

Orbits, Vision, and Visual Loss

Seeing (vision) is a complicated system that converts light coming in through the eyes into various signals that are received by different parts of the brain. MRI (<https://www.radiologyinfo.org/en/info/mri-brain>) and CT (<https://www.radiologyinfo.org/en/info/headct>) are used to diagnose diseases of the eye and eye cavity in the skull (orbits). MRI is good for examining soft tissues, and CT is useful to examine orbits, muscles, fat, foreign bodies, accumulation of calcium salts in tissues (calcifications), and bones. When vascular (blood vessel) disease is suspected, CT angiography (CTA) (<https://www.radiologyinfo.org/en/info/angiocr>) or MR angiography (MRA) (<https://www.radiologyinfo.org/en/info/angiomr>) can be added to initial CT or MRI tests. MRA is preferred in the nontrauma setting. Common vision problems and the appropriate imaging follow-ups include:

- CT head and orbits without contrast is the most appropriate imaging evaluation for a traumatic loss of vision. CTA is appropriate for suspected vascular injury. MRI is an appropriate follow-up to an inconclusive CT scan or suspected damage of the optic nerve.
- Bulging out or caving in of the eyeball, infections, abnormal tissue growths (such as a tumor), and loss of control of eye movement are best assessed with MRI of the orbits without and with contrast and CT of the orbits with contrast. Both scans are complementary and appropriate.
- A mass on or inflammation of the optic nerve is best assessed on an MRI head and orbits without and with contrast.

When the correct orbital disease is identified in a clinical examination performed by a doctor or on a laboratory result, more imaging tests are usually not appropriate.

— By Frank Rybicki Jr., Bruno Policeni, MBA, MD. This information originally appeared in the *Journal of the American College of Radiology*.

Disclaimer

This information is copied from the RadiologyInfo Web site (<http://www.radiologyinfo.org>) which is dedicated to providing the highest quality information. To ensure that, each section is reviewed by a physician with expertise in the area presented. All information contained in the Web site is further reviewed by an ACR (American College of Radiology) - RSNA (Radiological Society of North America) committee, comprising physicians with expertise in several radiologic areas.

However, it is not possible to assure that this Web site contains complete, up-to-date information on any particular subject. Therefore, ACR and RSNA make no representations or warranties about the suitability of this information for use for any particular purpose. All information is provided "as is" without express or implied warranty.

Please visit the RadiologyInfo Web site at <http://www.radiologyinfo.org> to view or download the latest information.

Note: Images may be shown for illustrative purposes. Do not attempt to draw conclusions or make diagnoses by comparing these images to other medical images, particularly your own. Only qualified physicians should interpret images; the radiologist is the physician expert trained in medical imaging.

Copyright

This material is copyrighted by either the Radiological Society of North America (RSNA), 820 Jorie Boulevard, Oak Brook, IL 60523-2251 or the American College of Radiology (ACR), 1891 Preston White Drive, Reston, VA 20191-4397. Commercial reproduction or multiple distribution by any traditional or electronically based reproduction/publication method is prohibited.

Copyright © 2025 Radiological Society of North America, Inc.