

Digital radiographs Imaging technology for the dental office

Dental radiographs (X-rays) can provide essential information about oral health. They are an important part of a patient's dental record. Some dental offices now use computers to help capture, store and transmit dental radiographs.

Dental radiographs produced with a special computer create digital images (computerized dental radiographs) that can be displayed and enhanced on the computer monitor.

CREATING DIGITAL RADIOGRAPHS

Digital imaging involves the use of a radiography machine like that used to create dental radiographs made with film. But instead of using film in a plastic holder, the clinician makes digital images using a small electronic sensor or an image receptor that is placed in the mouth to capture the image.

When the digital radiograph is exposed, the image is transmitted to a computer processor (with or without a cable) or, in the case of an imaging plate, the clinician removes the plate from the mouth and scans it with a special reader, similar to a compact disc player. Unlike conventional film that may take between three and five minutes to process, a digital radiographic image generally can be viewed quickly on the computer screen. The image is displayed in a large format on the screen, in comparison with the small films that are viewed on a light box.

With digital radiographic images, technical errors often can be corrected to provide an optimal radiograph without having to make another exposure. The clinician can use magnification to enhance specific problem areas of a tooth, as well as alter brightness and contrast in the image. Viewing an enhanced dental radiograph on a computer screen can help a dentist better see a problem area.

The dental office also can print or copy digital

radiographs. Because the images are stored on the computer, they can be compared easily with future dental radiographs to see if and how conditions have changed.

Digital radiographs eliminate the need for film and film processing chemicals that generate waste. Special light boxes to view the traditional radiographic films also are no longer needed.

ARE DENTAL RADIOGRAPHS SAFE?

Dental radiographic examinations require exposure to very low levels of radiation, which makes the risk of potentially harmful effects extremely small.

Dental radiographic equipment and techniques are designed to limit the body's exposure to radiation. A couple of steps can limit the area exposed during any dental radiographic examination:

- limiting the size of the radiographic beam to approximately the size of the film or sensor being used;
- using a leaded apron and thyroid shield (most X-rays are stopped by lead).

Many diseases of the oral cavity (which includes the teeth, surrounding tissues and bone) cannot be seen when the dentist examines a patient's mouth. A radiographic examination may help the dentist see

- small areas of decay between the teeth or below existing restorations (fillings);
- bone destruction from a tooth infection (for example, an abscess) or a cyst;
- bone loss due to periodontal (gum) disease;
- developmental abnormalities;
- some types of tumors;
- the effects of trauma;
- the position of unerupted teeth in children and adults. ■

Prepared by the ADA Division of Communications, in cooperation with The Journal of the American Dental Association and the ADA Council on Scientific Affairs. Unlike other portions of JADA, this page may be clipped and copied as a handout for patients, without first obtaining reprint permission from the ADA Publishing Division. Any other use, copying or distribution, whether in printed or electronic form, is strictly prohibited without prior written consent of the ADA Publishing Division.

"For the Dental Patient" provides general information on dental treatments to dental patients. It is designed to prompt discussion between dentist and patient about treatment options and does not substitute for the dentist's professional assessment based on the individual patient's needs and desires.