A standard X-ray of the head (skull radiograph) primarily visualizes the **hard, bony structures** of the skull.[1] It is a 2D image created by passing radiation through the head; dense objects block the radiation and appear white, while softer tissues allow it to pass through and appear dark.[2]

Because of this, head X-rays are distinct from CT scans or MRIs—they are excellent for looking at bone but very poor for looking at the brain itself.[3]

Here is a breakdown of what a head X-ray typically shows:

## 1. Bone Fractures and Trauma[4]

- **Skull Fractures:** X-rays are most commonly used to identify breaks in the cranial bones. Linear fractures appear as dark lines that do not follow the normal "suture lines" (natural joints) of the skull.[5]

- **Depressed Fractures:** If a piece of the skull has been pushed inward, it may appear as an area of increased whiteness (density) where the bone fragments overlap.[6]

## 2. Bone Abnormalities and Diseases

- **Craniosynostosis:** In infants, it can show if the skull sutures (joints between skull bones) have fused too early, which affects head shape and brain growth.[7]

- **Bone Tumors:** It can reveal lytic lesions (areas where bone has been destroyed, looking like "punched-out" holes) often associated with conditions like multiple myeloma, or abnormal bone growths (osteomas).[8]

- **Paget's Disease:** This condition causes thickening and deformity of the bone, which is clearly visible on an X-ray.

## 3. Foreign Objects

- **Metal or Glass:** If you have a foreign body embedded in the scalp or skull (like shrapnel, glass from an accident, or metal fragments), it will show up very clearly as bright white.[9]

- **Implants:** Surgical plates, screws, or shunts from previous surgeries will be visible.

## 4. Sinuses and Calcifications

- **Sinusitis:** While a CT scan is better for this, a skull X-ray can sometimes show fluid levels

or cloudiness in the sinus cavities, suggesting an infection.[10]

- **Intracranial Calcification:** Occasionally, it can show calcified areas inside the skull. Some of these are normal (like a calcified pineal gland), but others can indicate certain types of tumors (like meningiomas or oligodendrogliomas) or infections (like toxoplasmosis).

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## What a Head X-Ray Does NOT Show

It is vital to understand that a plain X-ray is **not** effective for diagnosing problems inside the brain tissue itself. It will generally **not** show:

- **Strokes:** It cannot see an ischemic stroke (blockage) or early-stage bleeding.
- **Concussions:** A concussion is a microscopic injury to brain cells; it does not show up on an X-ray (or even a CT scan usually).
- **Soft Tissue Tumors:** Unless a brain tumor is calcified or eroding the bone, it will likely be invisible on an X-ray.
- **Brain Bleeds:** Soft tissue bleeding (hemorrhage) is not distinct enough on a standard X-ray.

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