

Radiography

- Radiography is painless, very safe, and noninvasive, and it can sometimes be performed during an outpatient visit while you wait.
- Radiography is useful for evaluating the bones and the size, shape, and position of internal organs.
- Sedation is sometimes recommended for patients undergoing radiography.
- Radiography can help your veterinarian diagnose numerous medical conditions, including broken bones, intestinal blockages, bladder stones, and some types of cancer.

What Is a Radiograph?

A radiograph (sometimes called an *x-ray*) is a type of photograph that reveals the body's bones and internal organs. The procedure for obtaining a radiograph is called *radiography*. Radiography is a very useful diagnostic tool for veterinarians because it can help obtain information about almost any organ in the body, including the heart, lungs, and abdominal organs, as well as the bones.

How Does Radiography Work?

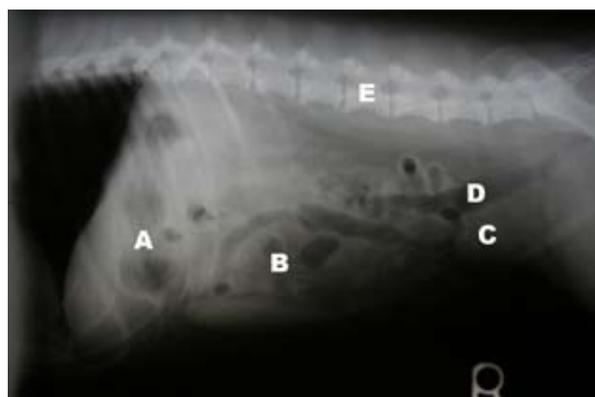
Traditional radiography machines use very low doses of radiation delivered in a focused beam (an x-ray) that is aimed at a photographic plate containing specialized photographic film. The patient is positioned between the x-ray beam and the photographic plate. When the x-ray beam passes through the patient, an image is created on the specialized film. Structures that are very thick or dense, such as bone, do not allow much of the beam to penetrate and expose the film. These structures look very bright or white on a radiograph (see the x-ray image). In contrast, structures that are not dense (such as gas in the intestines or air in the lungs) allow the beam to penetrate more completely and expose the film. As a result, these structures appear relatively dark when the radiograph is viewed. Structures that are of medium density, such as fluid, appear in various shades of gray on the film.

Digital radiograph machines use a very similar principle, but the final image can be much sharper and can show greater detail than images obtained from traditional radiography machines.

How Is Radiography Performed?

Radiography is painless, safe, and completely noninvasive. Your pet will be positioned on the x-ray table, and the body part that will be radiographed is measured. This is necessary so that the intensity of the x-ray beam can be precisely adjusted to capture the most accurate information. Once the measurements are complete, the x-ray tube (which will generate a beam of low-level radiation) is aligned over the body part, and a button is pushed on the radiograph machine to take the “photograph.” This part of the procedure is very much like taking a photograph with a camera. In most cases, at least two “pictures” are taken from different angles to create a three-dimensional image of the body part being studied.

Your veterinarian may recommend that your pet receives sedation before undergoing radiography.



This abdominal radiograph shows several organs that your veterinarian will examine: the stomach (A), intestines (B), bladder (C), and colon (D). Gas in the colon and stomach appears very dark on the radiograph; however, fluid in the bladder is gray, and the bones of the spine (E) appear closer to white.

Tests and Procedures

Patients that are sedated are much easier to position because they are completely relaxed. Sedation may also be recommended if the patient has a broken bone or other painful condition.

What Are Radiographs Used For?

Radiographs are used to examine the bones and the size, shape, and position of many of the body's organs. The size of organs is important because some medical conditions can cause enlargement of the heart, liver, or other organs. Some chronic conditions, such as chronic kidney disease or chronic liver disease, can cause these organs to appear smaller than normal on a radiograph. The shape of organs can be altered or distorted by certain medical conditions, including intestinal blockages or cancer. Tumors, depending on their size and location, can be detected using radiography. Radiography can also be used to diagnose many other conditions, such as bladder stones, broken bones, chronic arthritis, and certain spinal cord diseases.

What Are the Benefits and Risks of Radiography?

Radiography has many benefits and very minimal risks. It is very safe, completely painless, and noninvasive.

It is available in most veterinary practices and can sometimes be performed during an outpatient visit while you wait. Depending on the type of radiographic study being performed, the procedure may take only a few minutes.

The risks of radiography are minimal. Because the level of radiation exposure needed to perform radiography is very low, even pregnant females and very young pets can undergo radiography. If a pet is very unstable, such as a pet with severe breathing

Radiography is useful for evaluating the bones and the size, shape, and position of internal organs.

difficulties, the stress of performing radiography may be a concern. In these cases, it may be necessary to stabilize the pet (with oxygen or other therapy) before attempting to perform radiography. In the vast majority of cases, the benefits of performing radiography far outweigh the possible risks. Radiography is a valuable tool for your veterinarian because it can provide critical information about many different illnesses and medical conditions.