

restored with a permanent crown.

If the pulp is damaged, however, treatment becomes more complicated. A general dentist or endodontist may perform root canal treatment to remove the damaged pulp before putting on a crown. If the break in your tooth is anything more than a tiny chip, your dentist will want to see you again soon to make sure your tooth is healing properly.

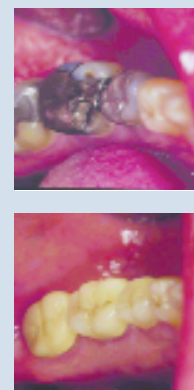
**Q: What can be done to prevent broken teeth?**

**A:** In the case of fracture due to accident, certain precautions can be taken to minimize your risk of traumatic tooth injury (or loss for that matter). A properly constructed sports mouth guard will protect your teeth while allowing you to breathe comfortably and participate in your favorite contact sports without distraction. Of course, regular visits to your dentist for preventive treatment, along with conscientious home care

habits, go a long way towards checking the development of any decay extensive enough to induce breakage.

When one or more of your teeth (especially your back teeth) already have large fillings in them and are starting to crack, as heavily filled teeth frequently do, you should seriously consider crowning the high-risk teeth because treatment will be simpler and less costly than if you wait until after they fracture. For example, it is not uncommon for an extensively restored (filled) broken tooth with cracks to need a root canal in order for it to be saved. In rare cases, if one of these teeth breaks in your mouth it will need to be extracted because the position and severity of the fracture makes the tooth hopeless.

Whereas fillings depend on their surrounding tooth structure to anchor them in place, crowns (also called "caps") hold teeth together by encasing them in a continuous shell. In over twenty years of practicing on the seacoast, I have only seen one case



*The heavily filled and cracked back teeth (top photo) were protected from further damage with crowns (bottom photo).*

where a tooth fractured after being crowned and that was in a case of severe trauma where the patient rolled his snowmobile and was not wearing a sports guard.

If you have an uneven bite, grind your teeth, or clench them, your dentist will address these conditions as part of a comprehensive treatment plan designed to restore your mouth, as a whole, to a state of health where uneven and excessive wear is minimized, and cracks are less likely to develop. ■

## *Special Report on* Osteoporosis Medication & Jaw Bone Death

Contributed by Dr. Dag Zapatero, Virginia Beach, VA

**Y**ou may have been reading in the news about a link found between osteoporosis medications (bisphosphonates) and ONJ (bone death of the jaw). ONJ is a painful condition in which the jawbone fails to heal normally, becoming exposed in the mouth. The exposed bone dies and can lead to jaw fractures or chronic infection that may require

additional surgeries to remove the dead bone, or long-term antibiotic treatments.

Osteoporosis is a disease in which bones become fragile and are more likely to break. It can sneak up on you painlessly if it isn't prevented, and it can progress painlessly until a bone breaks if it is left untreated. Any bone can be affected, but fractures of the hip and spine are of special con-

cern because hip fractures almost always requires hospitalization and major surgery, and spinal fractures can result in severe back pain, deformity, and compromised mobility. Both may cause permanent disability or even contribute to premature death.

Ten million Americans over the age of 50 currently have osteoporosis, and an additional 34 million have been diag- *(Continued on next page)*

## Bisphosphonates Continued

nosed with lowered bone densities. The National Osteoporosis Foundation recommends a bone mineral density test be performed on all women over the age of 65, who have one of the risk factors for osteoporosis, which includes being white, postmenopausal, and female.

Treatment for osteoporosis often includes an exercise program, diet and vitamin therapy. Oral bisphosphonate medications are commonly prescribed because they have been found beneficial in preventing further bone loss and help rebuild bone structure in affected patients. These medications are widely taken by more than 10 million Americans, and include brand names like Fosamax, Boniva, Actonel, Aredia, and Zometa. The major side effect of this class has been a disorder to the esophagus. People taking the oral form of these medications are instructed to remain upright for 30 minutes after taking this medication.

For patients whose cancer has metastasized into the hip, spine or long bones, oncologists prescribe a more potent IV form of bisphosphonates to help prevent fractures that often cause life-threatening complications in already fragile patients. When tumors are not in the bone, bisphosphonates may be given to reduce elevated calcium caused by some cancers because the unbound calcium binds with the bisphosphonates and is excreted by the kidneys. IV form also may be used to treat multiple myeloma, osteolytic lesion associated with metastatic bone disease, Paget's disease, and dorsal kyphosis or dowager's hump in advanced osteoporosis.

Bisphosphonates work by preventing the body from breaking down bone during its remodeling process. The bisphosphonates' molecules remain in the bone after the patient stops taking the medications, thus producing long-lasting effects. The remodeling rate in the mouth is much higher than in the rest of the body, and bisphosphonates may actually prevent the formation of healthy bone in the mouth.

In the May 2004 issue of the *Journal of Oral and Maxillofacial Surgery*, researchers at Long Island Jewish Medical Center (LIJMC) reported ONJ in 63 cancer patients who had received IV infusion of bisphosphonates. The 3-year retrospective study noted an elevated rate of ONJ in patients who had minor dental surgery or tooth extractions, after receiving intravenous bisphosphonates therapy.

A history of cancer, osteoporosis, concurrent steroid use, traumatic dental procedures, and poor oral hygiene, including periodontal disease, have all been linked to ONJ. The LIJMC study included a small subclass of patients with ONJ that had received long-term treatments of the oral form of bisphosphonates for treatment of osteoporosis but never the IV form.

**Less than one percent of patients taking oral bisphosphonates are believed to be at risk for ONJ**, but we still do not understand the role of long-term exposure. Merck, the maker of Fosamax, reported that it had seen zero incidences of ONJ in more than 17,000 patients in their controlled clinical trails of Fosamax that included some patients who have been on the drug for more than 10 years.

The American Association of Oral and Maxillofacial Surgeons recently recommended that cancer patients **seek dental care before starting IV infusions** of bisphosphonate chemotherapy. The dentist will work toward treating any infections or periodontal disease immediately in order to prevent the need for later invasive dental procedures. Immediate dental treatment may include the extraction of compromised teeth prior to bisphosphonate infusion. Patients needing teeth cleaning and non-invasive dental care can proceed with bisphosphonate infusion without concern.

**Patients should not be discouraged from taking oral bisphosphonates. The benefits of these drugs in helping reduce the effects of osteoporosis far outweigh any currently known risk.** If you are taking oral bisphosphonates, orthodontics should be avoided because tooth movement requires osteoclastic activity, which these drugs block.

**If you have received IV bisphosphonates, oral surgery (for example, dental extractions and dental implants) and orthodontics should be avoided.** You may receive root canal therapy without risk of causing ONJ. Patients who wear denture of partial dentures and receive intravenous bisphosphonates must have dentures that do not produce any sore spots that may lead to ONJ.

Be sure to ask your own oral surgeon and/or periodontist about his or her knowledge of the dangers of bisphosphonates prior to any type of oral surgery. Additional information may be found on the following websites:

[www.ada.org](http://www.ada.org)

[www.perio.org](http://www.perio.org)

[www.fdaadvisorycommittee.org](http://www.fdaadvisorycommittee.org)

[www.Merck.com](http://www.Merck.com) ■