

Bisphosphonates and Osteonecrosis of the Jaw: Dental Care Protocols

Bisphosphonate medications are linked to a risk of osteonecrosis of the jaw. Care guidelines are based on expert opinion but clinical decisions are left up to practitioners. The following protocols have been developed by the BC Cancer Agency Department of Oral Oncology. Case by case professional judgment, in consultation with an educated patient is recommended.

What are bisphosphonate medications?

Bisphosphonates are a class of medications which include pamidronate (AREDIA®), zoledronic acid (ZOMETA®), alendronate (FOSAMAX®), risedronate (ACTONEL®), etidronate (DIDRONEL®), clodronate (BONEFOS®, OSTAC®) and ibandronate (BONAVIA®).

Bisphosphonates are used intravenously to treat cancers with metastatic spread to bone, to prevent hypercalcemia of malignancy, for multiple myeloma, and for Paget's disease. They are used orally to treat osteoporosis and osteopenia.

Bisphosphonates decrease bone turnover by disabling osteoclast and osteoblast function. They may also inhibit intraosseous blood vessel formation, as is the case with radiation treatment. However, unlike osteoradionecrosis, increasing angiogenesis with hyperbaric oxygen does not appear to alleviate bisphosphonate osteonecrosis.

What is bisphosphonate osteonecrosis?

In this condition, areas of necrotic bone become exposed and do not heal. It can occur spontaneously, due to dental disease or secondary to dental therapy. Approximately 60% of the reported cases have followed dentoalveolar surgery.



Spontaneous Bisphosphonate Osteonecrosis



Post-Extraction Bisphosphonate Osteonecrosis

Early bisphosphonate osteonecrosis may present with symptoms such as tooth mobilities, soft tissue swelling or infection, parasthesia, feeling of “heavy jaw”, undiagnosed oral pain, or a sudden change in periodontal/mucosal health.

The spontaneous form usually presents as a painless oral ulceration with a smooth or ragged border of inflamed mucosa, exposing necrotic bone. The bone sequestra sometimes slough off or can be easily removed. In severe cases, mostly associated with dentoalveolar surgery, there is chronic pain, swelling, irreversible dysfunction and disfigurement of the jaw. In extreme cases, jaw fracture can occur.

Dental Care Protocol for Patients Prescribed Bisphosphonates

Currently, prevention is the only known way to address this complication. Complete prevention is not possible, but the patient’s risk can be decreased by ensuring that invasive dentoalveolar treatment is not required. A complete and up to date medical history is required for all patients. Recognize that those with any significant history of bisphosphonate use are at permanent risk.

A thorough oral assessment for patients about to begin therapy with bisphosphonates is required.

Initiation of bisphosphonate therapy should be postponed if possible, until an optimal dental condition is achieved.

The pre-bisphosphonate dental appointments should establish a dentition that the patient can maintain for the rest of their life.

Informed consent should be obtained, with a signed patient released.

For patients who are already taking bisphosphonates:

- Complete oral, dental and radiographic examination.
- A traumatic non-surgical periodontal therapy. Meticulous oral hygiene will be mandatory. Home care instruction and education regarding lifelong osteonecrosis should be done. Cariogenic diet, smoking and excessive alcohol should be avoided.
- Routine restorative treatment should be encouraged, to prevent future dental problems.
- Aggressive non-surgical management of dental infections. Extractions should be avoided in favour of endodontic treatment and if necessary coronal amputation.
- Place cast restorations on heavily restored teeth to reduce the risk of coronal fracture. Care with or avoidance of retraction cord is recommended. Crown lengthening surgery is contraindicated in patients on intravenous bisphosphonates and is high risk in patients taking oral treatment.
- Evaluation of prostheses for proper fit. Frequent adjustments are recommended to prevent irritation or trauma. Occlusal splints should not contact soft tissues and should be kept meticulously clean.

If extractions are required, consultation should be made with the patient's physician (and oncologist if applicable). Referral to an oral surgeon familiar with bisphosphonate osteonecrosis is recommended if possible.

Bisphosphonate osteonecrosis usually occurs two to three months after dentoalveolar surgery. Immediately see patients taking bisphosphonate medications for evaluation of suspicious changes or symptoms.

If bisphosphonate osteonecrosis occurs, refer immediately to a dentist or oral surgeon experienced with this condition and report the event to Health Canada.

For more detailed information on this topic and for a sample patient release form, please go to the BC Dental Association website, member page at bcdental.org.