



The Power of Panoramic X-rays

The Practice Benefits of Using Panoramic for Bitewings

Panoramic x-rays have come a long way since the US Army developed them in an effort to speed up the process of examining the oral health of soldiers. While these units helped soldiers move through the dental exam process quickly, they had limitations. At the time, panoramic x-rays were useful at detecting and localizing mandibular fractures and other pathologic entities of the mandible, but they had limited usefulness for assessing periodontal bone loss or tooth decay.

This history of the panoramic x-ray has followed it into the 21st century. I talk with many dentists who don't believe that pan machines can take diagnostically reliable bitewings. However, with the advent of digital radiography and improvements in panoramic x-rays, these units are now important tools in the diagnostic armamentarium of the dental practice.

Misconceptions of Panoramic X-rays

Many dentists believe that the resolution of panoramic x-rays and the ability to open the contacts are not as good

as traditional bitewings.

A typical panoramic image displays the interproximal contacts as overlapped or not open. Because the contact points cannot be seen clearly, many dentists believe that pans cannot properly display interproximal cavities. As part of my research, I examined what angle the beam, or x-ray, should be pointed at to open the contacts and get an image of the interproximal area. One manufacturer used this research and engineered it into technology that allows the panoramic x-ray to be adjusted to the right angle to open the contacts.

Some dentists still believe that because traditional bitewing x-rays are sharper, they will show cavities better than panoramic x-rays. However, it is not, as most dentists believe, the resolution (sharpness) that makes interproximal caries detection good, but rather it is the imaging characteristics of the technology in use. In 1985, my research team first demonstrated that the “fuzzy pan” images showed interproximal cavities as well as, or better than, the intraoral bitewings.¹ In some cases no cavity was seen

at all on the bitewing, but it was plainly visible on the pan taken the same day.

Benefits of Panoramic Bitewings

Using panoramic x-rays for bitewings can provide a dental practice and its patients with many benefits, including reduced costs for the practice, increased staff satisfaction, and improved patient care.^{2,3}

Better patient acceptance. Patients can easily stand or sit during a panoramic x-ray examination. These exams can be performed once, as opposed to a bitewing series of up to 4 x-ray exposures that take several steps, which can be uncomfortable to patients.

Easier for the dentist and staff. Dentists can now consistently open up the contacts between the posterior teeth by simply adjusting the panoramic positioning light, rather than setting up a sensor in a holder, placing it in the patient's mouth, aiming the x-ray unit, and repeating several of these steps for each subsequent bitewing exposure.

Faster. The panoramic technique requires fewer steps compared to traditional dental x-rays. Dentists or their staff can

turn on the machine, instruct the patient to bite into the groove in the bite block, and have the images they need seconds later.

More diagnostic. In my experience, more interproximal caries are missed with traditional bitewing x-rays than with panoramic x-rays. In addition, panoramic x-rays provide more coverage for periodontal bone defects, periapical lesions, and pathological jaw lesions than bitewings.

Less radiation exposure. A panoramic bitewing study can cut radiation dose by 40% in comparison with intraoral bitewing x-ray studies. A pan creates as little as 3 to 5 microsieverts versus 10 to 95 in various intraoral bitewing scenarios. In pediatric mode, the dose may be reduced up to 30% less than the adult bitewing dose.

Less infection control. With traditional bitewing x-rays, dentists have to wrap and unwrap the sensor after each patient, disinfect the sensor and its sensor holder; disinfect the machine tube head, yolk, and cone; disinfect any soiled countertop areas, and dispose of and change gloves. Using a panoramic machine requires no gloves and virtually no between procedure cleaning or maintenance. Only

the bite block sleeve needs to be replaced, which is removed by the patient. Traditional bitewing x-rays take much longer to acquire than panoramic x-rays, which adds up over time. By switching to panoramic, practices can achieve real time and cost savings.

The Power of Panoramic Imaging

The word is finally getting out about the power of panoramic imaging. According to a panoramic sales representative, dentists are more open-minded to gradually replacing bitewing x-rays with pans.

"I sold 28 pan units last April because dentists now understand that pans are superior to traditional x-ray units and have several other advantages such as cost, comfort, and ease of use," the sales representative added.

References

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