



ORIGINAL RESEARCH PAPER

Medicine

SURGICAL MANAGEMENT OF SQUAMOUS CELL CARCINOMA OF MAXILLARY SINUS: A RETROSPECTIVE STUDY

KEY WORDS: Squamous cell carcinoma, maxillary sinus, overall survival, recurrence

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ABSTRACT

BACKGROUND : Squamous cell carcinoma of maxillary sinus is a rare cancer among head and neck cancer whose optimal treatment is not well established and the outcome remains poor. **AIMS:** The purpose of this paper is to present the experience in the surgical management of patients with squamous cell carcinoma of the maxillary sinus.

MATERIALS AND METHODS: A total number of 40 patients with squamous cell carcinoma of maxillary sinus were operated at our institute from August 2011 to August 2014. All patients underwent surgical excision of tumor, 26 patients (65%) were treated with surgery followed by postoperative radiotherapy. Surgery consisted of 27 total maxillectomy, 12 partial maxillectomy with preservation of orbital floor, one radical maxillectomy with orbital exenteration. Overall survival and disease free survival were calculated using the Kaplan-Meier method.

RESULTS: Most(75%) patients presented in advanced stage. The 3 and 5-year overall survival of the 40 patients was 65% and 45% respectively. The 3 and 5-year disease free survival was 62.5% and 40% respectively. overall recurrence was seen in 21(52.5%) patients. The most common site of recurrence was in the primary site, which was observed in 17 of 40 patients (42.5%).

CONCLUSION: Maxillary sinus squamous cell carcinoma is an aggressive tumor normally diagnosed at the advanced stage and most patients present an unfavorable prognosis and reduced survival rate. The addition of systemic therapy(Neoadjuvant and in adjuvant settings) to radiotherapy may improve overall survival in advanced squamous cell carcinomas of maxillary sinuses, which has to be evaluated in larger prospective studies.

INTRODUCTION

Tumors of the paranasal sinuses account for approximately 3% of all head and neck malignancies. Carcinomas arising in the maxillary sinus comprise 80% of this group of tumors. Because of the relative rarity of carcinoma of the maxillary sinus, institutional experience usually is limited.

Nasal cavity and paranasal sinuses carcinomas account for 0.2-0.8% of all human malignant neoplasms. Among them, sinonasal squamous cell carcinoma though one of the rarest epithelial neoplasms represents about 3% of all malignancies of the head and neck region. It predominantly occurs within the maxillary sinus (60-70%).¹ Most patients with maxillary sinus cancer have no symptoms in the early stage and, therefore, many of these patients are diagnosed in the advanced stage of the disease. The complexity of the anatomy and the proximity of the eyes, brain, and cranial nerves render complete surgical resection difficult, which leads to local recurrence, a major cause of treatment failure.² Smoking and history of chronic sinusitis are the most common risk factors for maxillary sinus cancer. In addition, occupational exposure to chemical substances, such as formaldehyde, chromium, nickel, and air pollution is associated with an increased risk for malignant tumors of the maxillary sinus.³ The purpose of this paper is to present the experience in the surgical management of patients with squamous cell carcinoma of the maxillary sinus.

MATERIALS AND METHODS

A total number of 40 patients with squamous cell carcinoma of maxillary sinus were operated at our institute from August 2011 to August 2014. There were 32 males and 8 females. The median age was 55 years (range 25-70 years). The most common presenting symptom was facial swelling 60%, followed by oral symptoms (40%), epistaxis (25%) and nasal obstruction (12.5%). Facial numbness, increased lacrimation was present in two patients. On physical examination, the most common findings were facial mass in 21 patients (52.5%), intraoral mass in 12 patients (30%), intranasal mass in 4 patients (10%), palpable neck mass in 2 patients (5%) and trismus in 2 patients (5%). Biopsy was done in all cases. Clinical staging was done by examination and CECT PNS and Neck. All patients were staged according to the 2010 American Joint Committee on Cancer Staging System for maxillary

sinus tumors.

All the 40 patients were treated with a curative intent. All patients underwent surgical excision of tumor, 26 patients (65%) were treated with surgery followed by postoperative radiotherapy. Surgery consisted of 27 total maxillectomy, 12 partial maxillectomy with preservation of orbital floor, one radical maxillectomy with orbital exenteration. Prophylactic neck dissection was not performed in patients without neck disease at presentation. Therapeutic neck dissection was done in 2 patients who had neck nodes at presentation.

Overall survival and disease free survival were calculated using the Kaplan-Meier method. These end points were determined from the date of diagnosis until the event of death for survival and local, regional or distant failure for disease free survival. Recurrence pattern of disease was also studied.

RESULTS

A total number of 40 patients were operated. The majority of patients presented with advanced stage (TABLE 1). Negative resection margins were achieved in 32 patients (80%) and 8 (20%) had positive margins.

Table 1: STAGE OF SQUAMOUS CELL CARCINOMA OF THE MAXILLARY SINUS

STAGE	NUMBER	%
I	1	2.5%
II	9	22.5%
III	22	55%
IV	8	20%
TOTAL	40	100%

18 patients (45%) were alive at the end of 5 years; of these 16 (40%) had no clinical evidence of disease (FIGURE 1). 22 patients (55%) had died from the time evaluation, out of which 19 had died due to recurrent disease.

The 3 and 5-year overall survival of the 40 patients was 65% and 45% respectively. The 3 and 5-year disease free survival was 62.5% (25) and 40% (16) respectively.(FIGURE 2 &3)

TABLE 2: PATTERN OF RECURRENCE

TYPE OF RECURRENCE	NUMBER	PERCENTAGE
LOCAL	17	42.5%
NODAL	3	7.5%
DISTANT(LUNG METASTASIS)	1	2.5%

From the data above overall recurrence was seen in 21(52.5%) patients. All the 8 patients with positive resection margin had early local recurrence despite adjuvant RT and expired within 3 years. The majority of recurrences were within a year of diagnosis. The most common site of recurrence was in the primary site, which was observed in 17 of 40 patients (42.5%). Failure in the regional lymph nodes and distant sites were observed in 3 and 1 patient respectively.(TABLE 2)

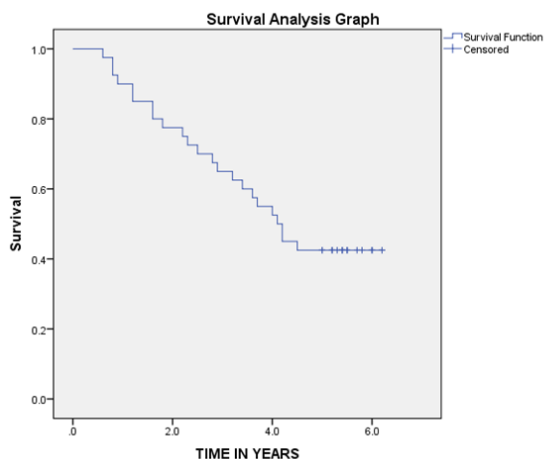


FIGURE 1: FIVE YEAR OVERALL SURVIVAL

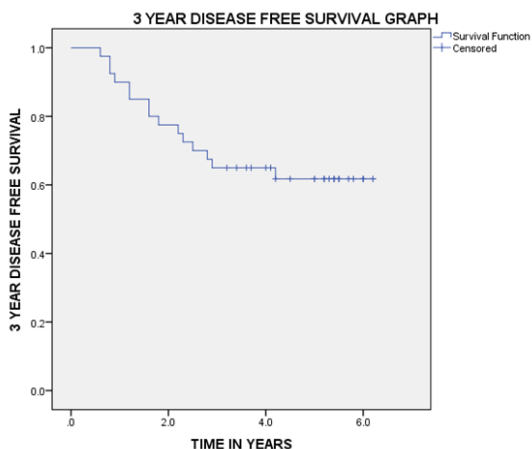


FIGURE 2: THREE YEAR DISEASE FREE SURVIVAL

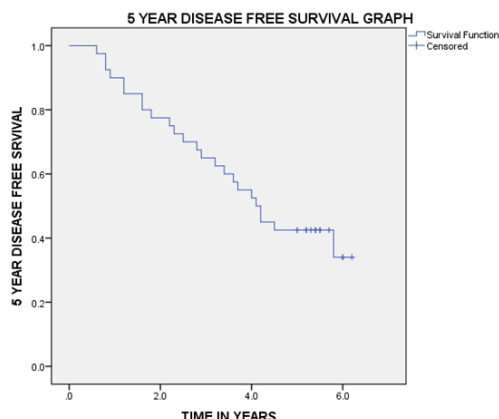


FIGURE 3: FIVE YEAR DISEASE FREE SURVIVAL

DISCUSSION

The prognosis of maxillary sinus cancer is poor, despite aggressive treatment. Maxillary sinus cancers usually are diagnosed at advanced stages. Surgery with postoperative radiation therapy remains the standard treatment for resectable sinonasal carcinoma.

Spiro et al. reviewed 105 patients at Memorial Sloan-Kettering Cancer Centre with nasal cavity, maxillary, and ethmoid squamous cell carcinoma treated with combination surgery and radiation therapy, radiation therapy alone, or surgery alone. Majority of these patients presented with extensive disease with 82 percent of newly treated patients having stage III or stage IV disease. Survival correlated to the stage at presentation, and the overall 5-year survival was 37 percent. The local control for maxillary sinus tumors was 49 percent, and local recurrence was the most common site of failure.⁴ The 10-year Cleveland Clinic experience comprises 54 patients with squamous cell carcinoma of the sinuses: all received surgery and/or radiation therapy with an overall survival of 38.2 percent for the maxillary sinus group.⁵ Zaharia et al., reported the outcome of 149 patients treated with surgery and postoperative radiation therapy for a variety of malignant histologies. The 5 year actuarial survival was 36.2 % overall, while for squamous cell carcinoma alone it was 35%.⁶ The overall treatment of maxillary malignancies in our group has resulted in 5-year survival rates of 45% percent .

Local control is a particularly difficult problem, with the majority of failures occurring at the primary site. These difficulties with maxillary cancer treatment are linked to the complex anatomy of the paranasal sinus region, and a propensity for late presentation due to the absence of symptoms in an early stage of disease. Pattern of failure in the present series revealed that 45% of patients failed at the primary site. In a study conducted by Qureshi et al, on 62 patients with squamous cell carcinoma of maxilla the local recurrence rate was 45%.⁷ A study conducted by Paulino et al, on 48 patients showed a local recurrence at primary site in 45.8%.⁸ Giri sp et al, study showed 43% of local recurrence after surgery and radiotherapy.⁹

The role of elective neck treatment is also debatable. Patients with metastases in the cervical nodes fare adversely and have poor prognosis. In our study the regional lymph node recurrence is seen in 3 (7.5%) out of 40 patients which is comparable to other studies conducted. Qureshi et al, study showed 16% regional failure after surgery with a total of 62 study population. Yagi et al, with a study population of 118 patients showed recurrent nodal disease in 8.3% of patients.¹⁰ Mcmohan JD et al, showed a local recurrence of 5 (10%) out of 50 study population.¹¹

CONCLUSION

Squamous cell carcinoma of maxilla is a rare malignancy but associated with late presentation due to its indolent course with poor long term outcome. Study shows high local recurrence rate even after aggressive surgical intervention due to late presentation and complex anatomy. New approaches such as neoadjuvant or concomitant chemoradiotherapy with aggressive surgery need to be considered and evaluated in prospective studies.

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