Plain abdominal radiography, often referred to simply as an abdominal X-ray, is a common imaging technique used to evaluate the structures within the abdomen. It involves taking a single or series of X-ray images without the use of contrast material.

Purpose and Uses Plain abdominal radiography is used to assess a variety of abdominal conditions, including:

- **Bowel Obstruction:** To detect signs of intestinal obstruction, such as dilated bowel loops and air-fluid levels. - **Perforation:** To identify free air under the diaphragm, which can indicate a perforation of the gastrointestinal tract. - **Kidney Stones:** To visualize calcifications, such as kidney stones or gallstones. - **Constipation:** To assess for large amounts of stool in the colon. - **Foreign Bodies:** To detect swallowed or inserted foreign objects. - **Ascites:** To evaluate fluid accumulation in the abdomen. - **Organ Size and Position:** To assess the size and position of organs like the liver, spleen, and kidneys.

Procedure 1. **Patient Positioning:** The patient typically lies on their back (supine position) on the X-ray table. In some cases, additional views may be taken with the patient in different positions, such as upright or lying on their side (decubitus position).

2. **Image Acquisition:** X-rays are passed through the abdomen, capturing images on a detector. The resulting images show the various densities of tissues, such as bones, air, and soft tissues.

3. **Radiologist Review:** The images are reviewed by a radiologist who interprets the findings based on the density patterns and other visual cues.

Interpretation Radiologists look for specific signs on a plain abdominal radiograph, such as:

- **Air-Fluid Levels:** Seen in bowel obstruction. - **Gas Patterns:** The distribution of gas in the intestines can indicate different conditions, like ileus or obstruction. - **Calcifications:** Kidney stones, gallstones, or other calcified structures. - **Soft Tissue Masses:** Shadows or unusual masses that may indicate tumors or other abnormalities. - **Bony Structures:** To check for any abnormalities in the vertebral column or pelvis.

Limitations - **Sensitivity:** While useful, plain abdominal radiography has limitations in detecting soft tissue masses or subtle lesions. - **Further Imaging:** Often, additional imaging modalities like CT scans, ultrasound, or MRI may be needed for a more detailed evaluation.

Plain abdominal radiography is a quick and non-invasive procedure, widely used as an initial diagnostic tool in emergency and outpatient settings.