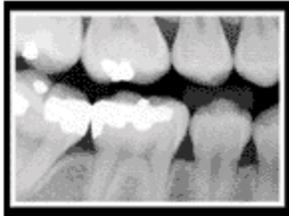


X-ray (Radiography)

There are three types of diagnostic radiographs taken in today's dental offices -- **periapical** (also known as intraoral or wall-mounted), **panoramic**, and **cephalometric**.



Periapical radiographs are probably the most familiar, with images of a few teeth at a time captured on small film cards inserted in the mouth. Periapical x-ray machines are typically mounted on the wall inside each treatment room.



Panoramic ("pan") x-rays generate a 5" x 11" (or 15 cm x 30 cm) wrap-around radiographic image of the patient's mouth. This is useful for studying the patient's jaw and the position of the teeth relative to one another. As previously mentioned, there are many additional regions of the patient's anatomy that can be imaged with a panoramic machine. The pan usually occupies its own small alcove in the dental office. However,

many offices have dedicated x-ray rooms where the machine is located.



Cephalometric ("ceph") x-rays capture a radiographic image of the entire head, usually in profile. These films are most often used by orthodontists to diagnose misalignment of the jaw and bite problems. Ceph images are taken on a standard panoramic machine outfitted with a cephalometric film-holding arm mounted off to one side.

A Few Words About Digital Radiography



Conventional radiographs are taken on photographic-style film, which must be chemically developed. Technology now offers dentists another option -- **digital radiography**. Digital radiographs are captured electronically, loaded into, viewed and stored on the office's main computer system.

Digital radiographs can be enhanced in many ways; enlarged or reduced, colorized, lightened or darkened. Accurate measurements can be taken right off the screen. Radiographs can be added to computerized patient files, printed on paper for the patient to take home, incorporated into letters or memos, and electronically transmitted to insurance companies or referral dentists.

Digital radiography is not only versatile; it also eliminates the costs and space required for darkrooms, film, and processing chemicals. Radiation levels are substantially reduced (up to 90%), making the procedure safer for the patient and staff. In addition, time, money, and paperwork are saved in storing and transmitting the images electronically. With digital radiography, it's possible for a general practitioner to e-mail a radiograph to a specialist for consultation while his or her patient is still in the chair.

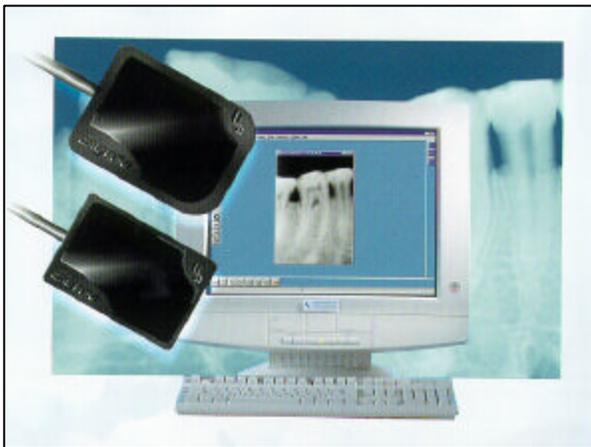
Two main types of digital imaging currently exist: **indirect** and **direct**. The doctor can use his or her existing x-ray equipment to take digital radiographs using either method. Each is described on the following page.



Indirect Digital Radiography

To take a periapical exposure, the hygienist or x-ray technician places a small photosensitive imaging plate (coated with phosphorus) into a sterile wrapper and inserts it into the patient's mouth just like a conventional X-ray film card. The X-ray is taken, and the exposed plate is then loaded into a scanner, or processor, which reads the image and converts it to digital form. The photo at left shows a sampling of imaging plates, two cylindrical plate holders, and the box-like scanner which holds the cylinders and reads the images as the cylinders spin inside.

Imaging plates can be re-used thousands of times, and they are available in different sizes to match conventional x-ray films, including panoramic and pan/ceph. The larger plates are simply loaded into the existing pan or pan/ceph film carriers.



Direct Digital Radiography

Direct digital radiographs bypass the scanning step and are loaded directly into the computer. Intraoral radiographs are taken on electronic sensors (shown at left) covered with a sterile wrapping. Sensors are about the same size as periapical film cards or imaging plates, although a bit thicker. However, the major difference is that a sensor is attached to a long, thin wire which plugs into a port in the computer. The captured image is loaded directly into the

computer with no scanning required. Likewise, digital panoramic and pan/ceph machines load the radiographic image directly into an attached computer.

Direct digital radiography is often used by endodontists (root canal specialists) who typically work on just one tooth at a time and need to take immediate measurements.