Case Report

Intraoral Mass Presenting as Maxillary Sinus Carcinoma: A Case Report

Omid Mahdavi[1], Najmehalsadat Boostani[2], Sharareh Karimi[3], Adel Tabesh[4]

[1]Assistant Professor, Department of Oral and Maxillofacial Medicine, School of Dentistry, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
[2]Resident, Department of Anesthesiology, School of Medicine, Shahid Sadoughi University of Medical Sciences, Yazd, Iran
[3]Assistant Professor, Department of Oral and Maxillofacial Medicine, School of Dentistry, Kurdistan University of Medical Sciences, Sanandaj, Iran
[4]Resident, Department of Oral and Maxillofacial Medicine, School of Dentistry, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

Abstract
Sinonasal undifferentiated carcinoma is an extremely rare malignancy of the paranasal sinuses and nasal cavity. It is of unknown etiology, and occurs more commonly in the elderly men, with a routinely shown aggressive behavior and poor prognosis for survival. Radiographically, it looks like severe osteomyelitis. Histopathologic study is essential to confirm diagnosis, and the undifferentiated histologic appearance often necessitates immunohistochemical studies for differentiation from other high-grade neoplasms. We present an 83-year-old man complaining of pain and unilateral swelling on the left side of the face due to a rare malignant tumor of maxillary sinus origin, a sinonasal undifferentiated carcinoma. He underwent hemimaxillectomy and radiotherapy, but refused chemotherapy. Maxillary sinus malignancy may be presented with unspecific symptoms mimicking sinusitis or dental pain. Coming across such symptoms, the physician or dentist must consider malignancies as well, and carry out medical and dental workups.
Keywords: Sinonasal Undifferentiated Carcinoma; Maxillary Sinus Neoplasms

Corresponding author:
A. Tabesh, Department of Oral Medicine, School of Dentistry, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

adeltabesh@gmail.com

Received: 18 June 2013
Accepted: 17 October 2013

Journal of Dentistry, Tehran University of Medical Sciences, Tehran, Iran (2013; Vol. 10, No.6)

INTRODUCTION

Sinonasal undifferentiated carcinoma (SNUC) is a rare malignancy originating from the mucosa lining the nasal cavity and paranasal sinuses. Clinically, it may occur from the third to ninth decade of life, and the mean age of occurrence is during the sixth decade of life. It involves men 2 to 3 times more frequently than women, and strongly relates to smoking or alcohol consumption. Due to the rapid and insidious enlargement of the lesion, several sinonasal symptoms may ensue.

These include swelling, pain, or paresthesia, as well as nasal congestion, bleeding, or posterior discharge. Involvement of the orbit may cause exophthalmia, periorbital edema, diplopia, or even blindness.

Radiographically, SNUC tumors are seen as expansive masses invading the adjacent bone, similar to severe osteomyelitis.

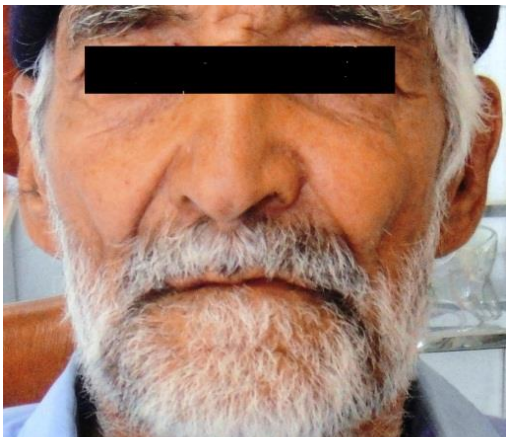

Fig 1. Extraoral swelling on the left maxillary region causing facial asymmetry

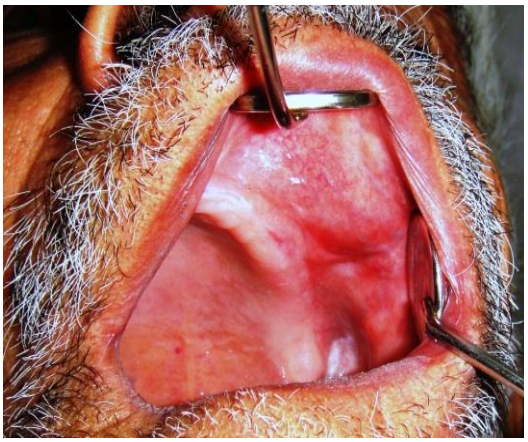

Fig 2. Intraoral nodular exophytic lesion with a smooth surface on the maxillary left vestibule

Unfortunately, most SNUC tumors grow large with infiltrative margins at the time of diagnosis. Cranial nerve paralysis is a common finding. In the case of maxillary sinus involvement, misdiagnosis as common cold or sinusitis is possible [1,2]. Although the exact histopathogenesis is not known, the lesion is diagnosed via histologic evaluation and immunohistochemical staining [1-3]. Histopathologically, the lesion shows islands, trabecules, or sheets of polygonal cells, with little cytoplasm and pleomorphic, hyperchrome to vesicular nuclei. There is no differentiation to squamous or glandular cells. Mitotic forms are frequent. Tumoral cell apoptosis, necrosis, and lymphovascular invasion are usually apparent. The epithelial surface may exhibit dysplasia or carcinoma *in situ*. Immunohistochemical staining for cytokeratin or superficial epithelial antigens are usually positive [1,3,4]. The lesion is highly invasive, usually diagnosed in its advanced stage with probable extension or metastasis to the oropharynx, oral cavity, cervical lymph nodes, bone, liver, orbit or brain. Although the therapeutic procedure is quite radical, composed of complete surgical resection, followed by radio- and chemotherapy, it may fail to treat this tumor [5,6]. Local recurrence is common. Prognosis is very poor, with a 15% 5-year survival-rate [1,2,6].

CASE REPORT

An 83-year-old man, complaining of pain and swelling on the left cheek, was referred to the department of oral medicine, faculty of dentistry, Shahid Sadoughi University of medical sciences, Yazd, Iran. The pain radiated to the left side of the forehead. The onset of his symptoms had been 1 month ago, and the pain was dull and continuous. Downward head movement aggravated the pain. The patient had used non-steroidal anti-inflammatory agents to relieve his pain that only ameliorated the symptoms for 3 to 4 hours. He had the symptoms of chronic sinusitis, including pain in maxillary and frontal sinuses (especially in the winter). He had a sense of congestion in the left nasal cavity too with nasal bleeding in the recent month. He had used antibiotics, but this treatment had not halted his pain.

The patient was a retired official clerk. His family history was negative for any genetic disorder or related disease. He had no history of smoking or alcohol consumption. Medical history was positive for well-controlled diabetes mellitus and hypertension. Extra oral examination revealed a nodular swelling on the left maxillary region, causing asymmetry of the face (Figure 1). The skin overlying the mass was red, edematous, and tender. No palpable lymph nodes were present.

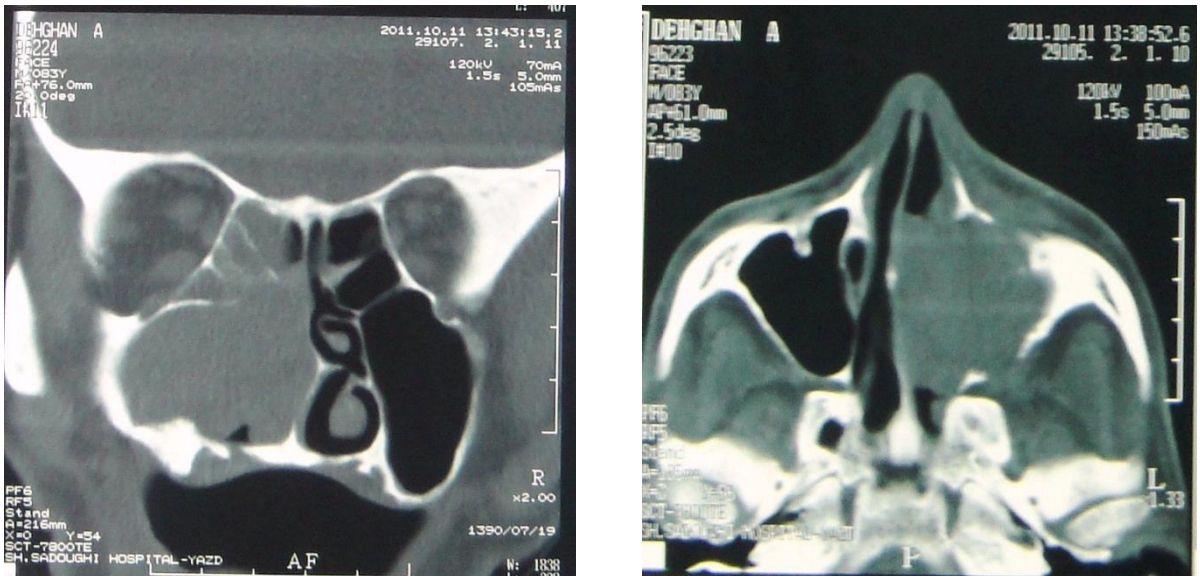

Fig 3. A, Coronal and **B,** Axial computerized tomographs (CT)

Intraoral examination revealed a nodular exophytic lesion on the maxillary left vestibule between the lateral incisor and second premolar regions (Figure 2).

The lesion was 2×2 centimeters in size, and firm on palpation. The surface was smooth, and the overlying mucosa had normal color. The maxilla was totally edentulous.

Panoramic radiography revealed opacity of the left maxillary sinus, and a small zone of perforation on its floor. After the initial clinical work-up, computed tomography (CT) scan and contrast magnetic resonance imaging (MRI) were performed in an attempt to define the borders of the lesion as clearly as possible, and to determine operability.

The CT scan showed sinus lateral wall perforation as well (Figure 3). Contrast MRI exhibited a large lobulated mass inside the left maxillary sinus destructing its walls, and extending to the left nasal cavity, ethmoidal sinus, and orbit (Figure 4).

A provisional diagnosis of malignant mesenchymal tumor, or another malignant lesion of sinus origin was made and an incisional biopsy was carried out.

The surgical incision was on the left maxillary vestibular mucosa. Two biopsy specimens were submitted for histopathologic examination.

The first was taken out of the tissue lying deep in the vestibule, and the second from the sinus cavity that seemed to be filled by the lesion mass. On hisotopathologic examination, a neoplastic epithelium was seen (Figure 5) that rejected lesions of connective tissue origin. The epithelial cells had eosinophylic cytoplasm and hyperchrome nuclei. Cell nests with high mitotic activity were present inside the epithelium.

The initial diagnosis was an undifferentiated carcinoma. The differential diagnosis list included undifferentiated variants of squamous cell carcinoma (SCC), malignant minor salivary gland adenocarcinoma, small cell neuroendocrine carcinoma (SCNEC), and melanoma.

Immunohistochemical staining was done to approach the exact origin of the cells. Cytokeratin (AE1/AE3), and epithelial membrane antigen (EMA) markers were positive, confirming the epithelial nature of the cells.

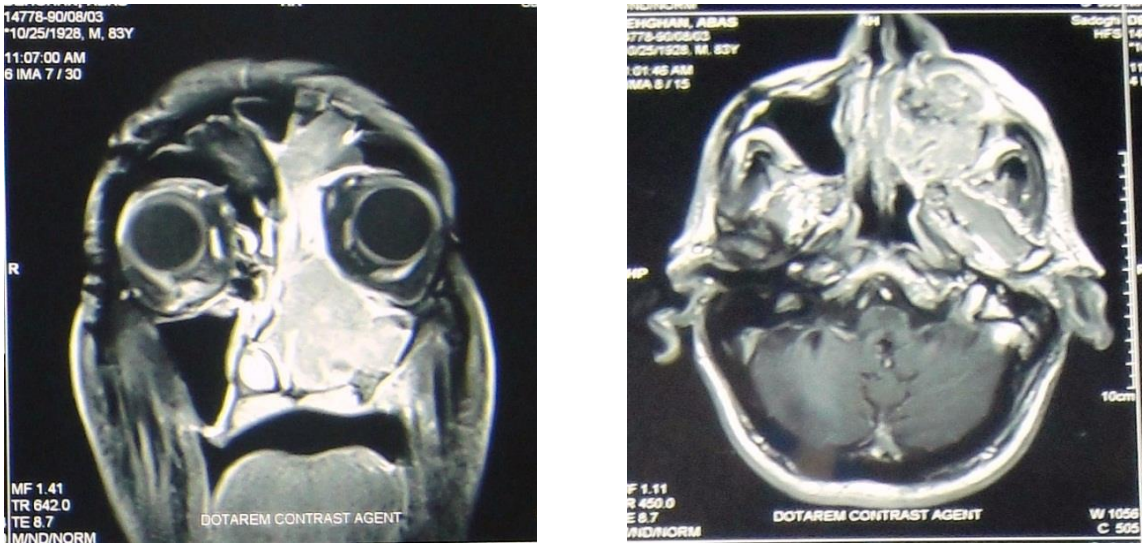

Fig 4. A, Coronal and **B,** Axial contrast magnetic resonance images (MRI)

Melaocytic markers, HMB45 and S100, were negative and relatively positive, respectively. Other immunohistochemical assays were not carried out, since they would have posed large expenses to the patient, with minus effect on the treatment plan or clinical outcome. The final diagnosis was undifferentiated sinonasal carcinoma.

Before surgery, a stent was made for the patient to obturate the surgical defect. Under general anesthesia, he underwent left hemimaxillectomy (Figure 6).

Then, 28 sessions of localized radiotherapy was carried out (50 Gy), followed by 15 Gy as the boosting dosage.

Concomitant chemotherapy (carboplatin and ceitabin in several 21-day intervals) was planned.

He refused chemotherapy due to fear of the side effects.

Four months after surgery, he complained of pain in the region, while he still refused chemotherapy. The patient passed away owing to this local disease 5 months postoperatively.

DISCUSSION

Malignant neoplasms of the nasal cavity and paranasal sinuses are rare. They constitute 3.6% of all head and neck malignancies and include SCC (most common, including 48% of cases), nasopharyngeal carcinoma (NC), lymphoma, melanoma, minor salivary gland adenocarcinoma, rhabdomyosarcoma, olfactory neuroblastoma (ON), peripheral neuroectodermal tumor (PNET), SCNEC, and hematolymphoid malignancies [3,7-9].

Many of these malignant neoplasms may present with an undifferentiated or poorly differentiated morphology that causes significant diagnostic difficulties for the pathologist, especially when the biopsy sample is small. Thus, they should be classified correctly by adjuvant techniques for choosing an appropriate diagnosis and treatment strategy [3,10].

Sinonasal undifferentiated carcinoma (SNUC) is a very rare and highly aggressive neoplasm of the nasal cavity and paranasal sinuses [4].

It was first described in 1986 by Frierson et al., with specific clinical, histological, and immunohistochemical properties.

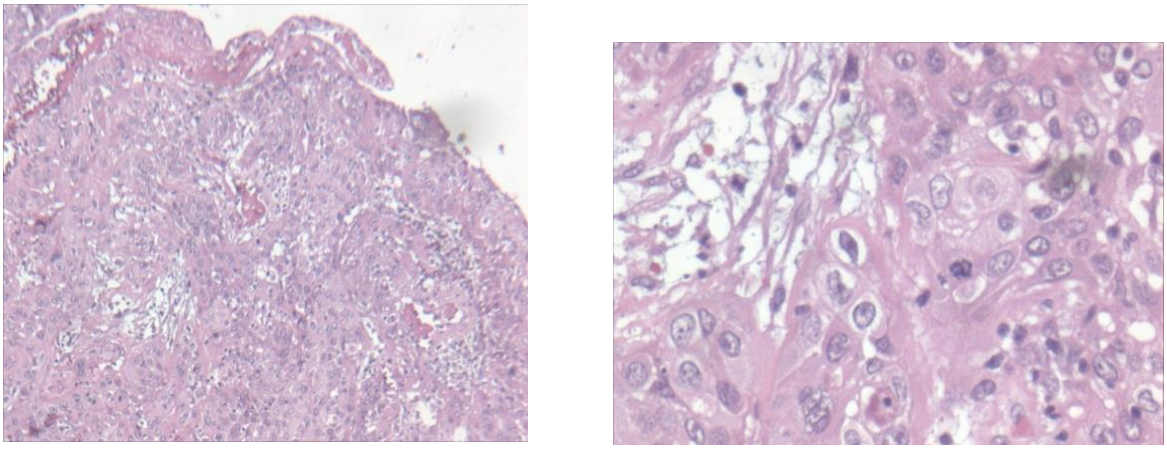

Fig 5. A, Low and **B,** High magnifications of the neoplastic epithelium

Although SNUC is of uncertain histogenesis, Schneiderian epithelium is a probable origin. It is characterized by a hypercellular proliferation of undifferentiated blue cells that display various growth patterns including trabecular, sheet-like, ribbon, lobular, or organoid. Immunohistochemical evaluation is essential to diagnose the lesion entity, due to the presence of histopathologically undifferentiated round cells. It should be differentiated from other aggressive malignant neoplasms by immunohistochemical techniques, molecular studies, and chromosome analyses [1-3].

For the present patient, who was complaining of facial swelling and pain, any dental etiology was ruled out, because he had no maxillary teeth. Sinusitis was not a suitable diagnosis, due to the presence of facial swelling, intraoral mass, sinus wall perforation, and previous insufficient response to antibiotics and analgesics. Inflammatory hyperplasia was not considered, because no irritating factor was present. Since the lesion was firmly attached to the underlying tissues, benign mesenchymal soft tissue lesions were not probable either. The mass had grown rapidly for one month, and the panoramic radiograph was showing unilateral maxillary sinus opacity and floor perforation. The clinical provisional diagnosis was a malignant lesion of maxillary sinus origin.

NC and ON were rejected, since they do not primarily originate in the maxillary sinus. PNET was not considered either, for it tends to occur in children or young adults [8]. The light microscopic appearance of the biopsy specimens was undifferentiated, narrowing the diagnosis list and necessitating adjuvant diagnostic techniques.

Immunohis to chemical markers are specific antibodies against certain histological molecules. They are used to identify epithelial (EMA; cytokeratin 7, 20, AE1/AE3), neuroendocrine (neuron-specific enolase or NSE, chromograin), melanocytic (S100, HMB45), muscular (myogenin), white blood (Leukocyte Common Antigen or LCA), or connective tissue (vimentin) cells [2,7,8].

In the present case, HMB45 was negative, ruling out melanoma and other melanocytic lesions, whereas relatively positive S100 was suggestive of a mass with melanocytic origin. LCA was negative, deleting lymphoma. EMA and cytokeratin (AE1/AE3) were positive, suggesting an epithelial origin for the cells.

Thus, the final diagnosis was undifferentiated sinonasal carcinoma. SCC is the most common sinonasal carcinoma, and as it may show little or no keratin via histopathologic examination, it may be reported as an undifferentiated carcinoma.

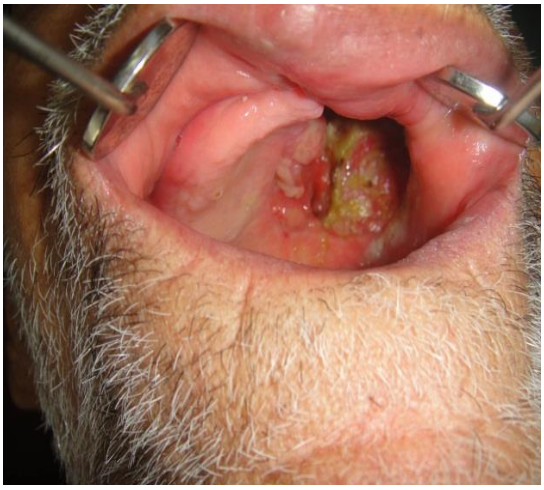

Fig 6. Post-operative view

Cylindrical cell carcinoma (CCC) and basaloid SCC (BSCC) are SCC variants, with cells tending to stand perpendicular to the basement membrane (palisading). When CCC or BSCC lack their characteristic features, they are reported as undifferentiated carcinomas. These entities, as well as the dedifferentiated adenoid cystic carcinoma or adenocarcinoma, are generally diagnosed via several immunohistochemical assays, including cytokeratin 5, 6, 13, 19, and calponin. SCNEC may be diagnosed by certain ultrastructural tests too, such as synaptophysin, chromogranin, and cluster of differentiation 57 (CD57) detection [8]. These immunohistochemical assays were not performed for the present patient because they are expensive and seem rather semantic with a minor effect on the treatment plan. Few reports have been published on undifferentiated nasal carcinoma since the first definition of the lesion about 20 years ago [2]. In 2006, Edwards et al. reported sinonasal carcinoma in a 43-year-old man complaining of left maxillary infection and pain/parestesia. Dental infection was ruled out by a dentist. The positive immunoistochemical markers were cytokeratin 20/7 and AE1/AE3 [6].

The present patient was older, and he did not have paresthesia. In 2008, Schmidt et al. reported a 65-year-old man, complaining of left nasal congestion, rapid swelling, and pain in the recent 3 weeks. Following radiographic and immunohistochemical evaluations, a diagnosis of SNUC was made [2].

In 2009, Ahossi et al. reported a 62-year-old woman, who complained of recurrent left sinusitis and pain. Her left maxillary first premolar and molar had been endodontically retreated, due to pain on percussion. An abnormal opacity was seen on the left part of her panoramic radiograph. A biopsy was made and the histopathologic diagnosis was moderately differentiated sinonasal carcinoma [1]. Our patient had the history of sinusitis too and took antibiotic and analgesic medications. He was referred to the department of oral medicine because these medications had not decreased the pain. It seems that carcinoma can mimic maxillary sinusitis insidiously, causing wrong medication use. Combination of surgery, radio- and chemotherapy were recommended to treat the lesion similar to the present patient. Complete surgical excision is stressed in all therapeutic procedures [11-13].

An extremely poor prognosis is confirmed in the literature for SNUC patients and most of them dye of the local disease in the first year of diagnosis [2,6,7]. In the meta-analysis study by Reiersen et al., 167 cases with SNUC were evaluated from 1986 to October 2009.

This study showed that 26.3% of the patients were alive with no evidence of disease, 21.0% were alive with disease, and 52.7% were dead because of the disease. Surgery was the best single modality, but chemotherapy and radiation were important as adjuncts in extensive and aggressive disease. The presence of neck metastases was a poor prognostic sign [6].

In the retrospective study by Lin et al., overall survival rates were 61% at 2 years, 43% at 3 years, and 22% at 5 years after diagnosis, for 19 cases with SNUC [14]. Our patient succumbed to the tumor too, 5 months after his operation. He had refused to undergo complete treatment (chemotherapy) that might have improved his survival.

CONCLUSION

The physician or dentist should be aware of unspecific signs or symptoms of malignancy, to diagnose such lesions as soon as possible. Sinonasal undifferentiated carcinoma is a rare malignancy that may mimic symptoms of dental infection or sinusitis.

Coming across symptoms such as nasal congestion, epistaxis, posterior nasal discharge, or pain, dentists must consider such a lesion as well. Further symptoms include exophthalmia, diplopia, paresthesia, and cheek swelling. The panoramic radiograph shows sinus opacity or wall destruction.

SNUC is traditionally related to a poor prognosis, even for patients treated aggressively with multiple modalities, and additional studies are required to determine the appropriate treatment plan.

REFERENCES

1- Ahossi V, Vincent S, Duvillard C. Sinonasal undifferentiated carcinoma, or schneiderian carcinoma arising from an aspergillosis: a case history. Br J Oral Maxillofac Surg. 2009 Jun;47(4):316-7.

2- Schmidt ER, Berry RL. Diagnosis and treatment of sinonasal undifferentiated carcinoma: report of a case and review of the literature. J Oral Maxillofac Surg. 2008 Jul;66(7):1505-10.

3- Wadsworth B, Bumpous J, Martin A, Nowacki M, Jenson A, Farghaly H. Expression of p16 in sinonasal undifferentiated carcinoma (SNUC) without associated human papillomavirus (HPV). Head Neck Pathol. 2011 Dec;5(4):349-54.

4- Houston GD. Sinonasal undifferentiated carcinoma: report of two cases and review of the literature. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1998 Feb;85(2):185-8.

5- Donald PJ. Sinonasal undifferentiated carcinoma with intracranial extension. Skull Base. 2006 May;16(2):67-74.

6- Reiersen DA, Pahilan ME, Devaiah AK. Meta-analysis of treatment outcomes for sinonasal undifferentiated carcinoma. Otolayngol Head Neck Surg. 2012 Jul;147(1):7-14.

7- Edwards PC, Hess SJ, Saini T. Sinonasal undifferentiated carcinoma of the maxillary sinus. J Can Dent Assoc. 2006 Mar;72(2):163-7.

8- Franchi A, Palomba A, Cardesa A. Current diagnostic strategies for undifferentiated tumours of the nasal cavities and paranasal sinuses. Histopathology. 2011 Dec;59(6):1034-45.

9- Kuijpens JH, Louwman MW, Peters R, Janssens GO, Burdorf AL, Coebergh JW. Trends in sinonasal cancer in The Netherlands: more squamous cell cancer, less adenocarcinoma. A population-based study 1973-2009. Eur J Cancer. 2012 Oct;48(15):2369-74.

10- Bridge JA, Bowen JM, Smith RB. The small round blue cell tumors of the sinonasal area. Head Neck Pathol. 2010 Mar;4(1):84-93.

11- Chen AM, Daly ME, El-Sayed I, Garcia J, Lee NY, Bucci MK, et al. Patterns of failure after combined-modality approaches incorporating radiotherapy for sinonasal undifferentiated carcinoma of the head and neck. Int J Radiat Oncol Biol Phys. 2008 Feb;70(2):338-43.

12- Yamaguchi K, Matsunaga T, Hayashi Y. Gross extrusion of endodontic obturation materials into the maxillary sinus: a case report. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2007 Jul;104(1):131-4.

13- Day TA, Beas RA, Schlosser RJ, Woodworth BA, Barredo J, Sharma AK, Gillespie MB. Management of paranasal sinus malignancy. Curr Treat Options Oncol. 2005 Jan;6(1):3-18.

14- Lin EM, Sparano A, Spalding A, Eisbruch A, Worden FP, Heth J, et al. Sinonasal undifferentiated carcinoma: a 13-year experience at a single institution. Skull Base. 2010 Mar;20(2):61-7.