<table>
<thead>
<tr>
<th>Clinical guidelines</th>
<th>Original Date:</th>
<th>September 1997</th>
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<tbody>
<tr>
<td>ORBIT CT</td>
<td>Last Review Date:</td>
<td>August 2015</td>
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<tr>
<td>(Includes sella and posterior fossa)</td>
<td>Last Revised Date:</td>
<td>September 2015</td>
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<tr>
<td>CPT Codes: 70480, 70481, 70482</td>
<td>Responsible Department:</td>
<td>Clinical Operations</td>
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<td>Guideline Number: NIA_CG_005-1</td>
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INTRODUCTION:

Computed tomography’s use of thin sections with multi-planar scanning, (e.g., axial, coronal and sagittal planes) along with its three-dimensional reconstruction permits thorough diagnosis and management of ocular and orbital disorders. Brain CT is often ordered along with CT of the orbit especially for head injury with orbital trauma.

INDICATIONS FOR ORBIT CT:

- For assessment of proptosis (exophthalmos).
- For evaluation of progressive vision loss.
- For evaluation of decreased range of motion of the eyes.
- For screening and evaluation of ocular tumor, especially melanoma.
- For screening and assessment of suspected hyperthyroidism (such as Graves’ disease).
- For assessment of trauma.
- For screening and assessment of known or suspected optic neuritis if MRI is contraindicated or is unable to be performed.
- For evaluation of unilateral visual deficit.
- For screening and evaluation of suspected orbital pseudotumor.
- Papilledema
- Orbital infection

COMBINATION OF STUDIES WITH ORBIT CT:

- **Brain CT/Orbit CT –**
  - For approved indications as noted above and being performed in a child under 3 years of age who will need anesthesia for the procedure and there is a suspicion of concurrent intracranial tumor (e.g. “trilateral retinoblastoma”)
  - Unilateral papilledema: to distinguish a compressive lesion on the optic nerve or optic disc swelling associated with acute demyelinating optic neuritis in multiple sclerosis from nonarteritic anterior ischemic optic neuropathy (NAION), central retinal vein occlusion or optic nerve infiltrative disorders.

ADDITIONAL INFORMATION RELATED TO ORBIT CT:

**Request for a follow-up study** - A follow-up study may be needed to help evaluate a patient’s progress after treatment, procedure, intervention or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested.
**Proptosis or exophthalmos** – Proptosis is a bulging of one or two of the eyes. Bulging of the eyes may be caused by hyperthyroidism (Graves’ disease) or it may be caused by orbital tumors, cancer, infection, inflammation and arteriovenous malformations. The extent of proptosis, the abnormal bulging of one or two eyes, can be assessed by using a mid-orbital axial scan.

**Orbital Pseudotumor** – Pseudotumor may appear as a well-defined mass or it may mimic a malignancy. A sclerosing orbital Pseudotumor can mimic a lacrimal gland tumor.

**Grave’s Disease** – Enlargement of extraocular muscles and exophthalmos are features of Grave’s disease. CT may show unilateral or bilateral involvement of single or multiple muscles. It will show fusiform muscle enlargement with smooth muscle borders, especially posteriorly and pre-septal edema may be evident. Quantitative CT imaging of the orbit evaluates the size and density values of extraocular muscles and the globe position and helps in detecting ophthalmopathy in Grave’s disease.

**Orbital Trauma** – CT is helpful in assessing trauma to the eye because it provides excellent visualization of soft tissues, bony structures and foreign bodies.

**Ocular Tumor** – In the early stages, a choroidal malignant melanoma appears as a localized thickening of sclero-uveal layer. It may be seen as a well defined mass if it is more than 3 mm thick.

**CT and Orbit Tumors** – MRI is preferred to CT for evaluation of the optic nerve and in many instances the orbital contents. When MRI cannot be performed or for certain indications; including evaluation of infection, trauma, thyroid ophthalmopathy or calcified tumors, CT is a suitable alternative.

**Retinoblastoma and intracranial tumors**: Histologically similar tumors may occur in the pineal, suprasellar or parasellar regions of patients with ocular retinoblastoma, also known as “trilateral retinoblastoma”. The incidence of these intracranial tumors in either unilateral or bilateral retinoblastoma patients is 1.5%-5 %.

**Unilateral papilledema**: The most common causes of unilateral optic disc edema are nonarteritic anterior ischemic optic neuropathy (AION), optic neuritis (termed papillitis when disc swelling is present), and orbital compressive lesions. Idiopathic intracranial hypertension (pseudotumor cerebri) and central retinal vein occlusive lesions can also present with unilateral papilledema.

**Nonarteritic anterior ischemic optic neuropathy (NAION)** – Nonarteritic anterior ischemic optic neuropathy (NAION) is the most common form of ischemic optic neuropathy. It is an idiopathic, ischemic insult of the optic nerve head characterized by acute, monocular, painless visual loss with optic disc swelling. The pathophysiology for reduction in blood flow to the optic nerve is controversial.
REFERENCES


