Dear Alice,

What about dental x-rays and their potential harm?

Answer

Dear Reader,

Smile and bite down! While dental x-rays can serve an important role in assessing oral health, they may make some people feel uneasy due to the inherent radiation involved. The x-ray image (a.k.a., radiograph) allows dentists to diagnose diseases in the gum, bone, ligament, and tooth (endodontic), as well as cavities that may be between the teeth. In addition, x-rays can help dentists see some types of tumors, infections in the bone, and any cysts that would ordinarily be hidden from plan view. However, considering the amount of radiation exposure that comes from the natural environment, exposure through dental x-rays is comparably minimal.

Radiation is measured in rems and millirems (mrem), a thousandth of a rem. These are units for measuring the amount of absorbed radiation. On average, a person is exposed to 360 mrem a year from natural sources, including minerals in the soil, outer space, as well as miniscule levels of radioactive materials in food (bon appétit!). Plane travel is also a source of radiation exposure due to the high altitude: a cross-country plane ride results in exposure of about five mrem. The small amounts of radon gas present in natural gas used for cooking also round out about ten mrem of exposure a year. A dental x-ray, by comparison, gives off two to three mrem.

So, how often should dental x-rays be taken? This depends on the individual circumstances of the patient. Keep in mind that while x-rays themselves cause no discomfort, it may feel momentarily uncomfortable to bite down on the paper tab/film while taking the x-ray. Basically, there are four types of dental x-rays:

- **Bitewing** ? shows the crowns of the top and bottom teeth together (FYI ? it's called "bitewing" because you literally bite down on an x-ray film while taking the x-ray)
- **Periapical** ? one or two complete teeth from the crown to the root
- **Palatal (a.k.a. occlusal)** ? shows all upper and lower teeth
- **Panoramic** ? a machine rotates around the head to show the entire set of teeth and jaws
Ensuring good oral health is a plus and is a necessity, but getting more radiation than you need is not as cool. Radiation, depending on duration and amount, may lead to DNA damage, such as mutations, which have been implicated in diseases such as cancer. To protect your body from unnecessary radiation, dentists are required to cover your chest and stomach with a lead apron. In some cases, a lead thyroid collar may also be used, especially in women who are pregnant, have children, or who are of childbearing age. One way to minimize repeat or unnecessary x-rays is to develop an ongoing relationship with your dentist so that s/he can track your oral hygiene and health consistently. If you switch dentists, ask the previous provider to send a copy of your records to the new office, without needing another x-ray.

If you're not comfortable with having dental x-rays taken, you may want to discuss your concerns with a dentist. S/he can answer your questions and suggest other options, such as digital x-rays that give off less radiation than the traditional x-rays. If you'd like more information on radiation, check out the websites of the National Cancer Institute [3], the U.S. Food and Drug Administration (FDA) [4], as well as the American Dental Association [5].

When it comes to dental x-rays, here's to grinning and bearing it!

Alice!
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