



A RARE CASE OF INTRAOSSEOUS MUCOEPIDERMOID CARCINOMA OF MAXILLA TREATED AT OUR CENTRE.

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ABSTRACT

Occurrence of Primary intraosseous mucoepidermoid carcinoma (PIOC) within the jaw bones from aberrant salivary tissues is extremely rare. Mandible is more commonly affected but occurrence in maxilla is very rare. The origin of mucoepidermoid carcinoma is controversial and debatable. Primary Intraosseous mucoepidermoid carcinoma is frequently misdiagnosed radiographically and clinically as a benign odontogenic tumor or cyst. Primary Intraosseous Mucoepidermoid Carcinoma has distinct and specific radiological and morphological features for its diagnosis. The main modality of treatment is surgery and appropriate patients are offered adjuvant radiotherapy. This paper reports a case of central mucoepidermoid carcinoma of the Maxilla which was presented as complaints of pain and swelling of upper jaw. Then, he was treated with surgery followed by adjuvant treatment as per specimen pathological report. Here, we have used Simultaneous Integrated Boost technique with helical IMRT for Radiotherapy along with concurrent chemotherapy for treatment of revised margins following positive margins status. **Summary:** Central mucoepidermoid carcinoma is a rare entity with highly selective radiological, histological and immunohistochemical criteria with overall around 150 cases reported. Due to rarity of occurrence, consensus guidelines for treatment protocol have not been established. Here we have described a similar case of a 25yrs old male patient that was diagnosed, surgically resected and has completed adjuvant chemo-radiation therapy at our centre.

KEYWORDS : Intraosseous mucoepidermoid carcinoma; Maxilla; Radiotherapy; Simultaneous Integrated Boost.

INTRODUCTION:

The predominant histological type of cancer in the oral cavity is Squamous cell carcinoma. Less than 10% neoplasms of the oral cavity have non-squamous etiology (van der Waal, R. & Van der Waal, I., 2007).¹ Most of these are minor salivary gland tumors, which tend to arise in the hard palate. Overall most common histological variety is Adenoid Cystic Carcinoma (27%) followed by Mucoepidermoid Carcinoma (16%) (Terhaard & Lubsen & Van der Tweel & Hilgers & Eijkenboom & Marres, 2004).² Mucoepidermoid Carcinoma is known to originate from ectopic salivary gland tissue (Rankow & Polayes, 1976).³ In extremely rare cases it can also arise as an intraosseous variant from the mandible and maxilla. This entity is called 'Central Mucoepidermoid Carcinoma' (CMEC) also known as 'Primary Intraosseous Mucoepidermoid Carcinoma' (PIOC) (Gingell & Beckerman & Levy & Snider, 1984).⁴ Primary intraosseous Mucoepidermoid carcinoma of jaw bones is comprising 2-3% of all Mucoepidermoid carcinomas reported (Gingell et al, 1984).⁴ Most primary CMEC lesions are seen in mandible, but it is quite rare in maxilla (Kochaji & Goossens & Bottenberg, 2004), (Eversol & Sabes & Rovin, 1975).^{5,6} First case of CMEC of mandible was reported by Lepp H. (1939).⁷ Due to its rarity of occurrence, there has been only around 150 cases reported (Singh & Nangia & Cudahy & Mir, 2018).⁸ There is also a lack of consensus regarding the optimal treatment protocol. Surgery is the mainstay of treatment. Recently He & Wang & Fu & Zhang & Zhuang, (2012) reported improved survival rates

following adjuvant radiotherapy in 2012.⁹ Here, we report a case of a PIOC of maxilla in a 25yrs old male patient, and he was operated for the same then underwent adjuvant Radiotherapy and Chemotherapy.

Case Report:

A 25 years old male patient presented with complaints of pain and swelling and growth over left upper jaw for 2 months. Patient underwent Orthopantomogram and contrast enhanced CT scan which showed 2 cystic lesions of size 26*25 mm and 28*18 mm respectively with thin bony walls seen protruding within Left maxillary sinus with base towards maxillary alveolar arch. There was significant erosion and destruction observed of maxillary alveolar arch near roots of left premolar and molar teeth and adjacent hard palate with mild adjacent soft tissue noted (Figure-1,2). Fistula formation was observed between cystic lesion and oral cavity. CEMRI was done which showed 22*21*26 mm sized altered signal intensity lesion in Left Upper alveolus at the level of premolar teeth. Lesion involved left maxillary sinus and extended into it and also involved Left upper buccal space and GBS, and extension into left RMT. There was 16*22*17mm size fluid collection seen within the maxillary sinus (Figure-3).

Then he underwent Left Partial maxillectomy with Left Supraomohyoid neck dissection and Left Temporalis flap insertion. Histopathology report showed the diagnosis of Intraosseous Mucoepidermoid carcinoma, Intermediate

Grade with a microscopic picture of tumor predominantly located within the bone trabeculae and positive staining with PASD and Mucicarmin. Histopathology report showed positive bony margins of maxillary and palatine bone, which were revised to achieve adequate negative margins and close mucosal resection margins and no lymphnodes were involved by the disease.

He was subsequently planned for adjuvant radiotherapy using Helical Intensity Modulated Radiotherapy (IMRT) after multidisciplinary team discussion and satisfactory wound healing. Adjuvant Radiotherapy was planned using contrast enhanced planning CT scan with appropriate immobilization devices on Precision (Accuray Medical Systems, USA) treatment planning system. Treatment was delivered on the Tomotherapy RADIXACT X9 (USA) after patient specific quality assurance completion. He has been given dose of 54Gy prescribe to entire surgical bed, remaining maxilla and alveolar process; involve maxillary sinus and cribriform plate in 1.8Gy/#. A simultaneous integrated boost (SIB) of 60Gy in 2Gy/# was prescribed to tumor bed and revised margins.(Figure-4,5) Along with Adjuvant Radiotherapy, concurrent chemotherapy was given. The treatment concluded in 56 days. The patient tolerated treatment well.



Figure-1: Orthopantomogram showing cystic lesion over Left Maxilla. (marked by arrow)

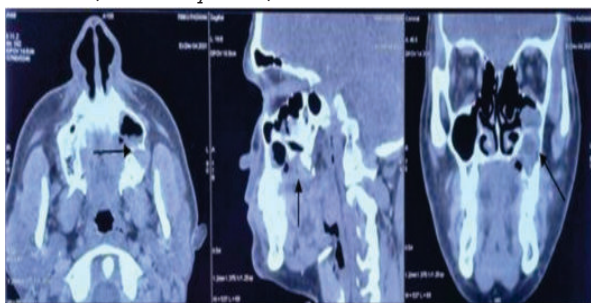


Figure-2: Contrast enhanced CT shows significant erosions and destruction seen of maxillary alveolar arch near roots of left premolar and molar teeth and adjacent hard palate with mild adjacent soft tissue sized approximately 14*10mm. (marked by arrows)

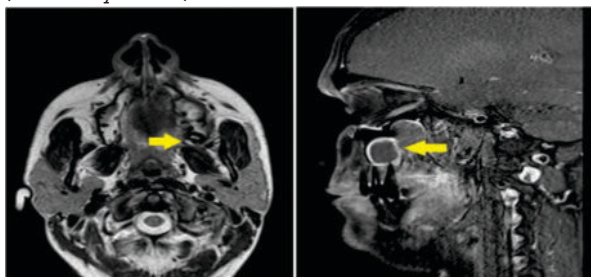


Figure-3: Contrast Enhanced MRI 22*21*16mm lesion arising from left upper alveolus at level of premolar teeth. Lesion involves alveolar process of left maxillary sinus and extends into it. Lesion involves left upper buccal space, gingivobuccal space and left retromolar trigone. (marked by arrows)

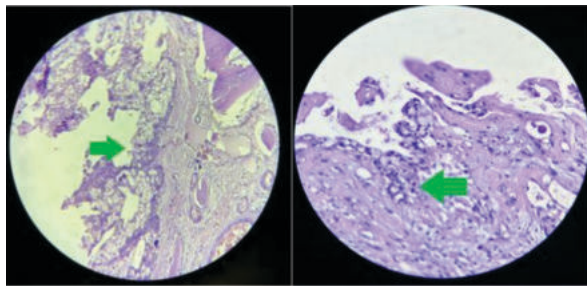


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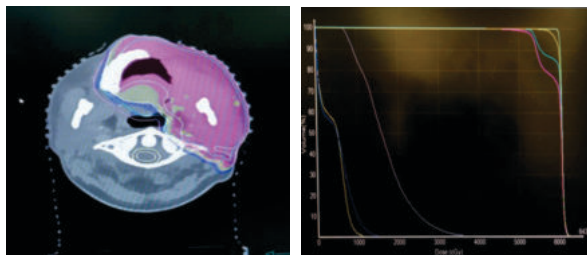


Figure-5: in DVH light green (on Right) shows PTV_60 coverage followed by coverage of PTV_45 in pink. In axial cut isodose curve colour wash shows coverage by 100% dose in pink ,95% dose in yellow and 90% dose coverage in blue.

DISCUSSION:

CMEC was included in classification of Primary Intraosseous Carcinoma of jaws by Waldron and Mustoe (1989).¹⁰ As per this type-4 includes Central MEC.¹⁰ CMECs have a slight female predominance (2:1) (Freije & Campbell & Yousif & Clowry, 1995).¹¹ These PIOC has a predilection for mandible comparing to maxilla. They usually manifest as swelling, toothache, Odontoseisis, Paresthesia. But the most common presentation is swelling of the retromolar triagone (Freije et al, 1995).¹¹

Although the exact pathogenesis of this lesion is still a subject of controversy and several current theories of its origin exist. The following may represent origins of these lesions: (1) transformation/metaplasia of mucous cells found in odontogenic cysts. (2) Ectopic salivary gland tissue: embryonic salivary gland remnants/mucous glands entrapped within the bone of the mandible (3) From the maxillary sinus epithelium (Velez & Johnson, 2008).¹² Eversole et al (1975) have found that about 50% of mandibular CMECs are associated with mucous cell differentiation in odontogenic cyst or impacted teeth, in contrast whereas Brookstone and Huvos (1992) this is close to 32%.^{6,13}

To diagnose CMEC, Alexander (1974) have defined radiological and histopathological criteria, which includes: absence of any primary lesion in the salivary gland, Presence of a radiographic distinct osteolytic lesion, retention of cortical plate integrity, positive mucicarmin staining, clinical and histological exclusion of a metastasis or an odontogenic lesion (Browand and Waldron, 1975).^{14,15} There are still some contradictions in these criteria as cases have been diagnosed with cortical plate perforation and invasion of nearby tissue. However, in our patient there was a fistulous connection between maxilla and oral cavity following erosion of cortical plate. In a case report, Waldron et al (1990) accepted cortical plate defects in the mandible overlying a radiolucent lesion if there was no obvious soft tissue lesion and the periosteum was intact.¹⁰ Diagnosis was also confirmed with histopathological findings which includes tumor predominantly located within

the bone trabeculae with an expansile and extensive infiltrative growth comprising microcysts, trabeculae, clusters and nests and strands of epithelioid cells with hyperchromatic nuclei and eosinophilic cytoplasm admixed with intermediate cells and many mucous secreting cells with intracytoplasmic mucin (PASD and Mucicarmine positive). The intervening stroma shows extensive sclerosis with myxoid change. Mitotic activity is inconspicuous and no definite necrosis evident. As per Memorial Sloan Kettering Cancer Center (MSKCC) Grading System, the grade is Intermediate Grade (Qannam and Bello, 2016).¹⁶

In the literature, Histological grading has a strong effect on survival rate, such as a well differentiated low grade tumor without perineural invasion and with tumor free margins shows a better prognosis and usually associated without lymphnode metastasis. In such cases there is no need for adjuvant radiotherapy. In our case, the patient has positive margins and intermediate grade which warrants the need for adjuvant treatment for improved survival. He et al (2012) showed that such cases are associated with poor prognosis increased mortality.⁹

The treatment of choice is Surgery, which include en bloc resection such as partial mandibulectomy or subtotal maxillectomy. Other options such as total or extensive maxillectomy are reserved for relatively larger (>20*20mm) tumor or with positive margins (He et al, 2012).⁹ Neck dissection is chosen according to clinical assessment of the cervical lymphnodes. As supported by other authors, in case of larger primary lesion (more than 20mm in greatest dimension) and high grade MEC neck dissection is strongly suggested (Guzzo & Andreola & Sirizzotti & Cantu, 2002).¹⁷

He et al shows better survival rate (72.7%) in patients who underwent adjuvant radiotherapy as compared to those who did not receive radiotherapy in high risk patients (He et al, 2012).⁹ In view of positive margins, and cortical plate perforation and Intermediate grade CMEC, the patient underwent adjuvant Radiotherapy and chemotherapy both (He et al, 2012).⁹

Hereby, we have described to include all possible clinical, radiological, pathological, and surgical aspects as suggested by Kochaji et al (2004).⁵

CONCLUSION:

Central mucoepidermoid carcinoma is a rare entity with highly selective radiological, histological and immuno histochemical criteria. Radical surgery is treatment of choice and extent of dissection depends upon size, extent and clinical findings. Adjuvant radiotherapy shows improved survival rate and improved outcomes. So, we advise strongly for adjuvant radiotherapy, preferably with highly conformal techniques in appropriate patients with high risk features such as positive margins, positive lymphnodes, intermediate to high grade. Novel approaches like Simultaneous Integrated Boost can be very useful for adequate disease control and favorable outcomes.

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