

## Mass in the Upper Lip

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

### Case Summary

A 45-year old white woman presented with a chief complaint of a loose crown on the maxillary right central incisor. There was a gray-black pigmented area on the alveolar mucosa in the apical region of the maxillary left central incisor and a firm mass in the left upper lip.

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

## Diagnostic Information

### History of Present Illness

The patient had the chief complaint of a loose crown on the maxillary right central incisor, which had been recemented three times previously. The crowns had been placed on the right and left central incisors 26 years previously. During the examination a lump was observed in the upper lip which the patient reported had been present for about 6 years. She said it did not bother her, and she felt that it did not alter her facial appearance. She did not remember any trauma to the area that coincided with the development of this lip swelling.

### Medical History

The patient reported a history of environmental allergies and sinus congestion for which she took medication. She had a physical examination with adjunctive laboratory studies approximately one year ago, and she stated the results of this medical evaluation were satisfactory.

### Clinical Findings

There was a gray-black discoloration of the alveolar mucosa overlying the apex of the maxillary left central incisor. (Figure 1) External clinical examination revealed subtle fullness of the left upper lip. (Figure 2) Intraoral examination showed erythema of the labial marginal gingiva adjacent to the right maxillary central incisor. In addition, there was firmness to the left upper lip. The skin and mucosal surfaces overlying the enlargement were normal in appearance. The firm, fixed, and nontender lip mass measured 1.5 x 1.2 x 0.7 cm.



**Figure 1.** Gray-black pigmentation in the apical area of the left central incisor and a firm, non-movable mass in the upper lip.

### Radiographic Findings

A periapical radiograph was taken of the maxillary incisor region, which revealed previous endodontic therapy of the central and left lateral incisors and an apical retrofill procedure of the left central incisor. (Figure 3) In addition, a radiograph was taken of the soft tissue of the left upper lip to determine if there was evidence of entrapped amalgam or other foreign material. (Figure 4)



**Figure 2.** Subtle fullness just to the left of the midline of the left upper lip.



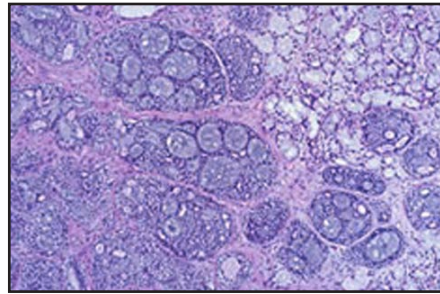
**Figure 3.** Periapical radiograph showing root canal therapy and retrofill with amalgam debris in the periapical area.



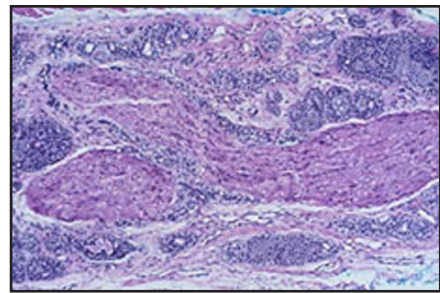
**Figure 4.** Soft tissue radiograph of the upper lip showing no evidence of amalgam particles or other foreign material.

### **Incisional Biopsy and Photomicrographs**

An excisional biopsy was attempted of the upper lip mass. Microscopic examination revealed minor salivary gland tissue, fibrous connective tissue, muscle, nerve, and blood vessels. Throughout the specimen were lobulated, rounded islands and cords of isomorphic cells with scant cytoplasm and dark blue nuclei. (Figure 5) Within the islands of darkly staining cells were prominent “cystic” spaces filled with pale blue, homogenous, and acellular material. These islands and cords of cells infiltrated through the salivary gland tissue, muscle, and fibrous connective tissue. The infiltrating islands of cells extended to the margins of the surgical specimen. In areas, perineural invasion by the tumor cells was identified. (Figure 6)



**Figure 5.** Islands of cells with “cystic” spaces filled with light blue acellular material. The islands are infiltrating the normal salivary gland tissue.



**Figure 6.** Islands of tumor cells in close approximation to a moderate-sized nerve.

### Can you make the diagnosis?

A 45-year old white woman presented with a chief complaint of a loose crown on the maxillary right central incisor. There was a gray-black pigmented area on the alveolar mucosa in the apical region of the maxillary left central incisor and a firm mass in the left upper lip.



### Select the Correct Diagnosis

- A. Adenoid Cystic Carcinoma
- B. Mucus Escape Reaction (Mucocele)
- C. Metastatic Melanoma
- D. Irritation Fibroma
- E. Foreign Body Reaction

## Adenoid Cystic Carcinoma

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

Adenoid cystic carcinoma is one of the most common malignant tumors of both major and minor salivary glands. Although uncommon in the lower lip, a salivary gland neoplasm should be considered when there is a localized submucosal enlargement of the upper lip. An appropriate clinical differential diagnosis for this presentation includes a salivary gland tumor, irritation fibroma, neurofibroma, and other firm mesenchymal neoplasms.<sup>1</sup> Approximately 85% of all labial salivary gland tumors occur in the upper lip.<sup>2,3</sup> Of these upper lip neoplasms, 80% are benign and represent canalicular adenoma or pleomorphic adenoma.<sup>3</sup>

Adenoid cystic carcinoma has a classic well-recognized microscopic pattern that has been described as “cribriform” (Figure 5). Well-defined islands of dark staining cells characterize this pattern. These islands contain multiple cyst-like spaces that contain a mucoid appearing material. There are two other recognized microscopic patterns of adenoid cystic carcinoma: the

“tubular” pattern, where there are multiple ductlike structures in a hyalinized connective tissue background, and the “solid” pattern, which has neither the cystlike or ductlike spaces and may show increased mitotic activity and focal necrosis. Another typical microscopic finding of adenoid cystic carcinoma is the tendency for the tumor cells to demonstrate perineural invasion. (Figure 6)

Adenoid cystic carcinoma of minor salivary glands is a malignancy that is difficult to impossible to irradiate by any therapy. Due to its infiltrative nature and tendency for extensive perineural spread, it is difficult to completely excise with surgery. Often, due to a known or suspected positive surgical margins, postoperative radiation therapy is provided. Late local recurrence and distant metastasis often mark the course of this neoplasm. For this reason, the five-year survival rate may be deceptively high, only to show steadily decreasing survival at 10-15 years, with only a few survivors after thirty years. The aggressiveness of the tumor and the rapidity of its course are related to a number of different factors: histology (solid pattern with a more rapid course), size, location, and “ploidy” of the cells.<sup>4</sup>

## Mucus Escape Reaction (Mucocele)

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

Mucus escape reaction (mucocele) is a lesion that is secondary to traumatic severance of a salivary gland duct. This leads to pooling of mucus in the submucosal connective tissue. More superficial mucoceles will have the appearance of a fluid filled swelling, while deeper ones will appear as a normal-colored soft tissue mass. Typically, they will increase in size and then decrease as they spontaneously drain or are ruptured by the patient. Common locations are the lower lip, the floor of the mouth (ranula), and the anterior ventral surface of the tongue (when the glands of Blandin and Nuhn are involved).

Treatment consists of surgical excision of the cystlike lesion along with the “feeder” salivary glands in the immediate vicinity. Sometimes marsupialization is attempted for large floor of the mouth ranulas. The glands may eventually reestablish consistent drainage or the “feeder” glands may undergo sclerosis and degeneration leading to spontaneous resolution of the problem.

Mucus escape reaction is one of the most common causes of a submucosal swelling of the lower lip.<sup>1</sup> Surprisingly, they are very uncommon in the upper lip. In addition, the microscopic features of this case do not support this diagnosis.

Please re-evaluate the information about this case.



## Metastatic Melanoma

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

Metastatic melanoma to the labial mucosa would most likely represent hematogenous spread from a primary cutaneous lesion. Cutaneous melanoma is the third most common form of skin cancer and the most deadly due to early metastasis to regional lymph nodes and to distant sites through the blood. Most melanomas are seen in white adults, and 25% occur in the head and neck area. They may arise in preexisting pigmented lesions or *de novo*. Damage due to sunlight is thought to be a major causative factor with acute blistering burns particularly predisposing. Blond and redheaded individuals, who tend to burn rather than tan, are more susceptible to melanoma.

Oral melanoma is a rare malignancy in the United States. It is more commonly diagnosed in individuals of Japanese or African race/ethnicity, elderly individuals, and males. About 80% of

tumors occur in the palatal or maxillary alveolar mucosa.<sup>5</sup> An individual who demonstrates either a metastatic melanoma to the oral mucosa or a primary oral lesion has a very poor prognosis.

The microscopic features of melanoma are cells that may demonstrate a wide range of pleomorphism and hyperchromatism. Often the malignant cells contain varying amounts of melanin pigment that is recognized by routine light microscopy. Occasionally special immunohistochemical studies are required to identify the tumor cells as malignant melanocytes.

Although a melanoma may produce a pigmented lesion and a swelling of the oral mucosa, as seen in this case, the radiographic findings suggest the pigmented lesion of the mucosa over the apex of the left central incisor is an amalgam tattoo secondary to an apical retrofill. In addition, the microscopic features of the lip lesion are not consistent with the diagnosis of melanoma.

Please re-evaluate the information about this case.

## Irritation Fibroma

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

Irritation fibroma is a good consideration for a submucosal mass of the upper lip.<sup>1</sup> Irritation fibroma (traumatic fibroma or just “fibroma”) is not a true neoplasm, but rather a reactive hyperplasia of fibrous connective tissue in response to chronic irritation. Common causes of irritation include chronic biting and habitual sucking on the mucosa of the cheek or lip, especially if a large diastema or an edentulous space exists. Although the most common location of irritation fibromas is the buccal mucosa along the occlusal plane,

it may occur at any oral site that is repeatedly traumatized. Unlike the present case, most irritation fibromas are well delineated and more superficial in location.

The microscopic picture is usually very bland and is characterized by a nodular mass of fibrous connective tissue surfaced by mucosal epithelium that is often slightly hyperkeratotic due to the chronic irritation. Excised irritation fibromas should be examined microscopically to rule out the possibility of a neoplastic process. In the present case, the microscopic features do not support the diagnosis of an irritation fibroma.

Please re-evaluate the information about this case.



## Foreign Body Reaction

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

A foreign body reaction is a consideration for this submucosal swelling due to the history of surgery in the anterior maxilla. Displacement of amalgam particles or other foreign materials into the soft tissues from the apical retrofill or a residual tooth fragment entrapped in the lip following an accident are possible explanations. In this case the radiograph of the soft tissue of the lip does not reveal any evidence of amalgam or tooth fragments. In addition, the microscopic features do not support a foreign body reaction.

Microscopically, evidence of amalgam or tooth fragments would be seen in the tissue sections. If the foreign material was comprised of finer particles, granulomatous inflammation and foreign body giant cells could be the only evidence of the reaction. If the foreign material is not identified with routine light microscopy, polarized light may assist in demonstrating the exogenous material if it is refractile. If there is granulomatous inflammation and no obvious foreign material, then infectious disease due to acid-fast or fungal organisms needs to be ruled out with special histochemical stains.

Please re-evaluate the information about this case.

## References

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## About the Author

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

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