Orbital X-ray

Procedure: Xray
Bodypart: Head
Patient Group: Female Male Child

Summary

Other terms: Orbital Radiography, X-Ray of the Orbit

Orbital x-ray or orbital radiography is a specialized form of radiography used to study the orbit of the eye. It is useful for detecting problems in the eye arising from injury or disease. It is also commonly used for detecting foreign objects in the eye that an ophthalmoscope cannot detect and is sometimes given prior to an MRI where metal fragments could cause significant damage.

Technique

What it is
Orbital X-rays are studies of the area and structures containing the eye. The orbit is the circle of thin bones that houses and protects the eye, even extending behind the eye and nearly wrapping around it. The orbit includes the eyebrow, the bridge of the nose and the cheekbone. X-rays are a form of radiation (like light) that can penetrate body tissues.

Purpose

Orbital x-ray, or orbital radiography, is used to detect problems resulting from injury or trauma to the eye. Seventy percent of all facial fractures involve the orbits in some way. An x ray of the orbits may also be ordered for patients complaining of pain, vision trouble, or excessive tearing of the eyes. An ophthalmologist may also order orbital x rays when a foreign body cannot be detected with an ophthalmoscope.

Orbital x ray is also used as a screening tool before an MRI is performed, since intraorbital metallic foreign bodies are a contraindication for MRI (the magnetic field in the MRI could move the metallic object causing eye injury). Patients scheduled for MRIs are screened for the possible presence of metallic foreign bodies by a questionnaire or interview with the MRI technologist. If there is a suspicion that a metallic foreign body may be present, the patient will have x rays taken of the orbit to ensure that no foreign body is present.

Procedure
Persons
The x-ray technologist works as part of the treatment team to make sure that the patients are radiographed and then returned to the emergency department as soon as possible. If portable (mobile radiography) orbital x rays are ordered the radiography technologist must make sure that all staff members remaining in the room wear proper shielding (lead aprons).

Preparation
There are no special dietary preparations needed prior to an orbital X-ray. As with any radiography procedure, the patient should remove any jewelry or metal objects, which may interfere with a clear image.

Precautions
Pregnant women and women who could possibly be pregnant should only receive orbital X-rays when absolutely necessary. If the patient is in severe pain due to injury or trauma, a painkiller may be given to help ease discomfort during positioning of the head throughout the exam. No other precautions are necessary for orbital X-rays.

Duration
The orbital X-ray procedure should take about 15 minutes to complete.

Process
A physician may perform the X-ray exam in his or her office, or refer the patient to an outpatient radiology facility or hospital radiology department. In the case of emergency, the exam may be performed in the emergency room or a nearby radiology area of the hospital.

Each orbit is composed of a floor, a roof, a medial (in the center plane) and lateral (sides of the plane) walls. The orbital X-ray involves several different views in order for the physician to clearly see various parts of the eye without obstruction. In orbital X-rays, images of the unaffected eye may also be taken to compare its shapes and structures to those of the affected eye. Views may include side view (lateral), back to front (posteroanterior), base view, views from both sides, and an image from the center to one outside edge (half-axial projection). Projections of the optical canal will also be included. For all of these views, the patient may be seated upright or asked to lie on a table in the X-ray room.

After procedure
No aftercare is required following this diagnostic test. Following the procedure, the patient will usually be asked to wait until the films are developed to ensure they are high enough quality and that repeat X-rays are not necessary.

Results
Normal results
Normal findings will show the bones of the orbit intact, and will show similarity between the orbit that is being studied and the unaffected orbit.

Abnormal results
Positive findings from an orbital x ray may show that there has been injury to the eye. Certain signs may indicate some disease that is affecting the orbital structures. Tiny fractures in the orbital bones can usually be detected on the radiograph. The floor bone, the medial wall and the ethmoid bone, which is a spongy bone that forms the upper part of the nasal cavity, are the most likely to break. In a blowout fracture (one involving the orbital floor), radiographic findings may include disruption to the orbital floor, an opaque look to the sinuses on the same side as the affected orbit (due to hemorrhage) or signs of sinus problems from the orbital root's interference. These indications can be seen in most typical orbital x ray views.

Since the physician examines both orbits side by side, indications of differences in size and shape of the various structures in the orbit may be apparent. The orbit may be enlarged, indicating irritation from an injury or foreign body. A number of growing tumors within the eye or brain area may also cause orbital enlargement. Destruction of the walls of the orbit may indicate a nearby infection or malignancy. Changes in density of the tiny orbit bones may also be a sign of bone disease or cancer spread to bone. Children's orbits are more likely to be enlarged by a fast growing lesion, since their orbital bones have not fully developed.
Consideration

Risks
Radiation exposure is low for this procedure and all certified radiology facilities follow strict personnel and equipment guidelines for radiation protection. Women of child bearing age and children should be offered protective shielding (lead aprons) to cover the genital and/or abdominal areas.

Citations