

## **A Pigmented Lesion of the Mandibular Facial Gingiva**

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The following Case Challenge is provided in conjunction with the American Academy of Oral and Maxillofacial Pathology.

### **Case Summary**

A 55-year-old white male was referred by his dermatologist for evaluation of an asymptomatic dark brown lesion on the mandibular facial attached gingiva.

After you have finished reviewing the available diagnostic information, make the diagnosis.

## Diagnostic Information

### History of Present Illness

The patient had been aware of the lesion for approximately two years and stated that it may be increasing in size. No pain or other symptoms were associated with the lesion. The patient denied any history of previous oral lesions or recent dental treatment.

### Past Medical History

The patient's medical history was significant for three separate, primary skin melanomas that had been diagnosed and treated two to three years earlier. The melanoma that was identified first was located on his nose and treated by wide excision followed by reconstruction by means of a forehead flap. Shortly thereafter, two other primary melanomas were discovered on the skin of his back and were excised. The patient also had a history of hypertension, shortness of breath, and elevated cholesterol. He reported an allergy to penicillin and a history of cigarette smoking. His daily medications consisted of aspirin (81 mg), atorvastatin calcium (Lipitor), and metoprolol succinate (Toprol).

### Clinical and Radiographic Findings

Extraoral examination showed evidence of a skin graft on the nose secondary to excision of the previous melanoma. Intraorally, a well-defined brown macule was noted on the facial attached gingiva between teeth #22 and #23 (Figure 1).

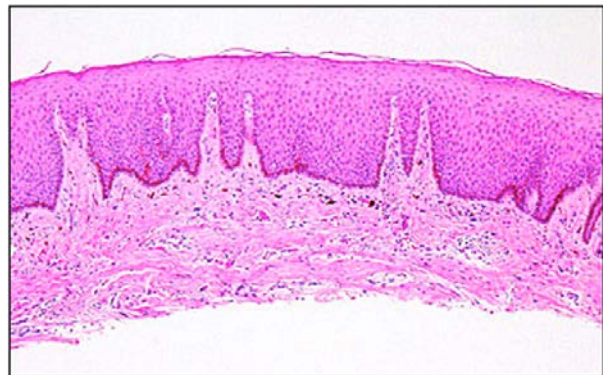
The lesion was 4 mm in diameter and had uniform pigmentation. Periapical radiographs of the area were unremarkable, showing a normal trabecular pattern and no evidence of bone loss.

### Histopathologic Findings

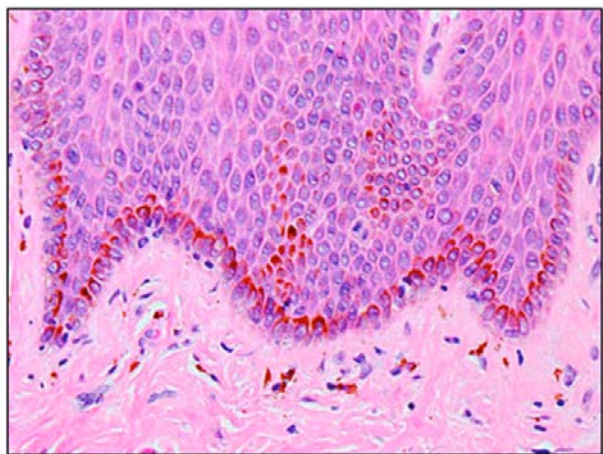
Microscopic examination of the biopsy specimen showed a normal maturation pattern of the epithelium with unremarkable rete ridge architecture. A prominent amount of melanin was localized to the basal and parabasal layers of the surface epithelium (Figure 2). Melanin could also be identified within melanophages in the superficial connective tissue (Figure 3). No melanocytic hyperplasia or atypia was seen.



**Figure 1.** A demarcated brown macule on the facial attached gingiva between #22 and #23.



**Figure 2.** This low-power photomicrograph shows normal surface oral epithelium with melanin pigment concentrated at the tips of the epithelial rete ridges and within the superficial connective tissue (hematoxylin and eosin).



**Figure 3.** This high-power photomicrograph shows melanin pigment localized to the basal keratinocytes of the epithelium and within melanophages in the underlying connective tissue (hematoxylin and eosin).

### Can you make the diagnosis?

A 55-year-old white male was referred by his dermatologist for evaluation of an asymptomatic dark brown lesion on the mandibular facial attached gingiva.



#### Select the Correct Diagnosis

- A. Melanoma
- B. Foreign Body Tattoo
- C. Acquired Melanocytic Nevus
- D. Melanotic Macule

## Melanoma

### Choice A. Sorry, this is not the correct diagnosis.

Oral melanoma is uncommon, accounting for much less than 1% of all melanomas in the U.S. Although oral melanoma can present as a well-circumscribed brown macule initially, most lesions will have irregular, ill-defined borders. Additionally, the overwhelming majority of oral melanomas are found on the hard palate or maxillary gingiva.<sup>1,2</sup> Despite this, the patient's

history of previous melanomas warrants a biopsy to exclude this diagnosis. Microscopically, oral melanoma is characterized by the presence of atypical melanocytes within both the basal layer of the epithelium and the underlying connective tissue. The malignant cells often appear spindle-shaped or epithelioid and demonstrate pleomorphism and hyperchromatism. The absence of melanocytic hyperplasia or atypia in the biopsy specimen eliminates melanoma as a diagnostic consideration.

Please re-evaluate the information about this case.

## Foreign Body Tattoo

**Choice B. Sorry, this is not the correct diagnosis.**

The gingiva is indeed a common location for embedded foreign material, particularly dental amalgam.<sup>3</sup> These lesions are flat in nature, and the color of the mucosa can range from black,

brown, blue, or gray, depending on the type of foreign material and how deeply it is embedded. The lack of dental treatment during the past two years when the lesion became evident would argue against this diagnosis. In addition, no foreign material was identified in the biopsy specimen.

Please re-evaluate the information about this case.

## Acquired Melanocytic Nevus

**Choice C. Sorry, this is not the correct diagnosis.**

Although most intraoral nevi occur on the palate or gingiva, these lesions are extremely uncommon.<sup>4,5</sup> It would be particularly unusual for

an acquired melanocytic nevus to develop after 35 years of age. The absence of characteristic nevus cells in the biopsy specimen excludes this diagnosis.

Please re-evaluate the information about this case.

## Melanotic Macule

### Choice D. Congratulations! You are correct.

The oral melanotic macule is a benign mucosal lesion caused by a focal increase in melanin production. Although it could represent a reactive or physiologic process, the true etiology is unknown. Excluding amalgam tattoos, the melanotic macule is the most common solitary, pigmented lesion found on the oral mucosa.<sup>6</sup> Females are affected twice as often as males, and the average age at diagnosis is 43 years. Over 80% of biopsied lesions come from Caucasian patients.<sup>7,8</sup>

Clinically, the melanotic macule presents as an asymptomatic, flat, brown lesion with well-defined borders and uniformly distributed pigmentation. Some lesions may be black or blue in color.<sup>9</sup> The lower lip vermilion is the most common location, followed by the gingiva, palate, and buccal mucosa. Lesions are typically round or ovoid with a mean diameter of 7 mm. Only about 12% of oral melanotic macules are greater than 10 mm in size.<sup>7</sup> Melanotic macules may develop rapidly but generally do not increase in size thereafter.<sup>9</sup>

Microscopic examination shows increased amounts of melanin in the basal and parabasal layers of the surface epithelium. The epithelium is otherwise normal in its morphology and maturation pattern. Melanin is also found frequently in the underlying connective tissue (melanin incontinence), either free or within melanophages.<sup>9</sup> In fact, over 90% of lesions show melanin in both the epithelium and superficial connective tissue.<sup>7</sup>

Treatment is generally not necessary unless the lesion is a cosmetic concern. As a rule, oral melanotic macules have no malignant biologic potential. However, a recent report documented a case of a histopathologically benign oral pigmentation that transformed into oral melanoma over a period of seven years. While initial biopsies of this particular lesion showed histopathologic alterations identical to those seen in melanotic macules, the clinical appearance of the lesion was atypical in terms of its large size and irregular borders.<sup>10</sup> Because early melanomas can appear similar to melanotic macules, any pigmented lesion of unknown duration, recent onset, or other suspicious features should be evaluated microscopically.<sup>9</sup> This is particularly true for lesions on the hard palate and maxillary gingiva, where oral melanoma is most often located.<sup>6</sup>

## References

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## About the Authors

*Note: Bio information was provided at the time the case challenge was developed.*

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