

# Malignant Fibrous Histiocytoma of the Tongue: Report of a Case and Review of the Literature

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## ABSTRACT

Malignant fibrous histiocytoma (MFH) of the tongue is an extremely rare subgroup of primary head and neck aggressive sarcomas with only six cases documented. Current recommended treatment in head and neck MFHs is wide resection of the tumor with adequate margins. However, technically this aggressive tumor type forms a challenging group for surgery due to difficulties in achieving tumor free margins without significant cosmetic and functional impairment. Elective neck dissection is not considered as a standard surgical option in head and neck MFHs, except for those patients presented with advanced stage and aggressive tumor histology. Local recurrences occur in 50% of head and neck MFHs treated with surgery alone, therefore adjuvant radiation therapy has an essential role in management of this aggressive tumor group. However, the role of postoperative radiation therapy in primary MFHs of tongue has not been addressed yet. In this report, we describe a further case of primary tongue MFH with positive surgical margins treated with postoperative radiation therapy in curative intent, and its clinical course following treatment. To our knowledge this is the first report of postoperative experience in MFHs of this disease site. Additionally, we review the clinicopathologic features and treatment aspects of all cases documented in the literature.

**Key Words:** Tongue, Malignant fibrous histiocytoma, Radiotherapy

## ÖZET

### Dilde Malign Fibröz Histiositoma: Olgu Sunumu ve Literatürün Gözden Geçirilmesi

Primer dil malign fibröz histiositomu (MFH) primer baş-boyun agresif sarkomlarının çok nadir görülen bir alt gurubu olup literatürde sadece altı vaka bildirilmiştir. Primer baş-boyun MFH tedavisinde güncel tedavi yaklaşımı tümörün yeterli emniyet marjiniyle cerrahi olarak çıkarılmasıdır. Ancak tümörün cerrahi olarak tam çıkarılması olası ciddi fonksiyonel ve kozmetik hasar oluşturabilme riski nedeniyle sıklıkla mümkün olmamaktadır. Elektif boyun disseksiyonu lokal ileri hastalık ve agresif histolojiler dışında MFH tedavisinde standart bir yöntem olarak görülmemektedir. Sadece cerrahi ile tedavi edilen hastaların %50'sinde lokal nüksler kaçınılmaz olup adjuvan radyoterapi primer baş-boyun MFH tedavisinde önemli bir yere sahiptir. Ancak, literatürde primer dil MFH tedavisinde radyoterapinin yeri henüz sorgulanmış değildir. Primer dil MFH tanısıyla opere edilmiş ancak cerrahi sınırlarda tümör varlığı devam eden bir vakada postoperatif küratif radyoterapi sonucumuzu vermeyi ve literatürde rapor edilmiş tüm vakaları tartışmayı amaçladık. Bildiğimiz kadarıyla burada takdim edilen vaka literatürde postoperatif küratif radyoterapi uygulaması yapılan ilk olgudur.

**Anahtar Kelimeler:** Dil, Malign fibröz histiositom, Radyoterapi

## INTRODUCTION

Malignant fibrous histiocytoma (MFH) is an aggressive primitive histological variant of high grade sarcomas. Following its first description as a distinct clinicopathological entity in 1964 (1), MFH rapidly gained recognition and has become the most commonly recognized soft tissue sarcoma of late adult life (1,2). MFHs have predilection for extremities and are rarely reported in the head and neck (H&N) region (3% to 7%) (2). Previously, fewer than 50 cases of MFH arising primarily from intra-oral structures, and only 6 cases with primary MFH of the tongue have been described (3-8).

Current treatment choice of H&N MFHs is wide resection of the tumor with adequate margins (4, 9). However, technically this aggressive tumor type forms a challenging group for surgery due to difficulty of achieving a complete resection without significant cosmetic and functional impairment. In MFHs of H&N, local recurrence rates up to 50% has been reported with surgery alone (10), hence, adjuvant treatment including RT has been considered as an essential component in management of soft tissue sarcomas of this region. However, the role of adjuvant radiation therapy (RT) in primary MFHs of tongue has not been addressed yet. Current report reviews the previous literature and presents a further case of primary tongue MFH treated with adjuvant RT.

## CASE REPORT

In January 2006, an 82-year-old male patient presented with a 4-month history of steadily enlarging, painless swelling on the left lateral surface of the tongue. The patient reported progressive difficulties in swallowing and speech that became worse in the last month. On physical examination, an ulcerated irregularly shaped solid mass of 30 x 30 mm was identified at the left lateral surface of the tongue. Neck examination was normal with no evidence of nodal involvement. Magnetic resonance imaging (MRI) revealed an 30 x 35 mm solid mass on the lateral surface of oral tongue, and other H&N structures including lymphatics appeared to be normal in size and consistency. Lesion was biopsied and microscopic examination revealed a high grade storiform-pleomorphic MFH of the tongue. Stan-

dard metastatic work-up revealed no local-regional or distant metastases. In the view of the tissue diagnosis, tumoral excision with wide resection margins was performed under general anesthesia. The postoperative period was uneventful. Histological examination demonstrated a tumor composed of pleomorphic, poorly differentiated mesenchymal cells with neighboring predominant fibroblasts in regions of storiform arrangement. Increased mitotic figures were apparent with accompanying histiocytes and multinucleated giant cells (Figure 1 and 2). Tumor was continuing microscopically at one focal margin. A definitive diagnosis of primary high grade pleomorphic MFH of the tongue was established, in consistent with biopsy.

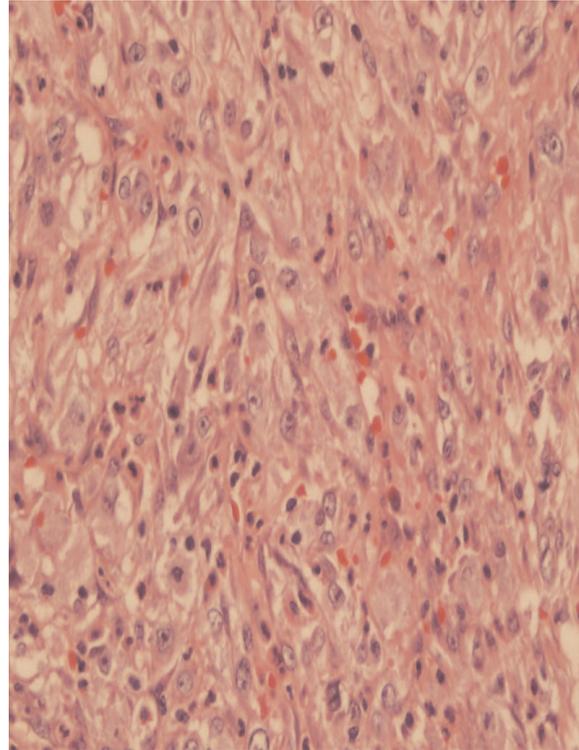
Second look surgery was offered to achieve negative tumor margins but was refused by the patient. Therefore, adjuvant chemoradiotherapy was planned but due to advanced age chemotherapy (CT) was postponed later, and a course of adjuvant radiotherapy (RT) targeted to the oral cavity (66.6 Gy, 1.8 Gy per fraction), and elective bilateral neck and bilateral supraclavicular fossae (45 Gy, 1.8 Gy per fraction) was delivered. Treatment was well tolerated with no significant toxicity, except for a grade II mucositis treated conventionally. His follow-up period was ordinary and was free of disease at 28 months.

## DISCUSSION

Our current literature review, including the present case, revealed that the both genders were almost equally affected, and the mean age was 45.4-years (range 16 to 82-years), with our case being the oldest one. Painless swelling and storiform-pleomorphic variant were the commonest presenting symptom and histologic subtype in this patient cohort. Primary surgery with/without modified-radical neck dissection (MRND) was the preferred choice of treatment. Only one case was treated with definitive RT which was followed by salvage surgery and MRND at recurrence 4. The present case was the sole patient treated with RT in the adjuvant setting. Follow-up period in this series ranged 9 to 37 months, with an average of 23.1 months. Six patients were alive and free of disease at reported follow-up periods, and only one patient died because of disseminated disease at 12 months (4). The fur-



**Figure 1.** Micrograph showing the tumor composed of malignant spindle cells underlying the normal tongue mucosa (H&E x40).



**Figure 2.** Short bundles of spindle shaped tumor cells with atypical mitotic activity accompanied by histiocytes and multinucleated giant cells dispersed among tumor cells (H&E x400).

her clinicopathologic features of these cases are summarized in Table 1.

Primary MFHs of H&N are rare, and with only six documented cases tongue accounts for one of the least common primaries (3-8). MFHs are classified in to five histologic subgroups: storiform-pleomorphic, myxoid, giant cell, inflammatory, and angiomatoid. Storiform-pleomorphic variant is the commonest histology accounting 82% of all MFHs. Tumor related factors including histologic subgroup, grade, diploidy, size, depth of invasion, anatomical location, and surgical margin status were identified as indicators of local-regional and distant relapse. Zagars et al (11) reported the tumor size (> 5 cm vs. ≤ 5 cm), and histology (non-myxoid vs. myxoid) as dominant determinants of metastatic and local relapse. Patients with small tumor size and myxoid histology survived better. Storiform-pleomorphic MFH has intermediate prognosis in between angiomatoid and giant cell variants, the latter representing poorest histology (12). Superfi-

cial tumors have better prognosis than deeper counterparts. Kearney et al (13) reported 65% and 14% 4-year survival in patients with superficial and deep MFHs, respectively. Tumor grade has been shown to be an independent indicator of survival (14), with 80% vs. 60%, 5 years survivals in patients with intermediate and high grade tumors, respectively. Localization of the tumor is another important prognostic factor. MFHs originating from soft tissues of oral cavity have more aggressive behavior than those arising from other H&N regions (15). Patients with aneuploid MFHs were associated with higher risk of local-regional relapse and mortality than those with diploid tumors (13). The presence of tumor on surgical margins after definitive treatment was the single most important factor relating to local recurrence (9). In our current case, tumor grade and localization were unfavorable factors for local-regional and metastatic relapse.

Surgery is the principle treatment approach for soft tissue sarcomas including primary MFHs of H&N

**Table 1.** Literature review of patient characteristics, clinicopathologic features and treatment results of reported malignant fibrous histiocytoma of the tongue.

Patient	Reference	Gender	Age (yr)	Chief Complaint	Duration of Symptoms	Tumor Localization	Size (mm)	Histologic subtype	Treatment	Survival After Diagnosis
1	Chen et al. <sup>3</sup>	Female	16	Painless Swelling	5 days	Dorsal surface	25	Giant cell	Surgery + MRND	NED (36 mo)
2	Bras et al. <sup>4</sup>	Male	72	Painless Swelling	3 mo	Lateral Surface	NS	Storiform-pleomorphic	RT + (Salvage Surgery + MRND)	DOD (12 mo)
3	Mc Millan et al. <sup>5</sup>	Female	42	Painless Swelling	8 wk	Lateral Surface	25	Mixed	Surgery	NED (9 mo)
4	Manni et al. <sup>6</sup>	Male	61	Bleeding	6 mo	Lateral Surface	90	Storiform-pleomorphic	Surgery + MRND	NED (24 mo)
5	Barnes and Kanbour <sup>7</sup>	Female	21	Painless Swelling	12 mo	Anterior border	30	Storiform-pleomorphic	Surgery + MRND	NED (37 mo)
6	Rapidis et al. <sup>8</sup>	Male	24	Painless Swelling	5 mo	Lateral Surface	26	Storiform-pleomorphic	Surgery	NED (18 mo)
7	Present case	Male	82	Ulcerative Swelling	4 mo	Lateral Surface	30	Storiform-pleomorphic	Surgery + Adjuvant RT	NED (28 mo)

Abbreviations: RT= radiation therapy; NS= not specified; MRND= modified radical neck dissection; DOD= died of disease; NED= no evidence of disease

region, but technically, these tumors form a challenging group for surgery due to difficulty of achieving complete resection without significant cosmetic and functional impairment 4, 9. As the risk for regional lymphatic involvement in MFHs of H&N region is only 10%, elective neck dissection is not indicated, except for those patients presented with advanced stage and aggressive tumor histology (2,12,14). However, local recurrence rates up to 50% has been reported with surgery alone (15), therefore adjuvant RT has an essential part in treatment of soft tissue sarcomas of this region. In one series including 94 H&N sarcomas, postoperative RT was demonstrated to reduce local failures from 48% to 10% (16). Lindberg et al (17) treated 300 patients with soft tissue sarcomas including H&N region. The 5-year disease-free survival and local recurrence rates were 61% and 23% for H&N primaries, respectively. Infield control rate was 100%, and all failures occurred beyond margins of the radiation portal. Mc Kenna (18) et al treated 16 patients with aggressive surgery, high-dose postoperative RT (60 to 63 Gy) and doxorubicin-based CT. With the median follow-up of 43 months, 64% were disease free, and local recurrence rate was 25%. Although there is lack of data in H&N region, it is reasonable to adopt the above data to MFHs of this region by considering them as an aggressive variant of malignant sarcomas. In our literature review, all MFHs of the tongue were treated with wide local excision except one case 4, that was treated with curative RT first, but as no response was reported salvage surgery and MRND were followed. Four cases underwent further neck dissection and all were free of cervical metastases. Considering the risks of a complicated surgery related with advanced patient age, elective neck dissection was not performed in the our current case, and although not standard, we treated our patient with curative RT targeted to primary disease to increase chance of local control. To our best knowledge, the present case is the second case treated with RT, as a part of treatment protocol, and the first treated with RT in postoperative setting.

Adjuvant CT was not used as an integral part of treatment protocols in any patient in the present series of primary tongue MFHs reviewed here. The role of adjuvant CT in treatment of H&N MFHs remains undefined, however some authors recommen-

ded doxorubicin based CT for tumors with high metastatic potential (2,9). In one series, 10-year local recurrence rates were 22% and 49% for patients treated with and without CT in non-extremity MFHs, respectively (14). In another study, Bramwell et al (19) demonstrated a similar significant improvement in local control rates with adjuvant CT. These results suggest CT as a feasible adjuvant option for H&N sarcomas including the primary MFHs, however prospective randomized trials are needed to conclude better on this issue.

In summary, we presented the clinicopathologic features of an exceedingly rare case of MFH of the tongue treated successfully with postoperative curative RT. This is the first case treated with RT in postoperative setting. Additionally we compared our results with previous literature by reviewing the available data. Although the primary treatment of MFH of the tongue appears to be surgical, improved treatment outcomes with multimodality treatment in other parts of body suggest a potential role for adjuvant RT and/or CT in adjunct to surgery in this rare tumor group.

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