

Maxillary Melanoma

Imogen Brander-McMullen; Bill Gorday, MSc, PA(ASCP)^{CM} (CCCPA)
University of Calgary Pathologists' Assistant Program and Department of Pathology and Laboratory Medicine, Foothills Medical Centre, Calgary, Alberta, Canada



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Background

- Mucosal Melanoma of the oral cavity is a rare and aggressive malignant tumour, accounting for approximately 0.5% of all oral malignancies¹
- Originates from the malignant transformation of the melanocytes of the mucosa or their precursors²
- Characterized by the proliferation of atypical melanocytes at the epithelial-connective tissue interface, associated with upward migration into the epithelium and by invasion of the underlying connective tissue²
- Most often found on the hard palate or maxillary gingiva³
- Average age for oral melanoma is 56 but has been reported affecting ages ranging from 22-83⁴⁻⁶
- Histologically classified as:
 - In situ*
 - Invasive (85%)
 - Combined *In situ* and invasive
- Oral Melanoma Clinical Characteristics^{3,4,5}:
 - Pigmented macule
 - Pigmented nodule
 - Large exophytic lesion
 - Heterogeneous pigmentation (brown, black, tan, red, white or blue)
 - Asymmetry
 - Irregular borders or poorly defined borders
 - Diameter often greater than 6 mm
 - Patients are frequently asymptomatic and pain-free until the late stages of the disease, making early diagnosis challenging

Methods

Clinical History

- Patient presented with left palate pressure, but otherwise no pain or other symptoms
- The dentist observed the patient for a few months
- The patient was referred to a periodontist, who performed a biopsy, which proved that the patient had melanoma
- Physical Examination:
 - The oral cavity and oropharynx appeared to have areas of patchy dark pigmentation involving the left hard and soft palate to the midline and the attached gingiva of the maxillary teeth from the left incisor to the left maxillary tuberosity
- It was noted that the lesion was not well assessed, and the tumour size could not be determined during the physical examination
- CT scan of head and neck was conducted
 - Maxillary known lesion was not well visualized
- Surgical Plan:
 - Maxillectomy with neck dissection
 - Tracheostomy with tube insertion
 - Right-sided creation
 - Free flap

Results

Gross Examination

- Oral Cavity (right maxilla and hard palate); mandibulectomy:
- The black tumour (2.5 cm AP x 1.3 cm ML x 2.4 cm SI) was within the bone and surrounding the roots of multiple teeth of the maxillary sinus floor (**Fig 1, 2**)
 - Distance from margins:
 - The tumour abutted the superior bone margin
 - 0.1 cm from the lateral margin
 - 0.2 cm from the medial margin
 - 0.3 cm from the anterior margin
 - 0.9 cm from the posterior margin
 - Negative for lymphovascular invasion
 - Perineural and bone invasion were present
 - Specimen submitted in toto as 21 blocks submitted with focus on determining invasion at margins, black tumour and pale white nodule (**Fig 2**)
 - Lab also received lymph node-bearing tissue from a right neck dissection submitted in four parts corresponding to levels I-IV
 - 48 lymph nodes were examined, and all regional lymph nodes were negative for metastasis
 - Also received were biopsies of the floor of the nose mucosa, the anterior labial margin, right buccal margin, posterior soft palate margin, and medial skin paddle from the previous flap
 - All biopsies were negative for malignancy
- ### Diagnosis
- Maxillary melanoma
 - Primary tumour staged pT4aN0 according to the AJCC 8th edition staging system

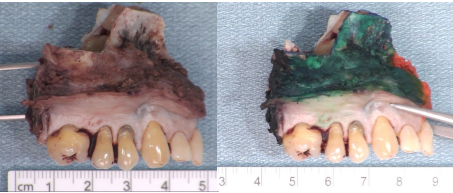


Figure 1. Right lateral view of the maxilla demonstrating the black tumour and its proximity to multiple teeth. Anterior-orange, posterior-black, superior bone margin-blue, lateral green. The photo was sourced from Alberta Precision Laboratories.

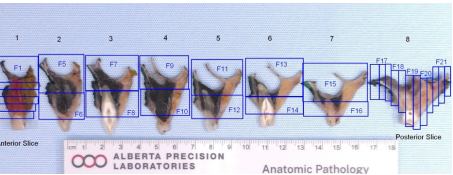


Figure 2. Serial sections of the maxillary melanoma. Demonstrates the size and depth of the black tumour within the maxilla and the mapping of the sections submitted for histology assessment. The photo was sourced from Alberta Precision Laboratories.

Discussion

- Given that clinical presentation varies considerably, often, patients are asymptomatic and experience no pain until the advanced stages, early diagnosis and treatment are critical for improving outcomes^{3,4}
- According to Greene et al. the criteria that can be used to help diagnose primary oral melanoma are:
 - Presence of malignant melanoma in the oral mucosa
 - Exclusion of melanoma at any other primary site
 - Histopathologic observation of melanocytes arranged along the basal layer of the surface epithelium and is termed "junctional activity."
- The etiology of oral melanoma is unknown. It is currently believed that, similarly to cutaneous melanomas, primary oral melanomas arise either from nevus, preexisting pigmented areas or de novo (30% cases)⁵
- Immunohistochemical staining for melanocytic markers such as S-100, HMB-45, and Melan-A can be used to support and confirm the diagnosis of melanoma^{4,5}
- Currently, the most effective treatment method for malignant melanoma is surgery combined with chemotherapy, radiotherapy and immunotherapy⁶
- The prognosis for oral melanoma is quite poor. The reported 5-year survival rate for oral malignant melanoma ranges from 4.5%-29% with the median survival rate of 18.5 months after initial diagnosis⁵
- Survival rates may be increased by early diagnosis and treatment and therefore dentists and physicians should request biopsies for any irregular pigmented lesions⁴

Importance of the Pathologists' Assistant

- On imaging, the radiologist noted that the maxillary lesion was not well visualized and therefore there were no preoperative measurements of tumour size or extent of invasion
- The true size of the mass, the extent of invasion, and the distance to the margins were all established based on the work and findings provided by the pathologists' assistant who handled this case
- This information was essential for accurate tumour staging, which plays a major role in guiding the patient's treatment

Conclusion

- Oral Melanoma is a rare and aggressive cancer that requires early diagnosis for improving prognosis
- Biopsies play a critical role in confirming the diagnosis and should be performed for irregular pigmented oral lesions
- The pathologists' assistant played an important role in gross assessment of the oral lesion, including evaluation of tumour size and extent of invasion, and in aiding the pathologist in accurate staging of the lesion

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