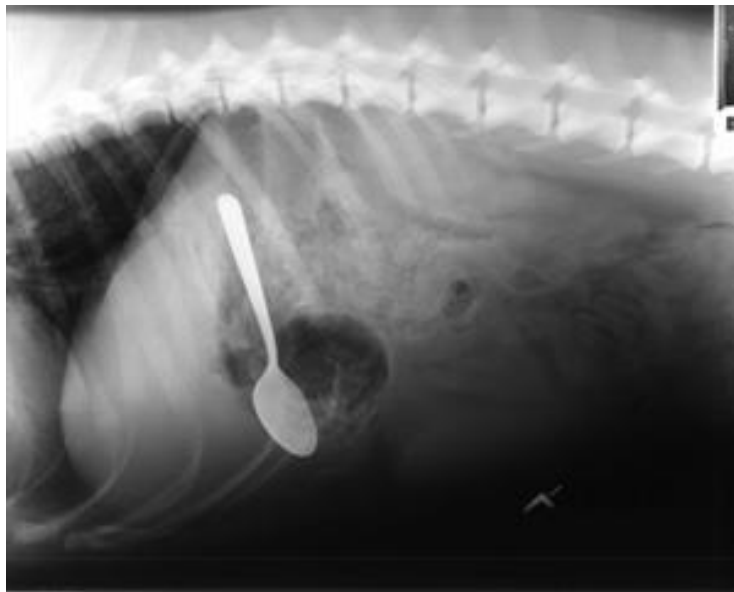


Contrast agents

- Contrast radiography is a method of studying organs using X-rays and the administration of a special dye, called a contrast medium. This test allows the radiologist to evaluate structures that are not clearly evident on conventional X-ray exams.
- X-rays work by passing through the body. Because bones block the X-rays easily, they show up clearly. But organs and other tissue – such as blood vessels, the stomach, and the colon – do not block the X-rays so easily. The contrast medium highlights these specific areas in the body and helps them to be seen in greater detail on the X-ray image.

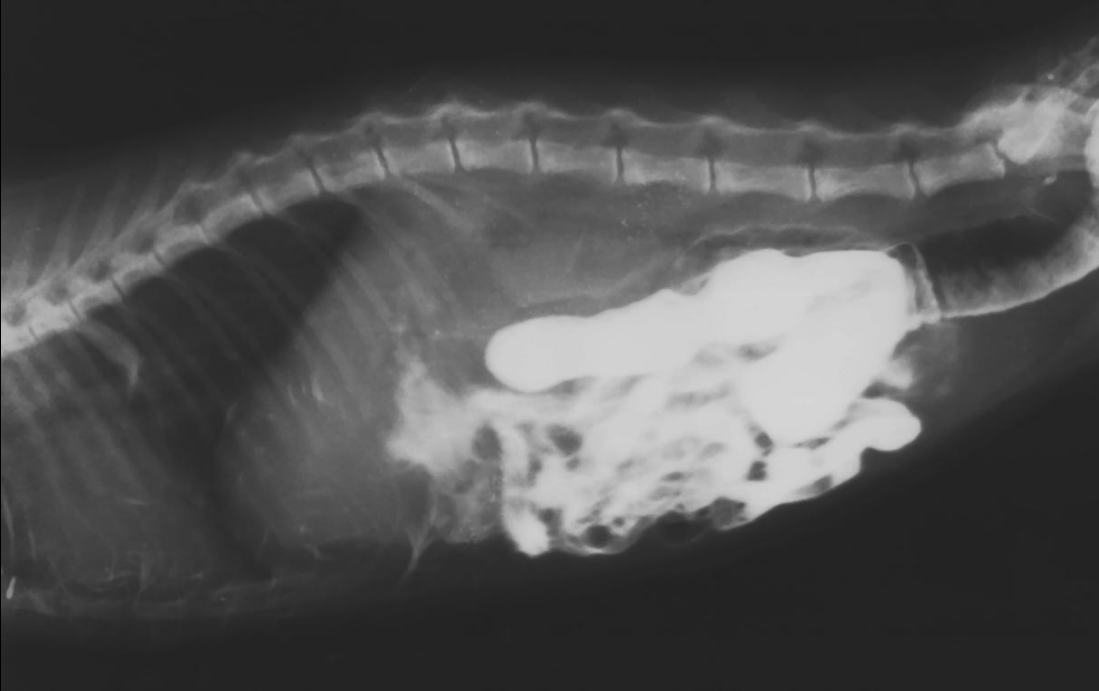


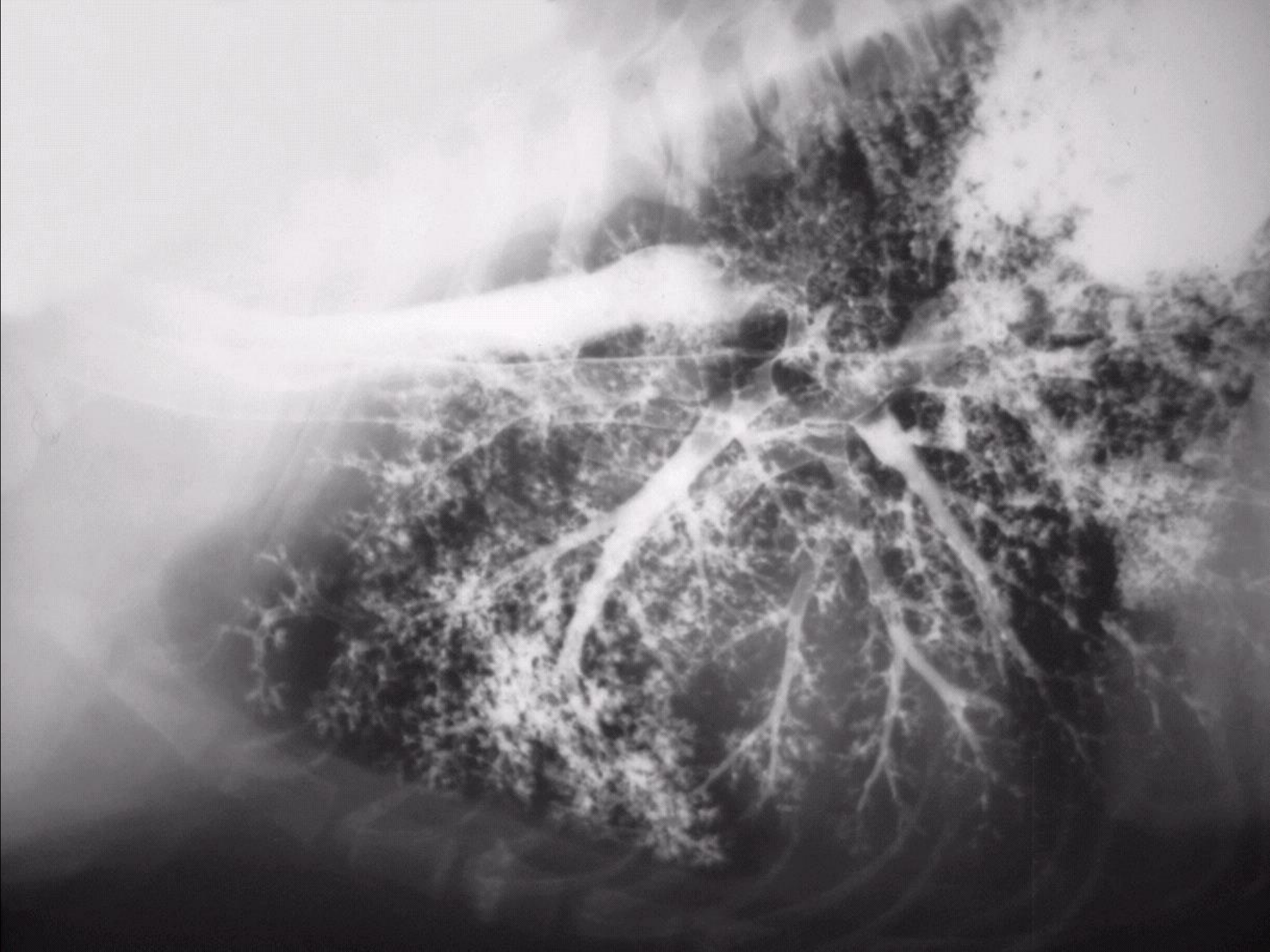
- With direct radiography;
 - organs' place, size, number and boundaries can be evaluated.
- With contrast radiography (endirect radiography) organs can be evaluated detaily.
 - Contrast materials are substances with a density more or less than tissues, and they keep or let x-rays more than thisues.
 - In this examination, changes in the organs are generally seen as filling excess or lack of filling.
 - In the examination of the excess or lack of fill;
 - Location, number, Format, Size and limits is evaluated and diagnosed

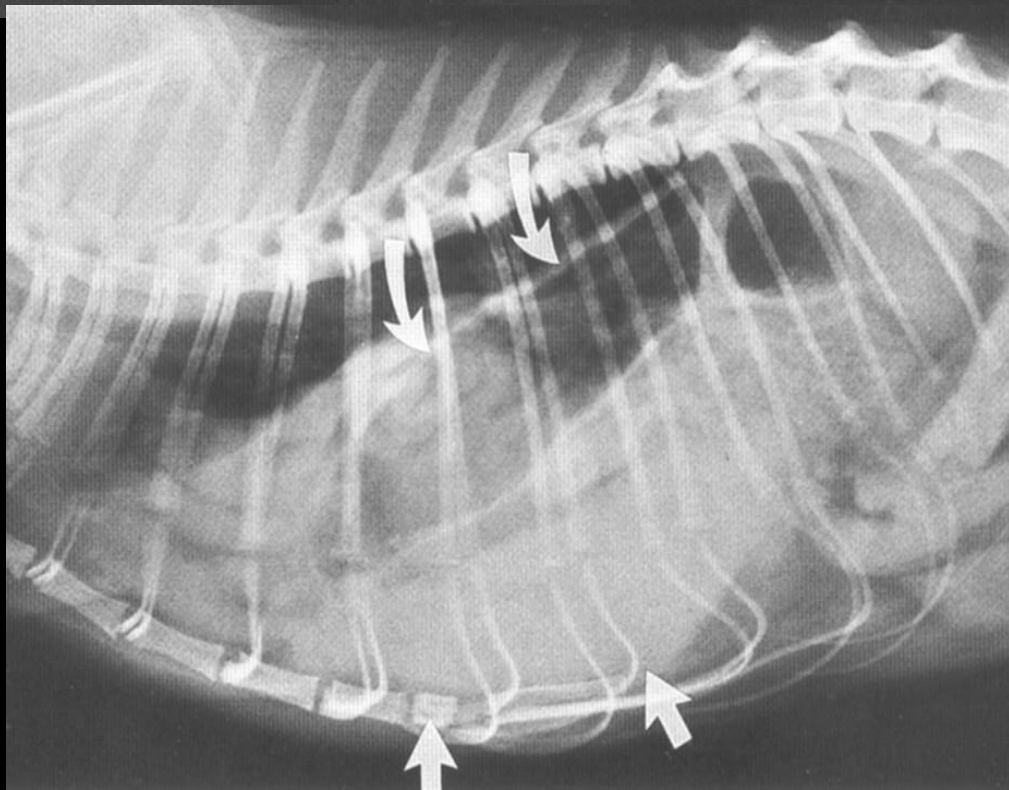
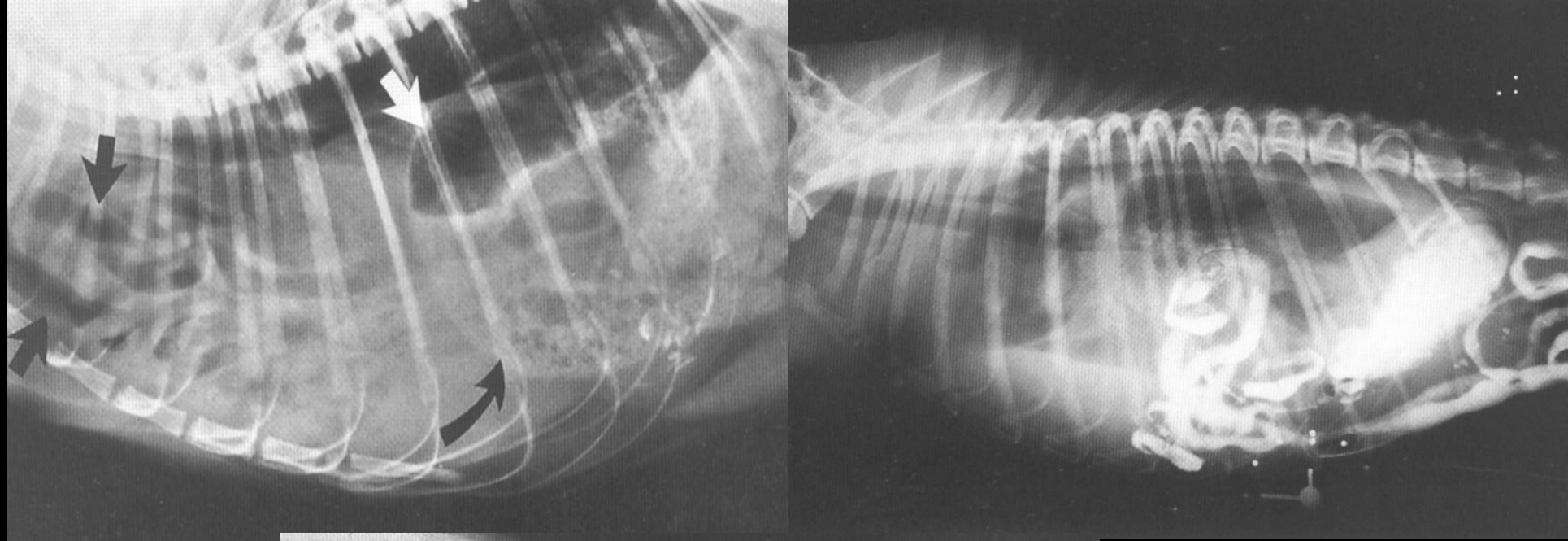


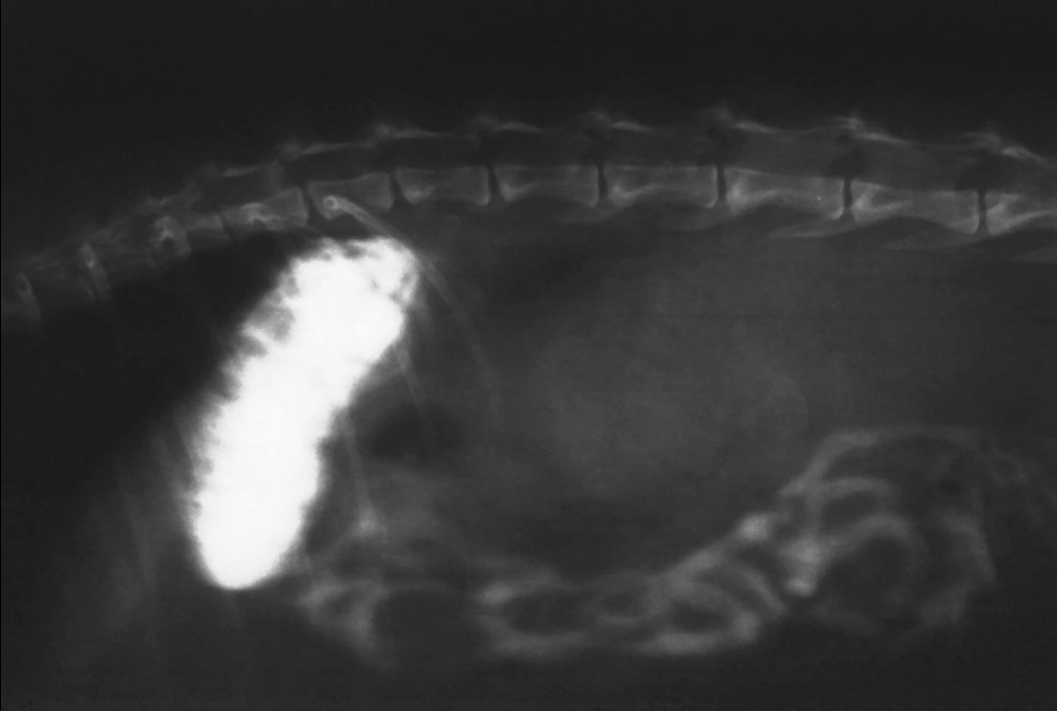
- Contrast materials, also called contrast agents or contrast media, are used to improve pictures of the inside of the body produced by x-rays, computed tomography (CT), magnetic resonance (MR) imaging, and ultrasound.
- Often, contrast materials allow the radiologist to distinguish normal from abnormal conditions. Contrast materials are not dyes that permanently discolor internal organs. They are substances that temporarily change the way x-rays or other imaging tools interact with the body.
- When introduced into the body prior to an imaging exam, contrast materials make certain structures or tissues in the body appear different on the images than they would if no contrast material had been administered. Contrast materials help distinguish or "contrast" selected areas of the body from surrounding tissue. By improving the visibility of specific organs, blood vessels or tissues, contrast materials help physicians diagnose medical conditions

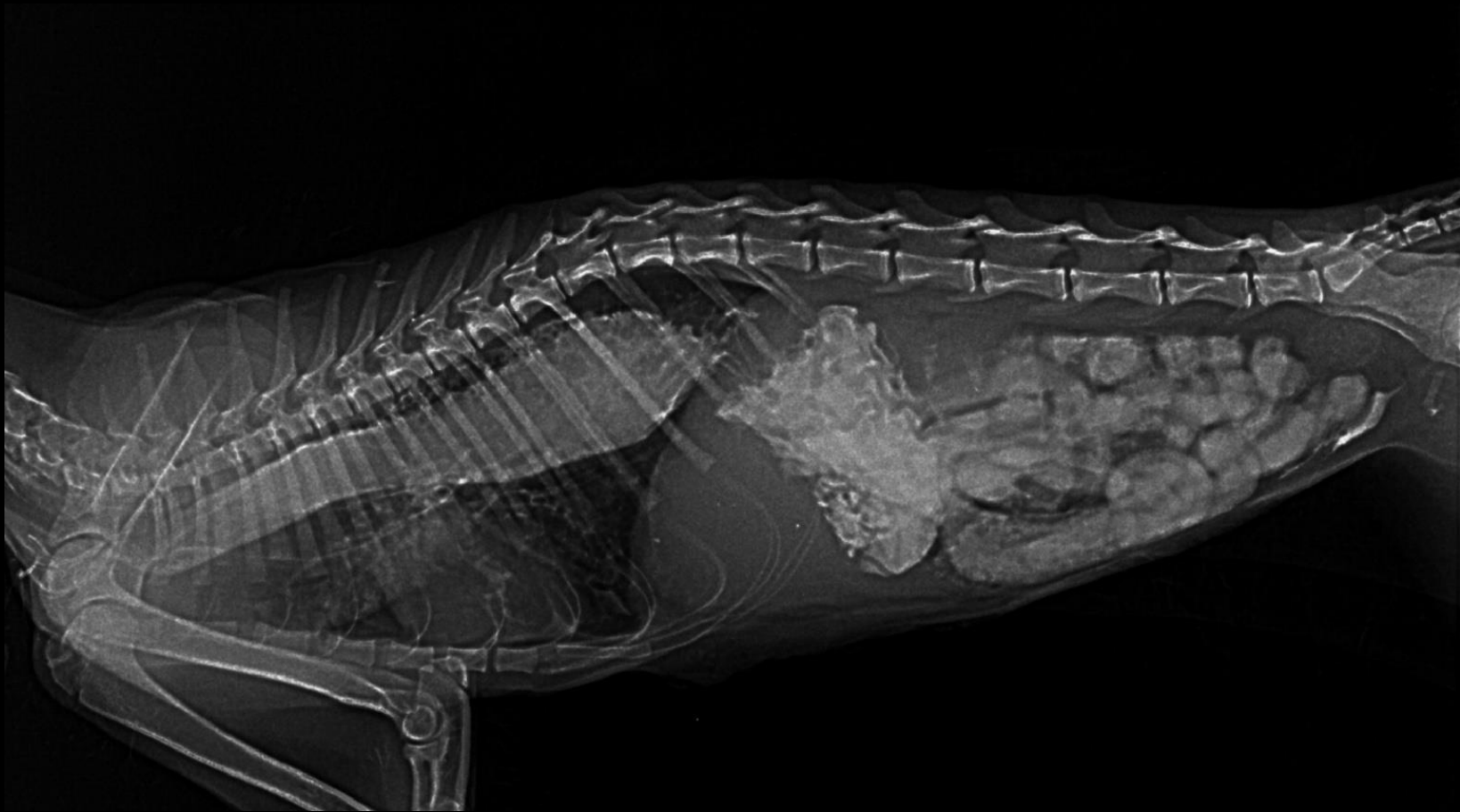








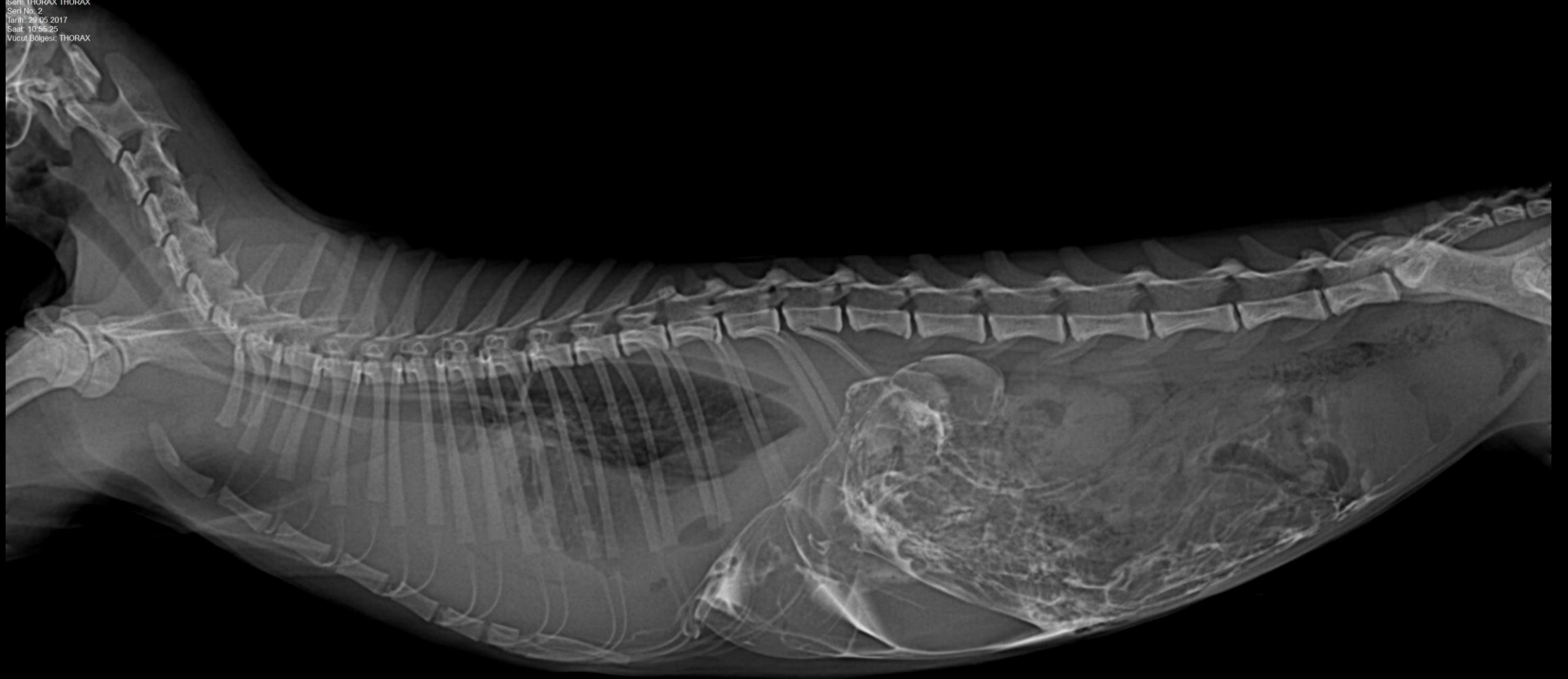




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Hasta İd: 17-1541
Yaş: 003Y
Cinsiyet: Erkek
Doğum Tarihi: 29.05.2014

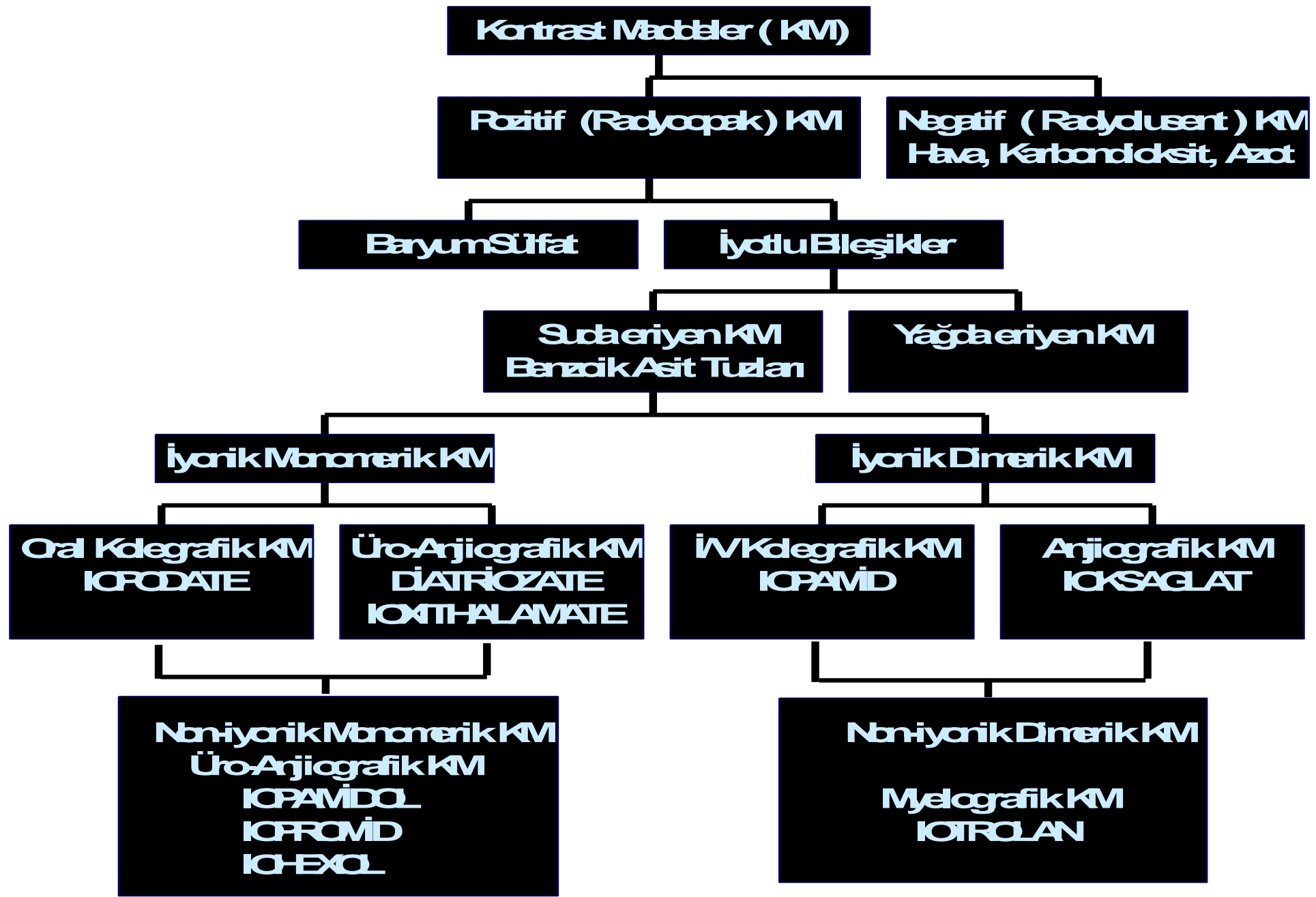
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There are several types of contrast materials:

- Iodine-based and barium-sulfate compounds are used in x-ray and computed tomography (CT) imaging exams.
- Contrast materials can have a chemical structure that includes iodine, a naturally occurring chemical element. These contrast materials can be injected into veins or arteries, within the disk or the fluid spaces of the spine, and into other body cavities.
- Barium-sulfate is the most common contrast material taken by mouth, or orally. It is also used directly and is available in several forms, including: powder, which is mixed with water before administration liquid paste tablet
- When iodine-based and barium-sulfate contrast materials are present in a specific area of the body, they block or limit the ability of x-rays to pass through. As a result, blood vessels, organs and other body tissue that temporarily contain iodine-based or barium compounds change their appearance on x-ray or CT images.
- Gadolinium is the key component of the contrast material most often used in magnetic resonance (MR) exams. When this substance is present in the body, it alters the magnetic properties of nearby water molecules, which enhances the quality of MR images.
- Saline (salt water) and gas (such as air) are also used as contrast materials in imaging exams. Microbubbles and microspheres have been administered for ultrasound imaging exams, particularly exams of the heart.



- **Negative contrast media**

- Negative contrast agent means that it absorbs less x-ray than the surrounding tissue: air, nitrox oxide and carbon-dioxide are most frequently used.
- Air as a contrast agent is used mostly in double-contrast radiography studies.
- Carbon-dioxide is most commonly used due to its rapid absorption and has less complications

- **Positive contrast media**

A positive contrast agent means that it absorbs more x-ray than the surrounding tissue. Today's contrast agents are mostly positive, and their further classification is based on their physical characteristics.

Iodine-based, water soluble contrast media;

Nephrotrop, ionic contrast media

Ionic contrast media have higher osmolarity (above 1000 mOsm/kg), they are excreted by the kidney, and cause more side effects, therefore it is not in use intravenously anymore, however, it is used for enterography routinely. Due to its hyperosmolarity ionic contrast media exert laxative effect. (In adhesional ileus they also might have therapeutic effect.) Fractionated iodine-based, ionic contrast medium is given orally in certain abdominal CT studies to differentiate bowels from other structures, for example abscesses.

Nephrotrop, nonionic contrast media

Ionic contrast media are hypo- (290-800 mOsm/kg) or iso-osmolar (290 mOsm/kg) compared to blood. These types of contrast media are also excreted by the kidney. They are generally used for intravenous and intra-arterial administration because they are safer. They causing fewer side effects, their nephrotoxicity are less common, which are not related to their osmolarity, but the single molecules' nephrotoxicity.

Hepatotrop contrast media

Intravenously administered contrast agents, which are excreted by the liver, therefore they are able enhance the biliary system.

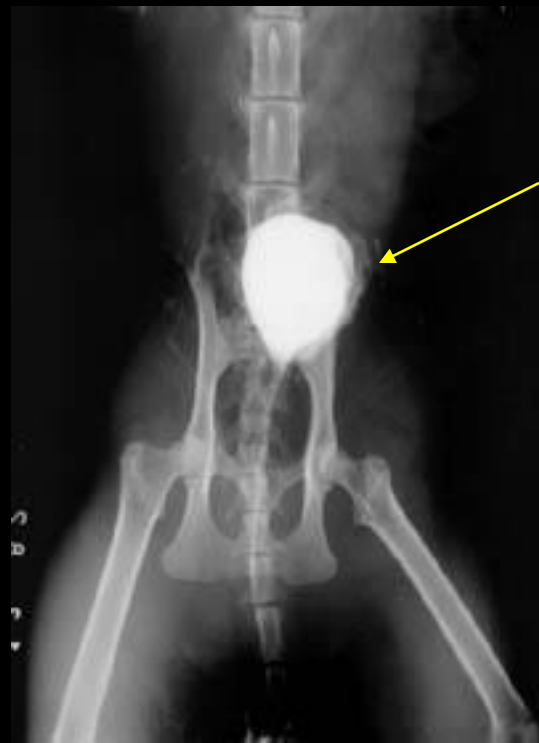
Iodinated, oily contrast media

Recently these oils are used for chemoembolization of certain tumors.

Non-iodinated contrast media

Most frequently used non-iodinated contrast agent is barium sulphate. It can be used orally or rectally, as a suspension of fine particles in aqueous solution. Barium-sulphate is insoluble in water, and if it gets into the peritoneal or mediastinal cavity it can lead to barium peritonitis and mediastinitis respectively. In case of aspiration it can cause pneumonitis. For these reasons, using barium is contraindicated in suspected bowel perforation and in patients at risk for aspiration.

- **Side effects and adverse and allergic reactions;**
- Barium Sulfate Contrast Materials:
 - stomach cramps, diarrhea, nausea, vomiting, constipation
- Iodine-based Contrast Materials:
 - Mild reactions include: nausea and vomiting, headache, itching, flushing, mild skin rash or hives.
 - Moderate reactions include: severe skin rash or hives wheezing, abnormal heart rhythms, high or low blood pressure, shortness of breath or difficulty breathing
 - Severe reactions include: difficulty breathing, cardiac arrest, swelling of the throat or other parts of the body, convulsions, profound low blood pressure



Kese duvarında kalınlaşma

pyelonefritis

