TEST

Dental x-rays

Dental x-rays create images of teeth and jawbone that an examination cannot fully show.

WHAT IT MEASURES
Teeth, jawbone, and hidden dental structures using radiation

SAMPLE
None; this is imaging

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually 5 to 20 minutes

RESULTS IN
Usually immediately; timing varies by dental or imaging service

USED FOR
Screening, diagnosis, treatment planning, and monitoring

MAIN LIMITATION
Overlapping structures can hide or imitate dental problems

Overview

Dental x-rays, also called dental radiographs, create pictures of your teeth, their roots, and the surrounding jawbone. They can show structures that are difficult or impossible to see during an examination.

The equipment sends a small amount of ionizing radiation through the area being examined. Dense materials, such as enamel and metal fillings, absorb more radiation and usually appear light. Less dense areas appear darker.

Different types of dental x-ray show different areas:

Dental x-rays are one part of an assessment. The images must be considered alongside your symptoms, dental history, and examination.

- Bitewing x-rays show the crowns of upper and lower teeth, often to look for decay between teeth and changes in bone level.
- Periapical x-rays show a whole tooth, including its root and nearby bone.

- Panoramic x-rays show the teeth, jaws, jaw joints, and nearby structures in one broad image.
- Cephalometric x-rays show the side of the head and are mainly used for orthodontic planning.
- Cone-beam computed tomography , or CBCT , creates three-dimensional images for selected problems or procedures.

Why the test is ordered

A dentist may recommend an x-ray to look for tooth decay that cannot be seen directly, particularly between teeth or under an existing filling. X-rays can also show bone loss around teeth, changes near a tooth root, and teeth that have not come through normally.

They may be used to:

CBCT may be useful when a three-dimensional view could change treatment decisions. It is not usually needed when a standard dental x-ray provides enough information.

- investigate pain, swelling, injury, or an unexplained dental change
- plan a filling, root canal treatment, extraction, implant, or braces
- check the position and development of adult teeth in children
- assess wisdom teeth or an impacted tooth
- monitor a known problem or healing after treatment

Who should have the test

There is no single schedule that is right for everyone. Whether you need dental x-rays, and how often, should be based on your examination, symptoms, previous images, dental history, age, and risk of developing new disease.

You may need images sooner if you have new pain, dental trauma, several recent areas of decay, gum disease, or treatment that needs detailed planning. If your teeth and gums are stable, you may need them less often.

Children may need x-rays to assess tooth development or decay between teeth. Because children are more sensitive to radiation, the image area and exposure settings should be kept appropriate for their size and the clinical question.

Tell the dental team if you are or may be pregnant. Necessary dental imaging can generally still

be performed when it will affect your care. The team can choose the smallest suitable image and avoid unnecessary repeat exposures.

How to prepare

You do not need to fast. You can eat, drink coffee, take your usual medicines, and brush your teeth unless the dental practice gives you different instructions for another procedure being done at the same visit.

Bring details of recent dental x-rays if they were taken elsewhere. Transferring suitable images may prevent them from being repeated.

Before panoramic imaging or CBCT, you may be asked to remove glasses, earrings, necklaces, hair clips, dentures, or removable dental appliances. Metal can block part of the image or create streaks.

Tell the person taking the image if you have a strong gag reflex, difficulty biting, trouble standing still, or limited movement in your neck or jaw. They may be able to change the sensor size or positioning.

What happens during the test

For a bitewing or periapical x-ray, a small sensor or film is placed inside your mouth. You bite gently or hold it in position while the x-ray machine is aimed at your teeth. The exposure itself takes only a fraction of a second, although several images may be needed.

The sensor can feel bulky or press against your gums. Tell the dental team if it is painful or makes you gag rather than trying to tolerate it silently.

For a panoramic x-ray, you usually stand or sit with your chin supported and bite on a small guide. The machine moves around your head while you remain still.

CBCT equipment also rotates around your head. The scan is brief, but careful positioning and image checks make the full appointment longer.

You cannot feel the radiation. No radiation remains in your body after the image is taken.

Understanding your results

Digital dental images are usually available immediately. A dentist or appropriately trained imaging professional reviews their quality and looks for changes that fit the reason for the test.

A report or explanation may describe:

A dark or light area is not automatically a dental problem. Normal anatomy, overlapping teeth, previous treatment, and image artifacts can look similar to disease. Your result should be matched with an examination and, where relevant, symptoms or earlier images.

There is no universal "normal range" for dental x-rays. Interpretation varies with the imaging method, equipment, age, tooth development, pregnancy status, medicines that affect teeth or bone, previous treatment, and clinical context.

- darker areas that could represent decay, a cavity, or loss of bone
- changes around a root that may be linked with inflammation or infection
- the amount and shape of bone available for planned treatment
- unerupted, impacted, missing, or extra teeth
- the position of roots, nerves, sinuses, or other nearby structures
- existing fillings, crowns, root canal material, or implants

What affects the results

Dental images can be misleading even when the equipment is working correctly.

Movement can blur an image. Incorrect head, sensor, or x-ray tube positioning may stretch, shorten, or overlap teeth. This can hide decay or make a healthy area appear unusual.

Metal fillings, crowns, implants, braces, jewelry, and removable appliances may block structures or create streaks, especially on CBCT. Dense bone and overlapping roots can also obscure small changes.

Exposure settings that are not suited to your size or the area being examined can make an image too light, too dark, or noisy. Digital processing can improve visibility, but it cannot restore detail that was never captured.

Timing matters. Very early decay, a fine tooth crack, or early inflammation around a root may not yet create a visible x-ray change. Previous images are often useful because a change over time may be more informative than one image alone.

Pregnancy does not make the image inaccurate. It matters because any radiation exposure should be justified and limited to what is needed.

Accuracy and limitations

Dental x-rays often find problems that cannot be seen during an examination, but they do not find every problem. There is no single percentage for how often they are right because performance changes with the type of x-ray, image quality, tooth location, and condition being investigated.

Small or early areas of decay may be missed. Overlapping surfaces can conceal decay or create a dark area that looks like decay when the tooth is healthy. An examination, comparison with previous images, or a later follow-up image may clarify the finding.

Standard dental x-rays are two-dimensional. They can make structures at different depths appear on top of one another. CBCT provides three-dimensional detail and may be better for selected impacted teeth, complex root anatomy, implant planning, or suspected fractures. However, it uses more radiation than ordinary dental images, can be affected by metal artifacts, and should not replace simpler imaging without a clear reason.

Some tooth cracks do not appear on any x-ray. Gum inflammation and many soft-tissue conditions are assessed mainly by examination. A suspicious mouth lesion may require specialist assessment or a biopsy, which removes a small tissue sample for testing; an x-ray alone cannot determine what it is.

Risks and complications

Dental x-rays use low doses of ionizing radiation. The individual risk is small, but exposure can add up over time, so images should be limited to those likely to help your care. CBCT generally involves more radiation than a small dental x-ray, although the dose changes with the machine, settings, and area scanned.

An inside-the-mouth sensor may briefly cause gagging or gum discomfort. The test does not make you radioactive and normally has no after-effects.

Routine lead aprons and thyroid collars are no longer recommended by some current dental radiation guidance when modern equipment, careful beam positioning, and suitable settings are used. Shielding can cover important anatomy and lead to a repeated image. Local rules and practice policies may differ.

What happens next

If the images do not show a concerning change, they may be stored as a reference and reviewed at routine dental visits. A normal x-ray does not rule out every cause of pain, so further examination may still be appropriate if symptoms continue.

If a possible problem is found, the next step might be monitoring, another type of image, a closer examination, or discussion of treatment. You can ask what the image showed, whether the finding is definite, and how it changes your options.

Contact a dental service promptly for worsening tooth pain, fever with dental or facial swelling, a dental injury, or swelling that is spreading.

Seek emergency care for difficulty breathing or swallowing, heavy bleeding that will not stop, or rapidly increasing swelling involving the mouth, neck, or area around an eye. These symptoms need urgent assessment rather than waiting for routine x-ray follow-up.

Common questions

Can I drink coffee before dental x-rays?

Yes. Coffee does not alter dental x-ray images. You do not need to fast, although brushing or rinsing before the appointment may make an inside-the-mouth sensor more comfortable.

Does the time of day matter?

No. Dental x-ray findings do not normally change with the time of day. Choose a time when you can remain still and follow positioning instructions.

Can I exercise beforehand?

Yes. Exercise does not affect the images. If strenuous activity makes it difficult to stay still or breathe comfortably, allow time to recover first.

Can I have dental x-rays while pregnant?

Tell the dental team if you are or might be pregnant. Imaging that is needed to investigate a dental problem can generally be performed using an appropriately limited exposure. Images that will not affect current care may sometimes be postponed.

How often should I have dental x-rays?

There is no fixed interval for everyone. The timing should reflect your symptoms, examination, age, dental history, risk of new disease, and whether useful recent images already exist.

Why do I not always receive a lead apron?

Modern equipment uses a narrow beam and settings intended to keep exposure low. Current guidance from some professional bodies does not recommend routine shielding because it may cover the area being imaged and cause a repeat exposure. Local requirements may still differ.

Sources

- US Food and Drug Administration. Dental X-Rays
- American Dental Association. X-Rays/Radiographs
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- National Council on Radiation Protection and Measurements. Radiation Protection in Dentistry and Oral & Maxillofacial Imaging . NCRP Report No. 177. 2019.