

Put Your Panoramic Imaging on Steroids While Reducing the Patient's Dose!

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It used to be that panoramic images could not be used for interproximal carious lesions detection because of the overlap in the bicuspid region secondary to the image acquisition. Thankfully this is no longer the case. And, in addition to the excellent “extraoral bitewing” images that are obtained, collimated panoramic images from these new machines are also excellent periapical images from the cuspid back to the second molar region. This means that the only intraoral images necessary for some patients would be the remaining anterior periapicals - the easiest ones in the oral cavity to take.

At the **Arizona School of Dentistry & Oral Health (ASDOH)** in Mesa Arizona, we have adopted a conventional digital panoramic supplemented by the panoramic “bitewings” as our initial patient radiographic exam by our screening clinicians. This protocol has allowed us to quicken the entry of the patient's into the clinical system. Once the patient is examined by the dentist and their clinical care unit leader, additional periapical or bitewing images might be ordered in in some situations if necessary. This also has led to a reduction in patient x-ray dose.

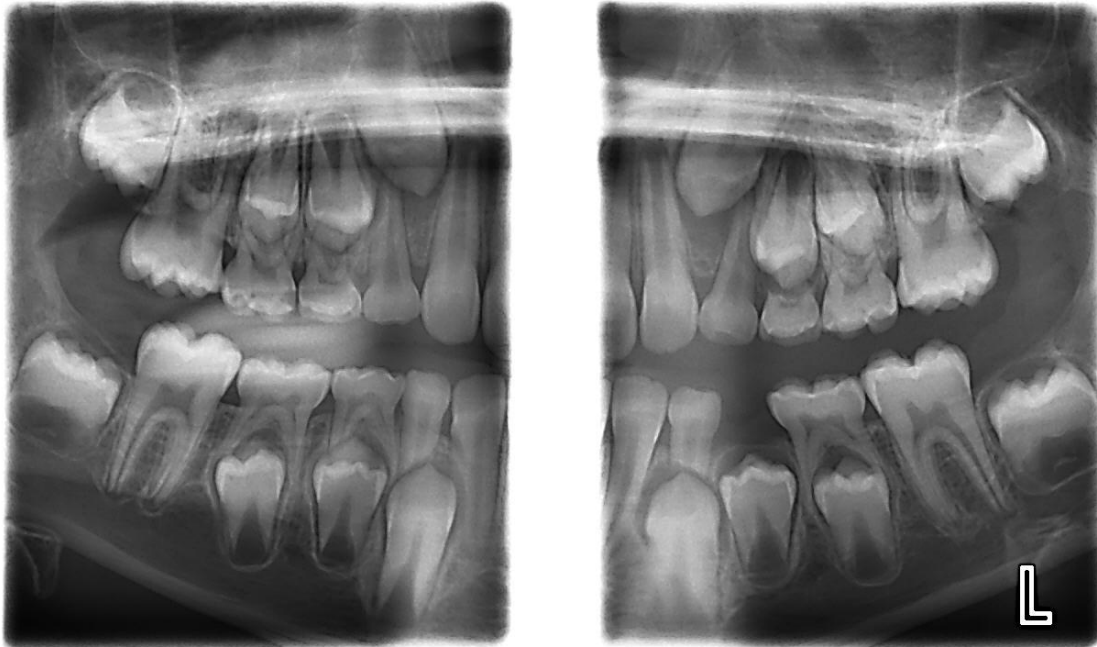
One additional benefit in the institutional setting is that are periodontists see these images as “vertical bitewings”, images that are not always easily obtained using solid-state detectors with wires or even phosphor plates. Another additional benefit is that many pediatric patients will not require intraoral radiographic images because these extraoral “bitewings” are an excellent way to display the developing dentition as well as

the primary key. As one pediatric dentist put it, “there are no incipient or small carious lesions on most children's teeth - the primary enamel is so thin that when it's a cavity, it's a cavity”. Stated another way the dentist or pediatric dentists rarely see small cavities and kids. Primarily, they are evaluating the furcation area for infection or inflammatory change secondary to the large carious lesions and the possible effect on the developing dentition. Thus we have a number of advantages to “panoramic bitewings”; namely,

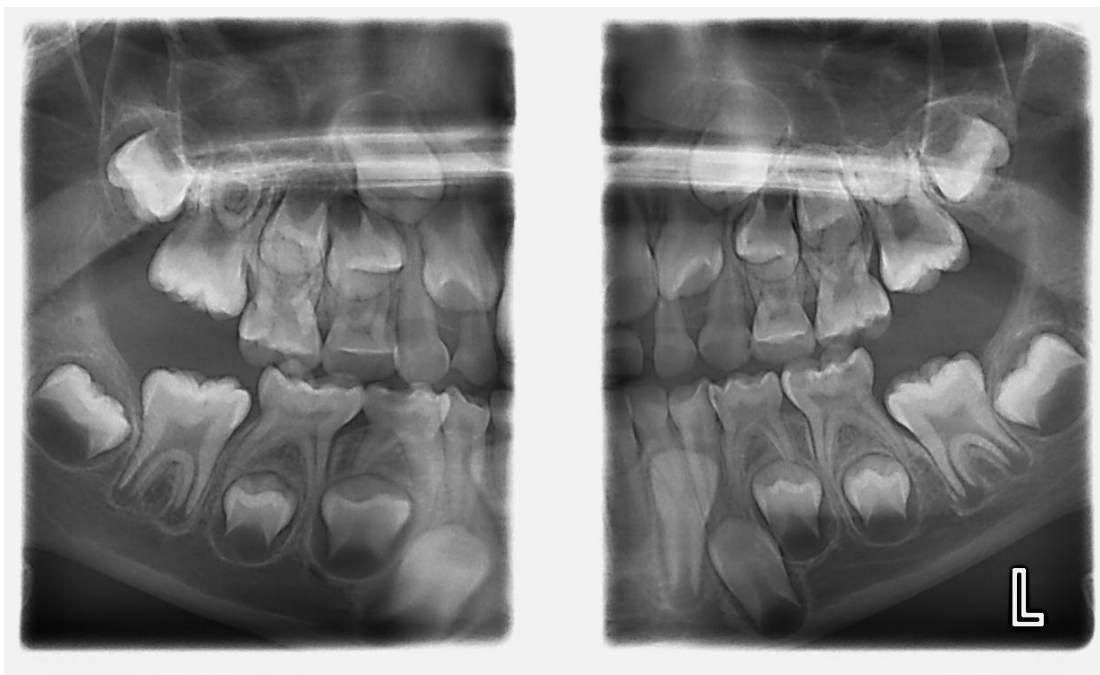
1. Possible reduction of the number of intraoral images
2. Reduction of patient dose* from a full mouth series, especially in children
3. More comfortable image acquisition for children and some adults
4. Possible replacement for vertical bitewings in periodontics
5. More rapid assessment of the patient's disease processes
6. Simplification of the images acquired by the dental assistant or hygienist

****Patient x-ray dose reduction is achieved by the reduction of the number of images required to adequately image the patient. There may be fewer full mouth radiographic series taken in the future because of this technology.***

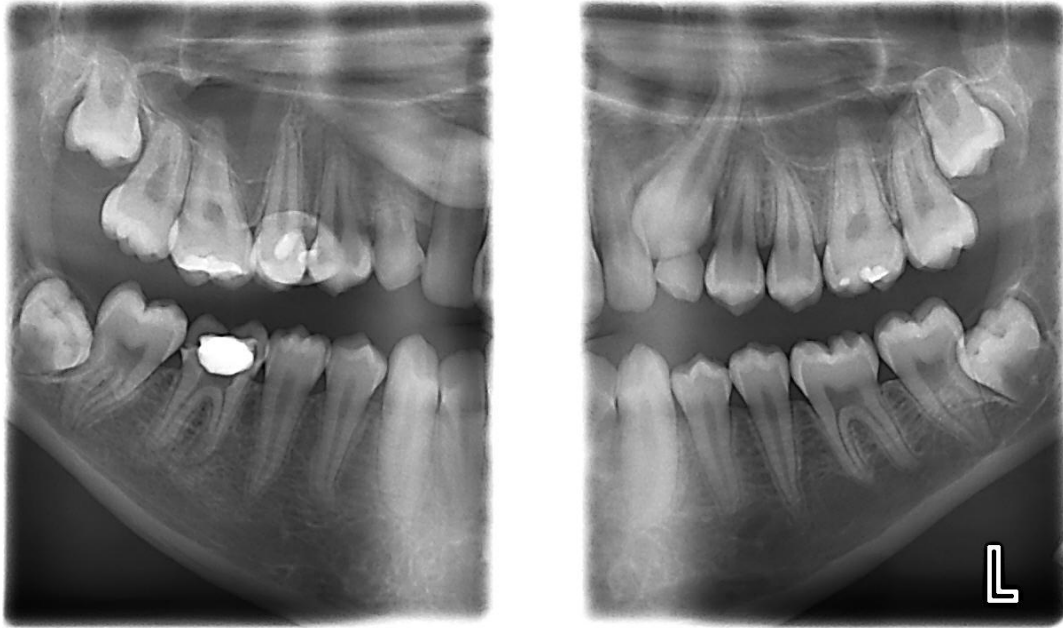
Below are some examples of the images taken at the **Arizona School of Dentistry & Oral Health** using the **Planmeca ProMax3D** panoramic machine (also capable of doing Cone Beam CT when required). The last image shows the 3-D capability of the panoramic machine when coupled with high-level, third-party CBCT imaging software, in this case a program called **OnDemand3D** made by **CyberMed International** (Irvine, CA and Seoul, Korea).



Developing dentition visualized with a “panoramic bitewing”.



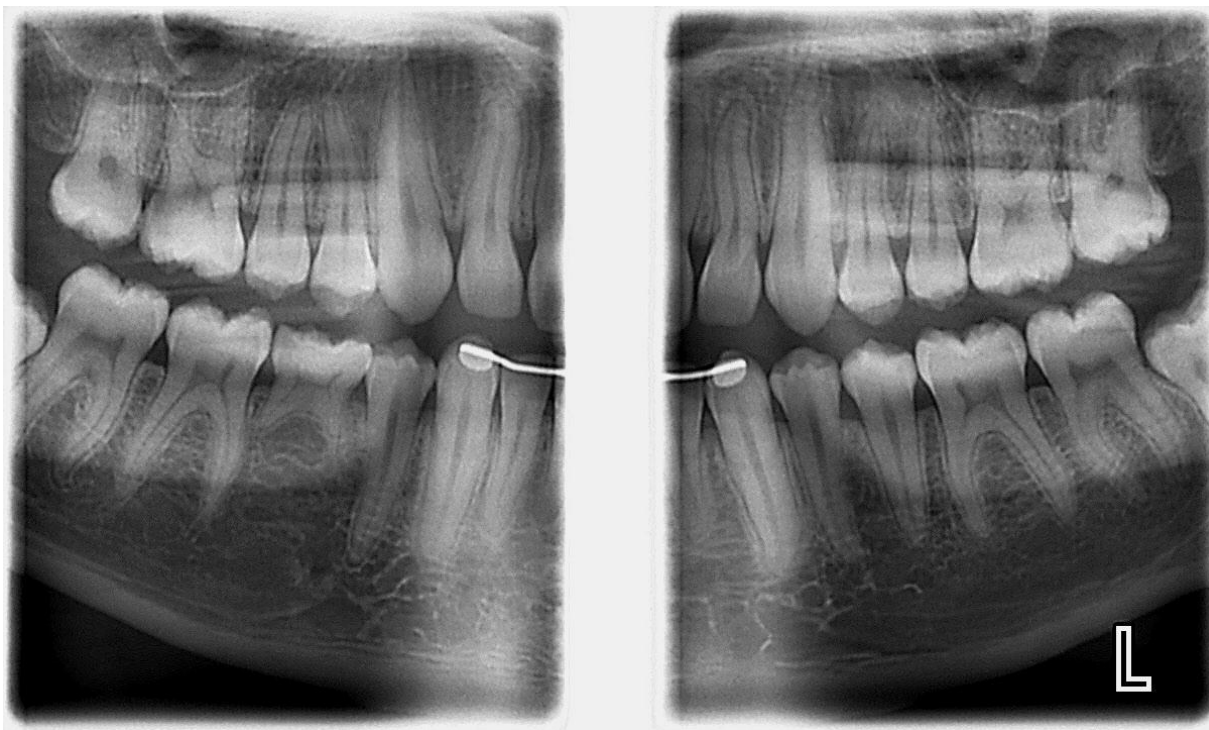
Developing dentition and visible carious lesions in a “panoramic bitewing”.



Developing dentition, impacted cuspids, retained maxillary, primary second molar and maxillary primary cuspids as well as periapical lesions on tooth #30 seen in a 13-year-old on the “panoramic bitewing”.



Hypodontia (teeth #1, 16 and 29) and bony impactions of teeth #17 and 32 – both in contact with inferior alveolar nerve. Note the typical overlap of the creep molar enter proximal contact areas seen in all conventional panoramic images.



Panoramic “bitewing” of case above. Note that the interproximal contact regions have been “opened” in the bicuspid region in this image. This is obtainable only by Planmeca’s patented **SCARA technology (Selectively Compliant Articulating Robotic Arm)**. This technology allows a different “start” position for the panoramic acquisition and allows the tooth head to move closer to the patient. This combination of the technology and the “start” position results in the “opened contacts”. This cannot be done by software alone.



Typical adult panoramic image taken at **ASDOH**.