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CASE REPORT

# Acute maxillary sinusitis following bisphosphonate-associated osteonecrosis of the upper jaw: a case report

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## ABSTRACT

Odontogenic sinusitis accounts for approximately 10% of maxillary sinusitis cases. Bisphosphonate-associated osteonecrosis is largely reported, frequently in the mandible. This type of medication is used to treat osteoporosis, multiple myeloma and bone metastases. Sporadic cases of upper jaw osteonecrosis associated with maxillary sinusitis have been reported so far. The aim of this article was to present a case of upper jaw osteonecrosis involving maxillary sinus and to evaluate therapeutic outcome. We present a case of a 63 years old woman with osteonecrosis in the right upper jaw after extraction of the first molar in a dental office 8 weeks previously. The nature of the disease, the diagnosis and treatment protocols are presented. In conclusion, Bisphosphonate-associated osteonecrosis of the jaw has a severe evolution. Any treatment should be minimal, with the lowest possible local morbidity.

**KEYWORDS:** Bisphosphonate-related osteonecrosis of the jaw, sinusitis maxillaris, oroantral fistulae

## INTRODUCTION

Odontogenic sinusitis accounts for approximately 10% of maxillary sinusitis cases. Sinusitis originating from an odontogenic source differs in its pathophysiology and management from sinusitis due to other causes[1]. It usually occurs when the Schneiderian membrane is disrupted by conditions such as infections originating from the maxillary teeth, or iatrogenic causes such as dental extractions, not properly treated oroantral fistula, root canal therapy and placement of dental implants[2].

Osteonecrosis of the jaws has been reported as a relatively common complication of bisphosphonate therapy in the last years[3]. This type of medication is used to treat osteoporosis, multiple myeloma and bone metastases related to malignant tumours.

Bisphosphonate-associated osteonecrosis is largely reported, frequently in the mandible. However, sporadic cases of upper jaw osteonecrosis associated with maxillary sinusitis have been reported so far[4].

In this paper, we report a case of bisphosphonate-associated osteonecrosis that developed into acute maxillary sinusitis as a complication.

## CASE REPORT

A 63 years old woman attended the Oro-Maxillo-Facial Department of "Carol Davila" University in Bucharest for examination of a non-healing chronic wound. The patient suffered from osteonecrosis in the right upper jaw after extraction of the first molar in a dental office 8 weeks previously. Patient`s medical records described a breast cancer diagnosed 4 years earlier. Due to multiple osseous metastases, the patient had been treated with Zoledronic acid for 1.5 years.

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**Figure 1** Exposed necrotic bone in the maxilla 8 weeks after right upper canine extraction

**Figure 2** Oroantral fistula

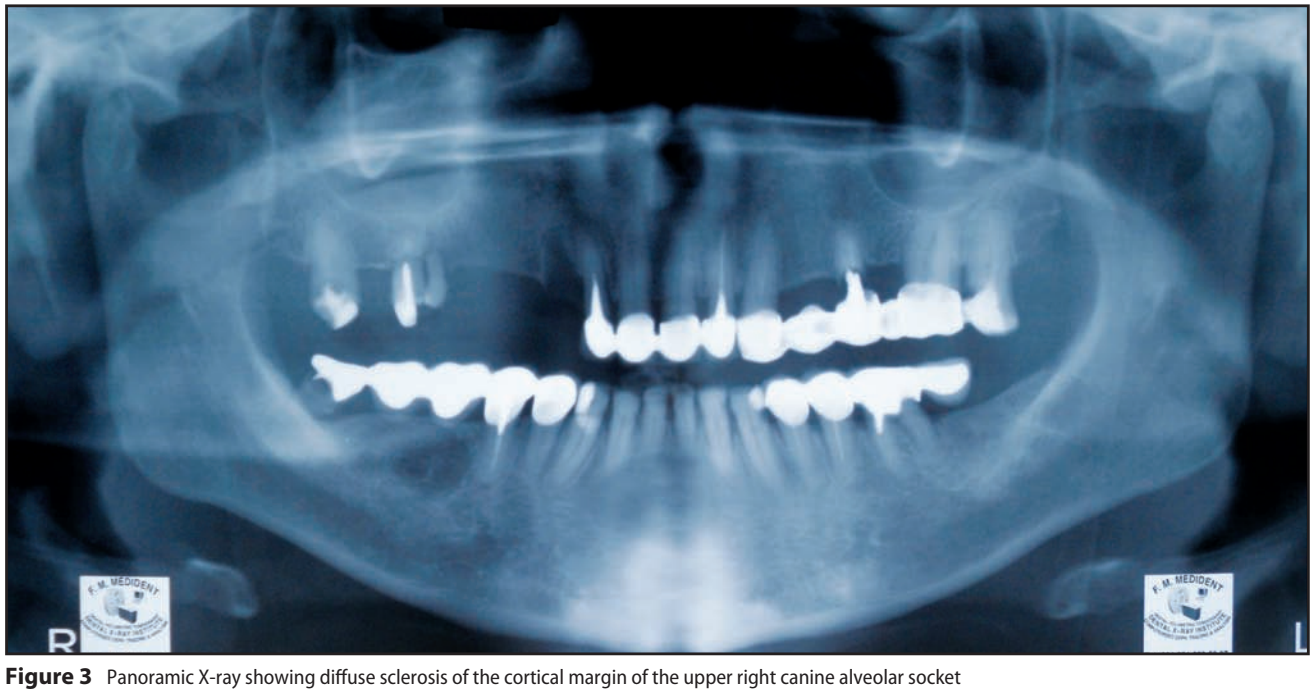

**Figure 3** Panoramic X-ray showing diffuse sclerosis of the cortical margin of the upper right canine alveolar socket

The main local finding was a healing disturbance immediately after right maxillary canine extraction, which was considered a dry socket. Therapy with Amoxicillin prescribed by the patient's dentist was without effect. After consultation with the oncologist, drug therapy was changed to oral Ibandronate sodium.

Two months after extraction, the patient was referred to our Department for evaluation and treatment of the therapy-resistant lesion in the maxilla. Clinically, there was exposed necrotic bone in the region of the first premolar, second premolar and first molar in the right upper jaw (Figure 1).

On palpation, the second molar was mobile but not tender. There was an oroantral fistula (Figure 2).

Panoramic X-ray showed a diffuse sclerosis of the cortical margin of the alveolar sockets along the area of the extraction site (Figure 3).

Treatment started with clindamycin (450 mg daily) for 10 days.

The superficial necrotic bone was excised under local anesthesia and sent for histologic examination. Histopathology revealed typical hallmarks of osteonecrosis with areas with inflammatory infiltrate, acellular necrotic debris, wide acellular ne-

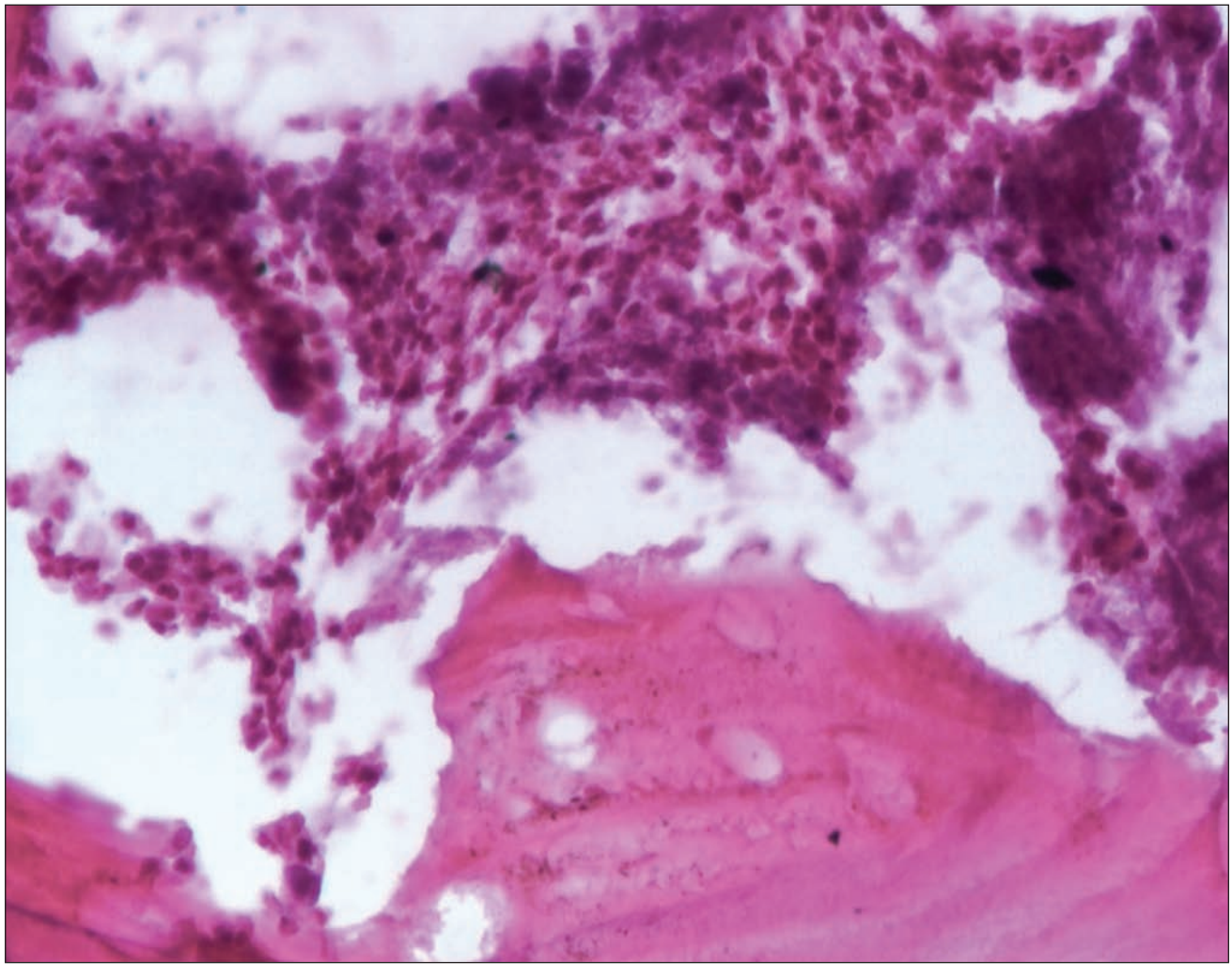

**Figure 4** Photomicrograph displaying chronic osteonecrosis (haematoxylin-eosin stain, original magnification x 20)

crotic sequestra and large Haversian canals (Figure 4). A metastasis of the breast cancer was also excluded.

Intraoral wound treatment was carried out daily in our outpatient facility, with local antimicrobial rinses. In the next three months, the patient attended our clinic weekly. During the last follow-up examination, the patient complained of mucopurulent nasal discharge. The sinus X-ray showed a complete opacification of the right maxillary sinus, corresponding to a subacute suppurative maxillary sinusitis associated with upper jaw osteonecrosis (Figure 5).

The sinus was irrigated with physiologic salt solution and intravenous metronidazole (500 mg daily) was administrated for 10 days.

Microbiologic analysis showed high colony counts of penicillin-sensitive *Viridans Streptococcus* and beta-hemolytic group F *streptococci* by culture methods and Gram-positive.

After four months, the maxillary sinus remains open and the exposed bone has not healed, but is stable and has not expanded (Figure 6). The patient shows no infection and reports no pain.

## DISCUSSIONS

About 50% of chronic maxillary sinusitis cases have a dental origin[5]. Jaw infection after tooth extraction, and consecutive osteonecrosis associated with bisphosphonate treatment may lead to odontogenic sinusitis[6].

Bisphosphonate-associated osteonecrosis of the jaw is both clinically and radiologically comparable to a typical osteoradionecrosis.

Antibiotics have poor results because of the limited access to bone when avascular osteonecrosis has occurred.

Surgery, as conservative as possible, should be kept for those patients who are symptomatic and have lesions that are refractory to antimicrobial and antibiotic therapy[7].

**Figure 5** Sinus X-ray showing partial obliteration of the right maxillary sinus

**Figure 6** After 4 months, the maxillary sinus is open, but no infection is present

## CONCLUSIONS

Bisphosphonate-associated osteonecrosis of the jaw has a severe evolution. Any treatment should be minimal, with the lowest possible local morbidity.

Cancer patients' quality of life should not be interfered with by extended oral surgery.

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