

# Osteonecrosis of the Jaw Associated With Bisphosphonates

Deborah Pate, DC, DACBR

This is a personal story about a problem I was unaware of and probably should have been more informed about. I feel compelled to share this information with you, even before I am completely informed on the topic. Please note that I am not a dentist and have very little knowledge of jaw or diseases of the teeth, except for radiographic changes as they relate to musculoskeletal diseases.

I recently was surprised at the dentist's office to find that Fosomax has a very serious side effect. My dad is soon to be 92 and has never had any real problems with his teeth; in fact, he had all his teeth until this incident. He fractured a tooth eating - we don't know exactly what happened but it fractured right at the gum line, which made it impossible to put a cap on the leftover fragment. Because there was not enough tooth left to support a crown, it needed to be extracted. This was a rather emotional experience for my father. He feels as if he is losing all his energy and function, and the tooth was a real surprise because he has never had any dental problems.

Back to the story: While we were in the oral surgeon's office to have this tooth extracted, I was filling out all the forms for him and just happened to add that he was taking Fosomax. Later, we were waiting while the surgeon was examining the X-rays. Of course, I was looking at the X-ray, too, and the surgeon turned to me and said, "I think I can do it. His tooth is healthy and the jaw looks healthy, even though he is on Fosomax." Well, being the responsible daughter, I said, "What do you mean? What does Fosomax have to do with tooth extraction?" He told me there is a relationship between osteonecrosis of the jaw and bisphosphonates. This was news to me because I try to stay on top of the side effects of the drugs my parents take. So, you can imagine how surprised I was by this information. Here is a short summary of what I've been able to find out since then:

According to researchers, bisphosphonates affect the balance between the osteoblasts and osteoclasts, and shorten the lifespan of osteoclasts, thus tilting the balance in favor of the bone-making osteoblasts and helping prevent osteoporosis. Although this action by bisphosphonates helps compression fractures in the spine, hip and other skeletal regions; there is a downside. Scientists indicate that bisphosphonates, by disrupting this delicate balance of osteoclasts and osteoblasts, may inhibit new vessel formation, thereby impairing healing. Apparently, this is found to happen mainly in the jaw, triggered by tooth extraction.

Many patients are on bisphosphonate medication to prevent or treat osteoporosis, or as part of cancer treatment therapy. Some bisphosphonate medications (e.g., Fosomax, Actonel, Boniva) are taken orally to help prevent or treat osteoporosis and Paget's disease. Other bisphosphonates, such as Aredia, Bonfoss, Didronel or Zometa, are administered intravenously as part of cancer therapy to reduce bone pain and hypocalcaemia, associated with metastatic breast cancer, prostate cancer and multiple myeloma. This makes up a large population of our patients. Think of just one group of patients we treat, i.e., female and over age 50.)

I am not suggesting patients stop taking bisphosphonates. I am simply informing my chiropractic colleagues of one side effect of a very commonly used treatment for osteoporosis.

Let's review what is known about osteonecrosis of the jaw due to bisphosphonates:

1. The most important factor is the time of exposure to bisphosphonates. Bisphosphonate-related osteonecrosis of the jaw still is a rare phenomenon. Since first reported in 2003, 1,500 cases have been documented, most often triggered by tooth extraction and in patients who have received bisphosphonates intravenously for an extended period of time (more than 35 infusions in a 40-month period). Less invasive dental work, such as the filling of cavities, the placing of crowns and root canals, do not trigger the condition.
2. The mechanism behind why only the jaw is affected is not completely understood. The theory is that the blood supply is very rich in the jaw and somehow the bisphosphonates disrupt the bone's ability to heal because they are more highly concentrated in the jaw bone.
3. It is not recommended that patients stop taking bisphosphonates. A broken hip or vertebral fracture can cause more devastating effects. The problems associated with osteonecrosis of the jaw hopefully can be avoided with excellent dental hygiene; and once the mechanism is understood, this side effect may be eliminated.

In the meantime, here's a good recommendation for doctors and patients: If a course of bisphosphonates is necessary, take care of major dental work first; and then be very diligent in maintaining excellent oral hygiene to reduce the risk of dental and periodontal infections. Also alert your dentist to the fact that you are taking a bisphosphonate, so you can both make an informed decision about your dental care.

#### *Resources*

1. Bamias A, Kastritis E, Bamia C, et al. Osteonecrosis of the jaw in cancer treatment after bisphosphonates: incidence and risk factors. *Journal of Clinical Oncology* 2005;34:8580-8587.
2. Durie BGM, Katz M, Crowley J. Osteonecrosis of the jaw and bisphosphonates. *The New England Journal of Medicine* 2005;353:99-102.

SEPTEMBER 2006