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# THE EDITOR'S CORNER

## Bisphosphonates in Orthodontics

Many of my Editor's Corners have pointed out that we are living in a period of dynamic change within the specialty of orthodontics. There is no question that our patient demographics have shifted considerably in recent years; my practice, for example, is currently almost 75% adult. In addition, our technologies are developing at a dizzying pace. We now have paperless offices with plaster-less models, three-dimensional radiographs, computer-generated aligners, and body-heat-activated superelastic archwires. Other technologies are bringing the practice of orthodontics closer to the practice of medicine. Diode lasers are used for a variety of orthodontic applications that could be considered cosmetic laser surgery. Distraction osteogenesis, bone development for implant preparation, and surgical placement of temporary anchorage devices all take us into the realms of bone biology and implantology.

These new therapeutic options have allowed us to treat many malocclusions with efficient orthodontic mechanics, instead of much more invasive orthognathic or periodontal procedures. Along with our expanded treatment capabilities, however, we have to accept new responsibilities. When we choose to employ quasi-medical technologies, we owe it to ourselves and, even more, to our patients to learn all we can about the potential complications—how to predict them, how to avoid them, and what to do if they occur. Our life-long learning process must now include staying abreast of medical developments and the associated literature in areas that were once only vaguely related to orthodontics.

One such development is the growing use of a class of drugs called bisphosphonates in the treatment of osteoporosis and osseous complications of a variety of cancers. Reports of oral complications, while relatively rare, have prompted a special inquiry by the ADA's Council on Scientific Affairs. The June 15 *eGram* from the ADA contains recommendations on "Dental Management of Patients on Oral Bisphosphonate Therapy". To quote it directly:

“Reports of osteonecrosis (also called osteochemonecrosis and bisphosphonate-associated osteonecrosis) of the jaw associated with the use of the bisphosphonates, zoledronic acid (Zometa) and pamidronate (Aredia), began to surface in 2003.<sup>1,2</sup> Zoledronic acid and pamidronate are intravenous bisphosphonates used to reduce bone pain, hypercalcemia of malignancy, and skeletal complications in patients with multiple myeloma, breast, lung, and other cancers and Paget’s disease of bone. The majority of reported cases of bisphosphonate-associated osteonecrosis of the jaw (BON) have been diagnosed after dental procedures such as tooth extraction. Less commonly BON appears to occur spontaneously in patients taking these drugs.<sup>3</sup>

“As of early 2006, cases of BON had also been reported in individuals taking orally administered nitrogen-containing bisphosphonates, used for the treatment of osteoporosis.<sup>3-5</sup> To date, the total number of reported cases of BON associated with alendronate (Fosamax) is approximately 170 worldwide according to Merck and Co., Inc.,<sup>6</sup> approximately 20 associated with risedronate (Actonel) according to Procter and Gamble,<sup>7</sup> and approximately one with ibandronate (Boniva) according to Roche.<sup>8</sup> For alendronate (the most commonly prescribed oral bisphosphonate), this translates into a spontaneous BON incidence (or rate at which new cases occur) of approximately .7 cases per 100,000 person-years exposure. To date, a true cause-and-effect relationship has not been established.”

The entire report can be viewed at [http://](http://www.ada.org/prof/resources/topics/topics_osteonecrosis_recommendations.pdf)

[www.ada.org/prof/resources/topics/topics\\_osteonecrosis\\_recommendations.pdf](http://www.ada.org/prof/resources/topics/topics_osteonecrosis_recommendations.pdf).

I am unaware of any complications of bisphosphonate therapy that have arisen secondary to orthodontic therapy. Given the now-wide-spread use of diode lasers and skeletal anchorage devices and the increasing number of older adult patients, however, it behooves us to familiarize ourselves with the subject. In this issue of JCO, Dr. John Graham, an orthodontist and physician, provides an excellent introduction to the pharmacology, uses, and potential complications of bisphosphonates. With this information and the ADA report in hand, we will be better prepared to serve patients undergoing bisphosphonate therapy.

RGK

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