

Breast Metastasis around Dental Implants: A Case Report

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ABSTRACT

Background: Metastases to the oral cavity and to the jaws are rare; hence, the clinical manifestations of the oral metastasis lesion could frequently be simulating general pathologic entities, making the diagnosis a challenging process to the dental team. Local factors, such as trauma, have been observed to facilitate the growth of blood-borne tumors. To this end, surgical procedures such as fixture placement might cause cancer cells to spread.

Purpose: Careful clinical examination is a valuable help in diagnosing oral lesions, which can improve the quality of life of patients and reduce the risks of oral complications.

Materials and Methods: A female patient was referred to the clinic with symptoms of irritation, swelling, and pain associated with implants in the mandible and the maxilla.

Results: Clinical examination, x-ray, and histopathology revealed that the patients suffered from a metastatic lesion, primary tumor being an adenocarcinoma of the breast diagnosed at the same time.

Conclusion: Optimal clinical examination in conjunction with radiography and histopathology is a necessity in order to discover malignant lesions in time. Routine dental check-ups must comprise more thorough soft-tissue examination.

KEY WORDS: cancer metastasis, dental implants, oral rehabilitation, tumor spread

INTRODUCTION

Metastases to the oral cavity and the jaws are uncommon, estimated to comprise only about 1% of newly diagnosed oral malignancies¹⁻⁴ and involvement of both the maxilla and the mandible is extremely rare.³

Local factors have an influence on the site and the growth of metastases, and trauma has been observed to facilitate the growth of blood-borne metastases.^{2,5-7}

The clinical manifestations frequently simulate common pathologic entities, such as toothache, osteomyelitis, inflammatory hyperplasia, reactive lesions, periodontal conditions, pyogenic or giant cell granuloma, and others. Hence, it is essential to have

a biopsy taken in order to obtain a definitive diagnosis.^{1,8-12}

Detection of the oral lesions has great importance as they may be diagnosed first by the patient's dentist or by the maxillofacial surgeon. The lesion can indicate the presence of a metastasis until a malignant primary tumor is diagnosed.¹⁰

In this report, we describe the first case in the literature of a metastatic breast carcinoma to the mandible and the maxilla, around dental implants, the recognition of which led to a cancer diagnosis of this patient and illustrates the importance of routine dental examination.

CASE REPORT

In August 2002, a 67-year-old woman was referred with irritation, swelling, and pain in the gums, associated with poor hygiene and halitosis.

She reported two oral surgeries in the last year performed by her private dentist. In July 2001, she underwent a bone grafting procedure. Unfortunately, healing was compromised by the development of osteomyelitis, for which she required antibiotic therapy.

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In December 2001, eight intraosseous dental implants were placed, four in the maxilla and four in the mandible.

The patient's medical history revealed that in July 2002 she was diagnosed with a simultaneously occurring breast cancer and an amelanotic tumor in the left eye, which eventually spread, giving rise to metastases in the lungs, bone, liver, and brain. Upon extraoral examination, no relevant signs were noted.

Intraoral examination revealed that the patient was totally edentulous, with eight visible metal implants. The soft tissues surrounding the implants were ulcerative and inflamed, showing evidence of a high vascular activity. The four maxillary implants had a grade III mobility (Figure 1A). No mobility was noted of the four mandibular implants (Figure 1B).

The patient complained of pain and difficulty in performing oral hygiene. There was significant plaque

accumulation around the implants, and she had a prominent halitosis.

Radiographic examination showed horizontal and vertical bone loss in the maxilla, including around the implants.

The image of the mandible showed recent tooth extractions but no significant bone loss, including the area of the implants (Figure 2).

The differential diagnosis for the lesion included differential diagnosis of pyogenic or giant cell granuloma, inflammatory reaction, osteomyelitis, and metastatic lesion.

An incisional biopsy of the mandible and at the maxilla gingival was performed to provide the correct diagnosis. The histological features confirmed it to be metastatic carcinoma from the breast to the mandible and maxilla (Figure 3).

When the patient returned, 8 days after the biopsy, an increase of the lesions was noted (Figure 4), and she also reported low-grade numbness in the lower lip. Local cleaning was performed and topical rinse was prescribed to facilitate the oral hygiene. The patient was referred to an oncologist to continue palliative treatment with radiotherapy and chemotherapy already established.

The patient died in October 2002, 3 months after the diagnosis.

DISCUSSION

The jaws are considerably less frequently involved in metastatic lesions than other parts of the skeleton.^{1,2,3,10,11}

The oral sites to which metastasis most commonly occur are, in descending order, the jaws, the gingiva (mandible/maxilla), and the tongue;^{3,5,8,10} however, involvement of both the mandible and the maxilla is rare.⁹

The most common symptoms associated with metastases are pain, swelling,^{1,2,3,8,9} presence of intraoral mass,^{1,2,8,9,10} teeth mobility,^{1,2,3} gum irritation,^{2,10} halitosis, numbness or paresthesia of the lower lip,^{2,10} and trismus.^{1,11}

The patient in the present report presents with severe pain, halitosis, swelling and gum irritation in both jaws, and implant mobility in the maxilla, but no numbness or paresthesia.

According to Epker and colleagues,⁸ breast cancer may metastasize to the bone and progress without signs, symptoms, or radiographic change. Most often, however,

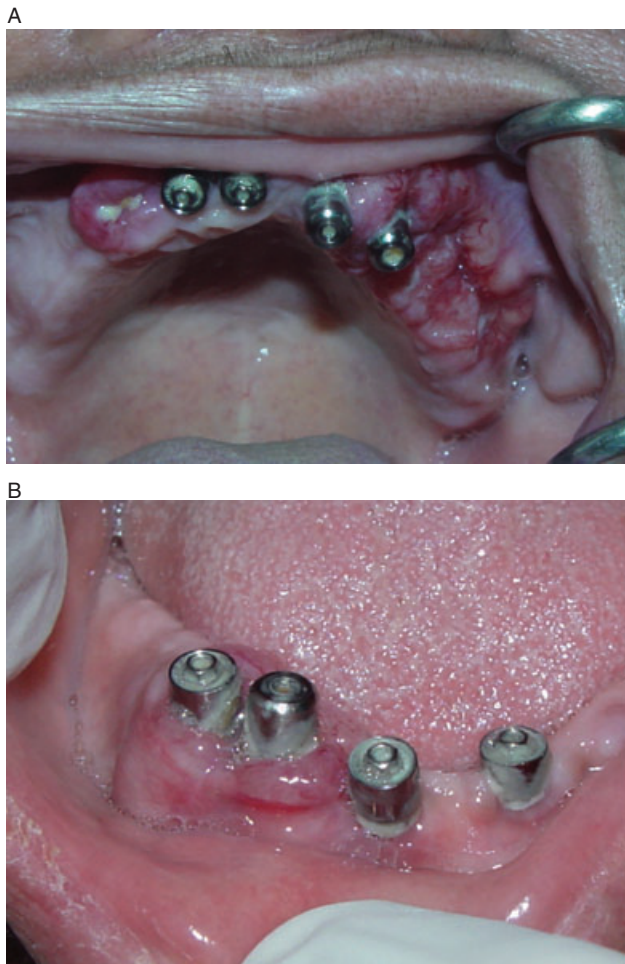


Figure 1 Intraoral photos, August 8, 2002. A, Showing affected implants and surrounding soft tissues of the maxilla. B, Intraoral view of part of the mandible, implants, and mucosa.

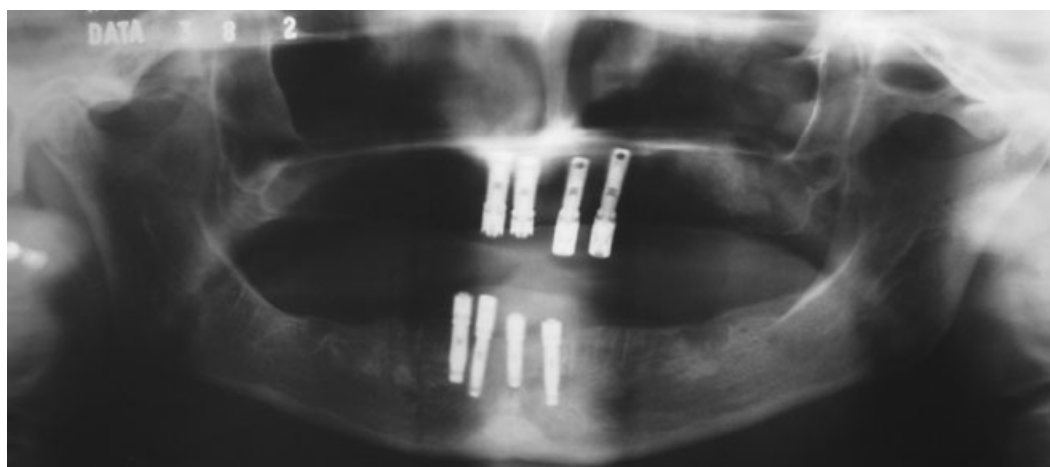


Figure 2 OPG taken at same visit, August 8, 2002. No significant bone loss around the implants can be seen.

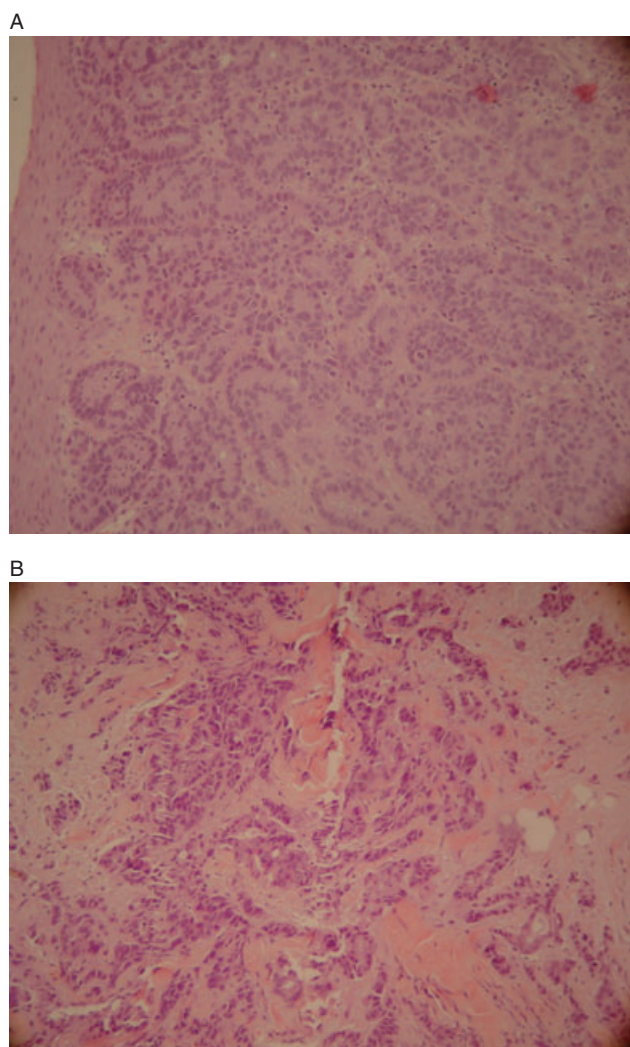


Figure 3 A, Section from the biopsy taken of the oral lesion, August 8, 2002. Hematoxylin-eosin staining. B, Section from a biopsy taken from the primary tumor in the breast. Hematoxylin-eosin staining. Note the resemblance of the two sections, showing metastatic carcinoma.

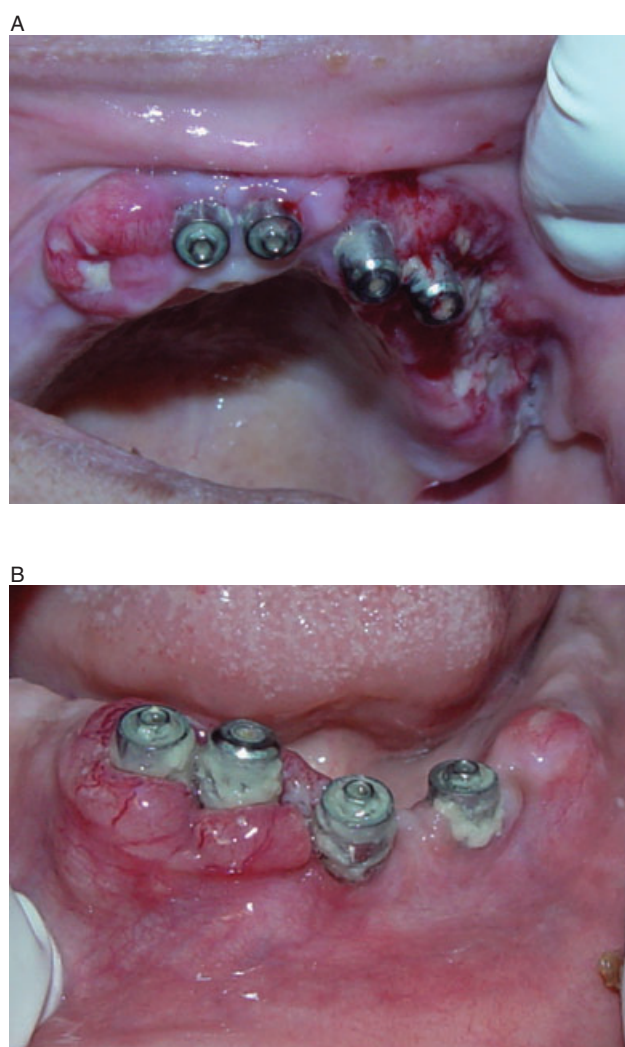


Figure 4 Intraoral photos, August 16, 2002. A, View of the maxilla, implants, and affected soft tissues. B, Mandible and soft tissues surrounding the implants.

pain in the affected bone is the first symptom noted. During progression, the radiographic presentation is usually a radiolucent area with a hazy outline. However, these lesions can also manifest as radiopaque or sclerotic areas. Sometimes, the lesion may simulate an infected cyst or osteomyelitis. The entire mandible may also have a moth-eaten appearance.¹ In this case, the radiographic appearance were osteolytic areas in the maxilla associated with the implants. However, based on the initial symptoms of pain and, at the second assessment, the manifestation of a low-grade numbness of the lower lip, the jaws were considered involved. This 1-week increase of the symptoms has been described by McMillan and Edwards.⁹ To complete the diagnosis, biopsies remain essential.^{8,10} Histopathology showed the metastatic lesion to be related to the first primary tumor, an adenocarcinoma, of the patient's breast. In agreement with the literature, it was shown to be the predominant histological type of adenocarcinoma seen in women.^{1,2,3,8,9,10}

The primary site from which metastasis to the oral mucosa occur in women are the breasts, and metastasis usually involves the jaw bones,² whereas soft tissues are involved in only 0.1% of all oral lesions.¹⁰

Sometimes the discovery of an oral metastasis leads to the detection of a primary malignancy elsewhere in the body, and just as with this patient, the metastatic lesions were diagnosed simultaneously with the primary tumor.

Trauma has been observed to facilitate the growth of blood-borne tumors,⁷ and this possibility stems from the entrapment of tumor cells during clot formation in fresh wounds and to the fact that malignant cells grow more rapidly in areas of high cellular proliferation, such as regenerating tissue, mediated by host-generated growth factors.

Teeth with chronic inflammation also seem to be favored by gingival metastasis, that is, circulating tumor cells may become entrapped by the rich capillary network of the chronically inflamed gingiva.^{2,5}

According to this, probably the manipulation of the tissue, on the past oral surgeries, to bone grafting procedures, and later placement of implants, could be an important factor associated with the spread of tumors to the jaws.

This clinical situation illustrates the importance of a good medical history review by the dentist prior to all procedures. Probably, when the patient was submitted to

oral surgery procedures, she already had the breast cancer, which unfortunately was not diagnosed. This case report serves as evidence to this situation and points to the importance of careful screening at routine dental examinations.

Metastatic tumors of the jaws, from distant organs and tissues, may be diagnosed first by the oral surgeon, and most of the patients with oral metastasis may have seen another dentist recently but the condition has not been diagnosed.⁸

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