be able to identify the tissue of origin of the tumour, but this is difficult in large tumors and those with multiple extensions<sup>10</sup>.

Pre-operative diagnosis for any infra-temporal tumor may be difficult to reach due to the location of this anatomical space, which is well bounded by bony structures and risky to biopsy<sup>11</sup>.

There may be many surgical approaches in the literature, but it is upto the surgeon to select an appropriate technique that provides maximum exposure with minimum morbidity of the patient so as to retain or preserve quality of life. Combined approaches usually offer the best solution in tumors with multiple extensions<sup>10</sup>. The site of the tumor and its relation to the components of the infra-temporal fossa and the index of suspected malignancy were the main aspects to our surgical planning.

Following our procedure, the patient was followed up after the first week, then once every month up to one year with no signs of recurrence of the lesion which was confirmed by post-operative CT imaging of the site. Patient also showed improvement in mouth opening with an opening of 38mm when recorded after one month post-operatively.

## 5. Conclusion

Many a times atypical location such as the one reported can mislead the practitioner, resulting in incorrect diagnosis. The infra-temporal fossa is a difficult anatomical space to access surgically, but modern techniques have led to an improvement in surgical approaches and quality of life for the patient. MEC of the infra-temporal fossa is considered highly unlikely; in our case, another primary tumor was not revealed even after the extensive diagnostic procedures before, during and after the surgery. The present case enlightens us about the importance of newer modalities of investigations like 3D contrast CT and MRI as one of the gold standards in the confirmation of diagnosis and as an aid in treatment planning.

### Preoperative Photograph



Figure 4: Showing reduced mouth opening of the patient

### Intraoperative Photographs



Figure 5: After modified malar osteotomy



Figure 6: After zygoma elevation

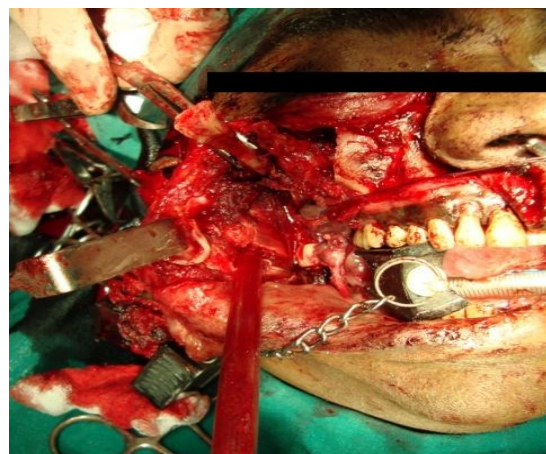


Figure 7: After excision of the mass

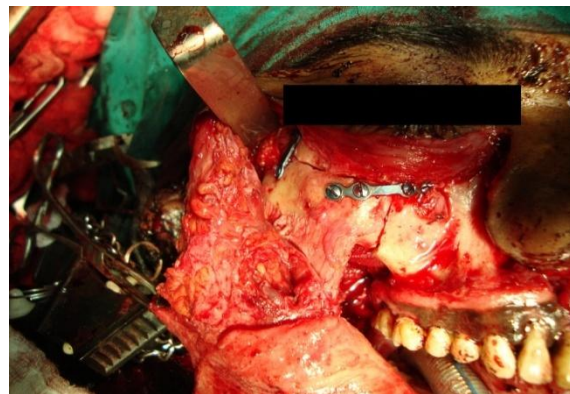


Figure 8: After fixation of the zygoma with miniplate

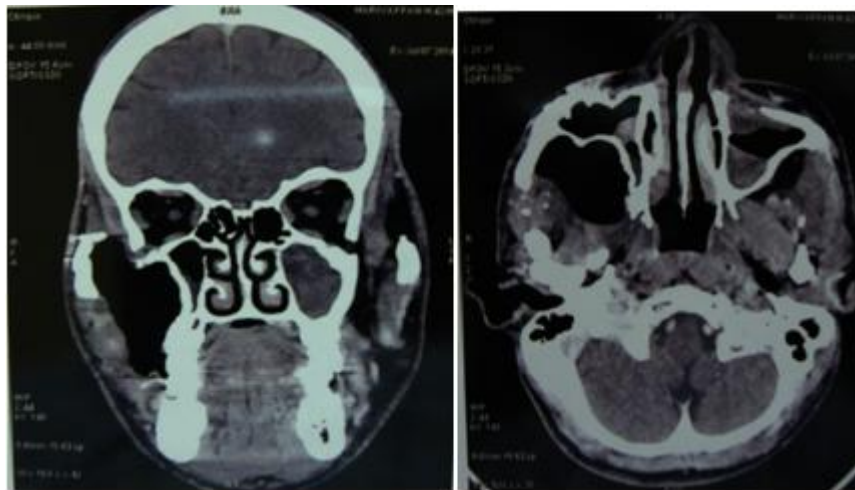


Figure 9: Contralateral sinus exploration and lavage



**Figure 10:** After the flap closure

### Postoperative CT Images



**Figure 11:** Postoperative coronal and axial CT view showing complete resolution of the lesion

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