

Indications

- > Visual loss that is clinically compatible with an intracranial pre- or postchiasmal lesion
- > Vascular lesions of the orbit (AV malformation , carotid-cavernous fistula, orbital varix)
- > History of visual disturbances
- > Optic nerve sheath meningioma
- > Tumours or suspected tumours
- > Thyroid opthalmopathy
- > Extraocular myopathy
- > Optic nerve neuritis
- > Optic nerve glioma
- > Unilateral proptosis
- > Orbital abscess
- > Inflammation

Contraindications

- > Any electrically, magnetically or mechanically activated implant (e.g. pacemaker, insulin pump biostimulator, neurostimulator, cochlear implants)
- > Intracranial aneurysm clips (unless made of titanium)
- > Pregnancy (risk vs benefit ratio to be assessed)
- > Ferromagnetic surgical clips or staples
- > Metallic foreign body in the eye
 - Metal shrapnel or bullet

Patient preparation

- > A satisfactory written consent form must be taken from the patient before entering the scanner room
- > Ask the patient to remove all metal objects including keys, coins, wallet, watches, mobile phones, magnetic strips, jewellery, hearing aid and hairpins
- > If possible provide a chaperone for claustrophobic patients (e.g. relative or friend)
- > **Contrast injection risk and benefits must be explained to the patient before the scan**
- > **Gadolinium should only be given to the patient if GFR is > 30**
- > Offer earplugs or headphones, possibly with music for extra comfort
- > Explain the procedure to the patient
- > Instruct the patient to keep still
- > Note the weight of the patient

Positioning

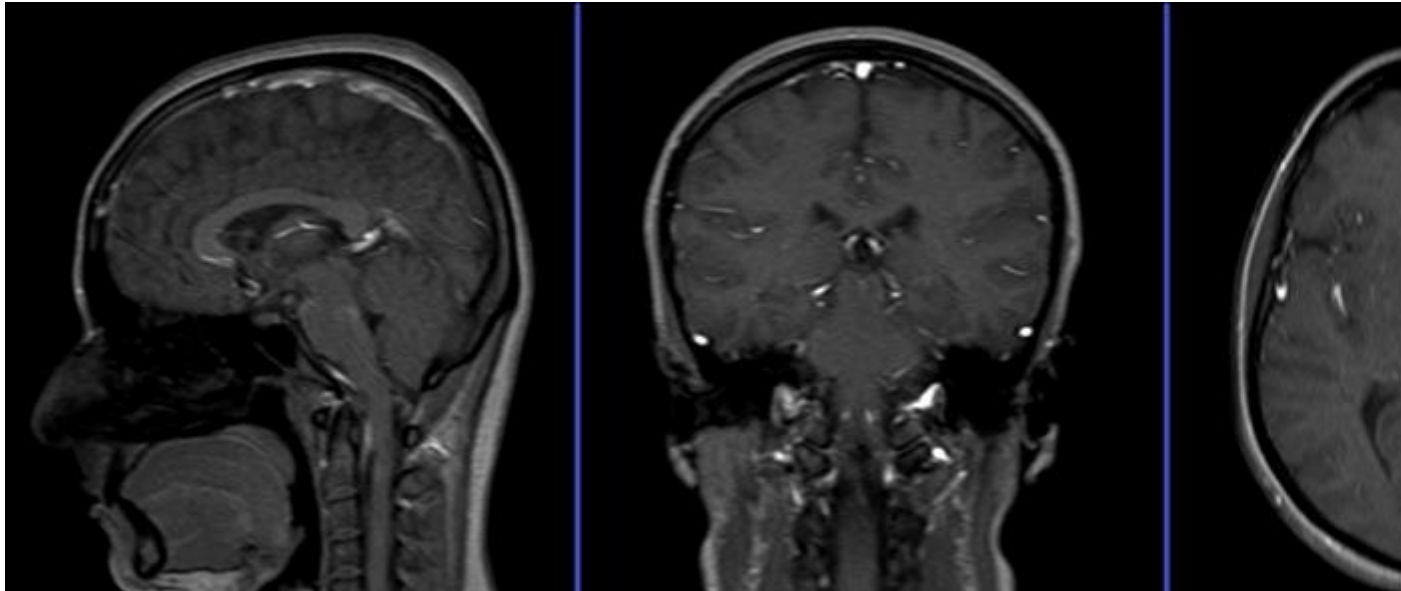
- > Head first supine
- > Position the head in the head coil and immobilise with cushions
- > Give cushions under the legs for extra comfort
- > Centre the laser beam localiser over the glabella



Suggested sequence, parameters and planning

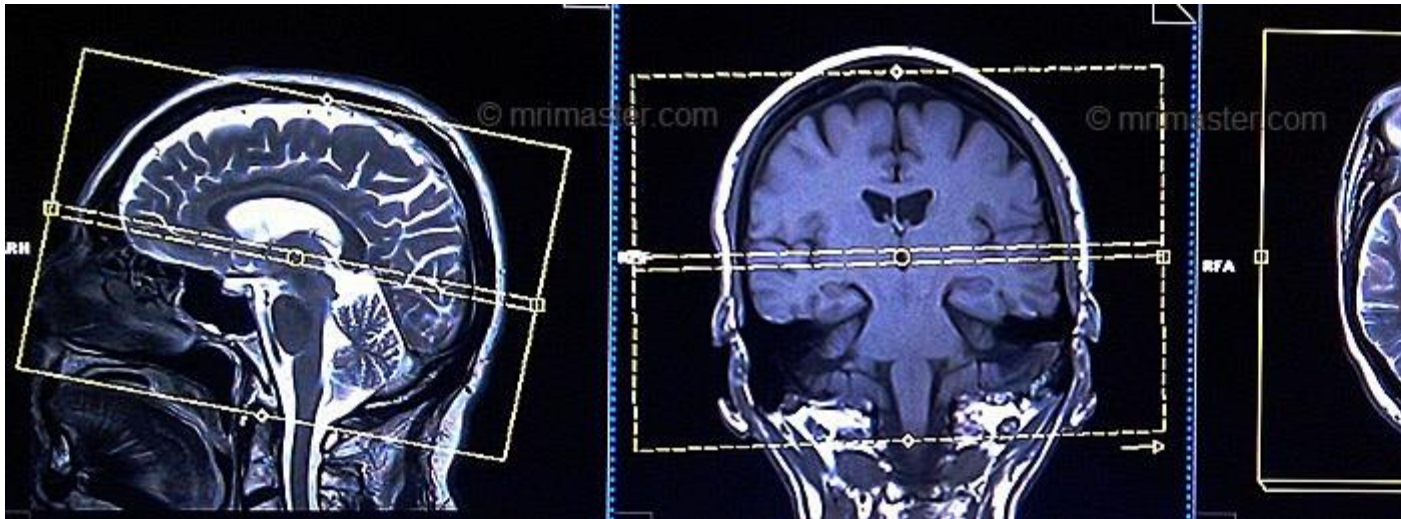
localiser

A three plane localiser must be taken in the beginning to localise and plan the sequences. Localisers are normally less than 25sec. T1 weighted low resolution scans.



T2 tse axial

Plan the axial slices on the sagittal plane; angle the position block parallel to the genu and splenium of the corpus callosum. Slices must be sufficient to cover the whole brain from the vertex to the line of the foramen magnum. Check the positioning block in the other two planes. An appropriate angle must be given in coronal plane on a tilted head (perpendicular to the line of 3rd ventricle and brain stem).

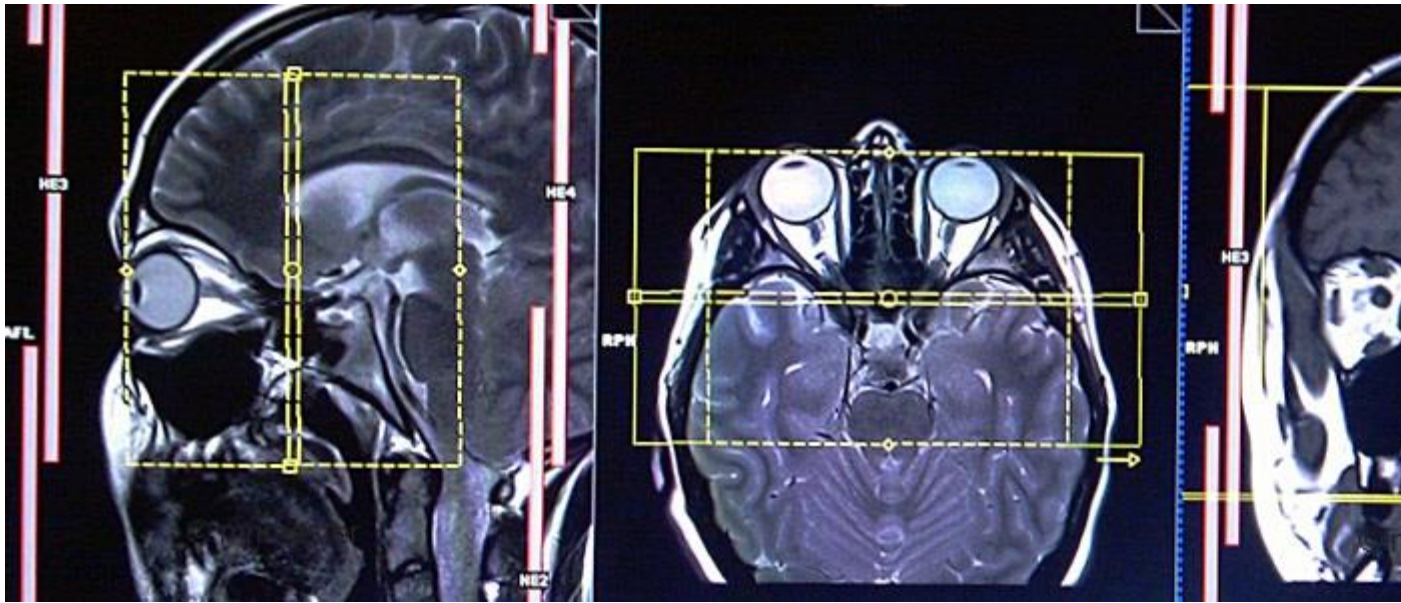


Parameters

TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP
3000-4000	100-120	5MM	130-150	R>L	320X320	210-230	10%

T2 stir coronal 3mm

Plan the coronal slices on the axial plane; angle the position block parallel to the RT and LT eye lenses. Check the positioning block in the other two planes. An appropriate angle must be given in the sagittal plane on a tilted head (perpendicular to optic nerve). Slices must be sufficient to cover the whole orbits from the eye lenses to the line of brain stem.

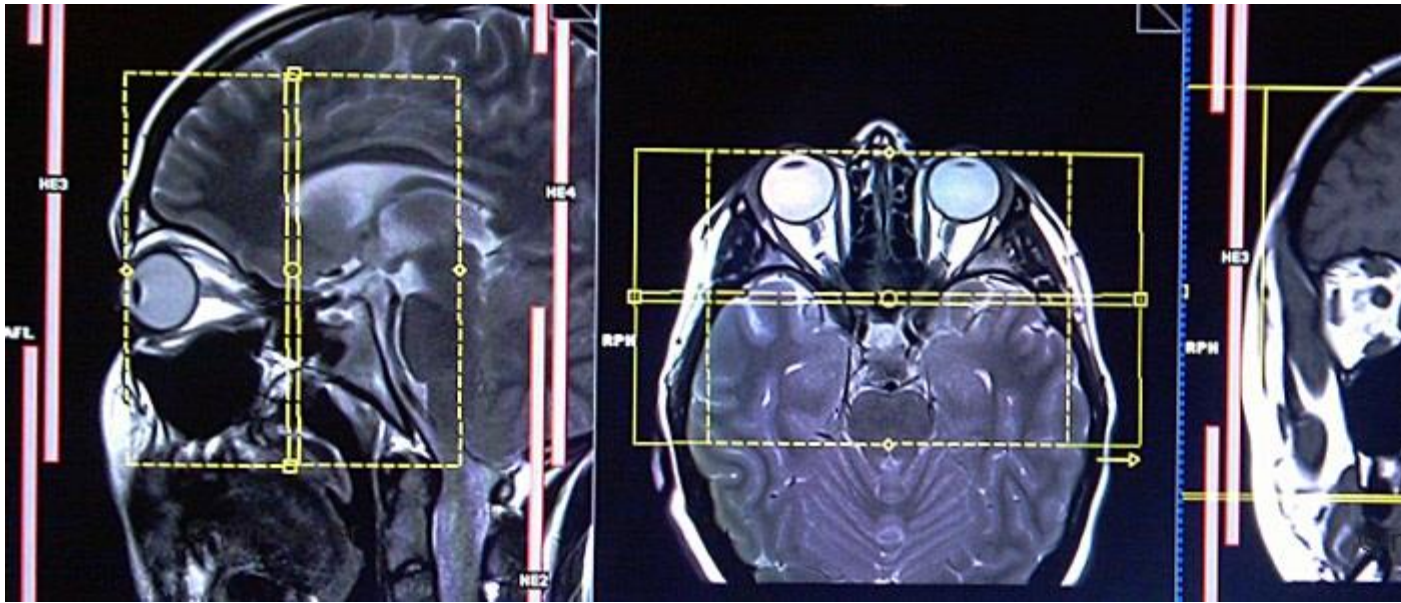


Parameters

TR	TE	FLIP	NEX	SLICE	MATRIX	FOV	PHASE
4000-5000	110	130	3	3MM	256x256	150-170	R>L

T1 TSE coronal 3mm

Plan the coronal slices on the axial plane; angle the position block parallel to the RT and LT eye lenses. Check the positioning block in the other two planes. An appropriate angle must be given in the sagittal plane on a tilted head (perpendicular to optic nerve). Slices must be sufficient to cover the whole orbits from the eye lenses to the line of brain stem.

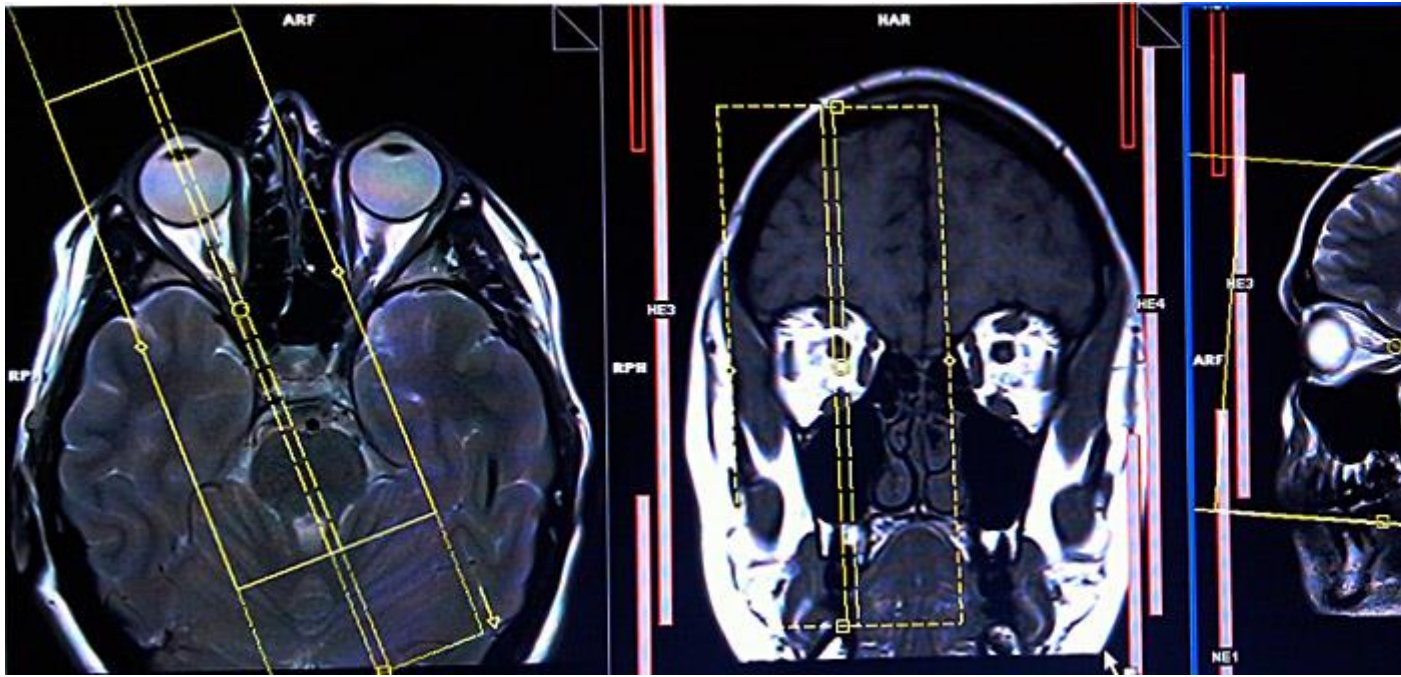


Parameters

TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP
400-600	15-25	3MM	90	R>L	256X256	150x170	10%

T2 tse sagittal oblique RT

Plan the sagittal slices on the axial plane; angle the position block parallel to optic nerve. Check the positioning block in the other two planes. An appropriate angle must be given in the coronal plane on a tilted head (parallel to the line along RT superior and RT inferior rectus muscles). Slices must be sufficient to cover the RT orbit.

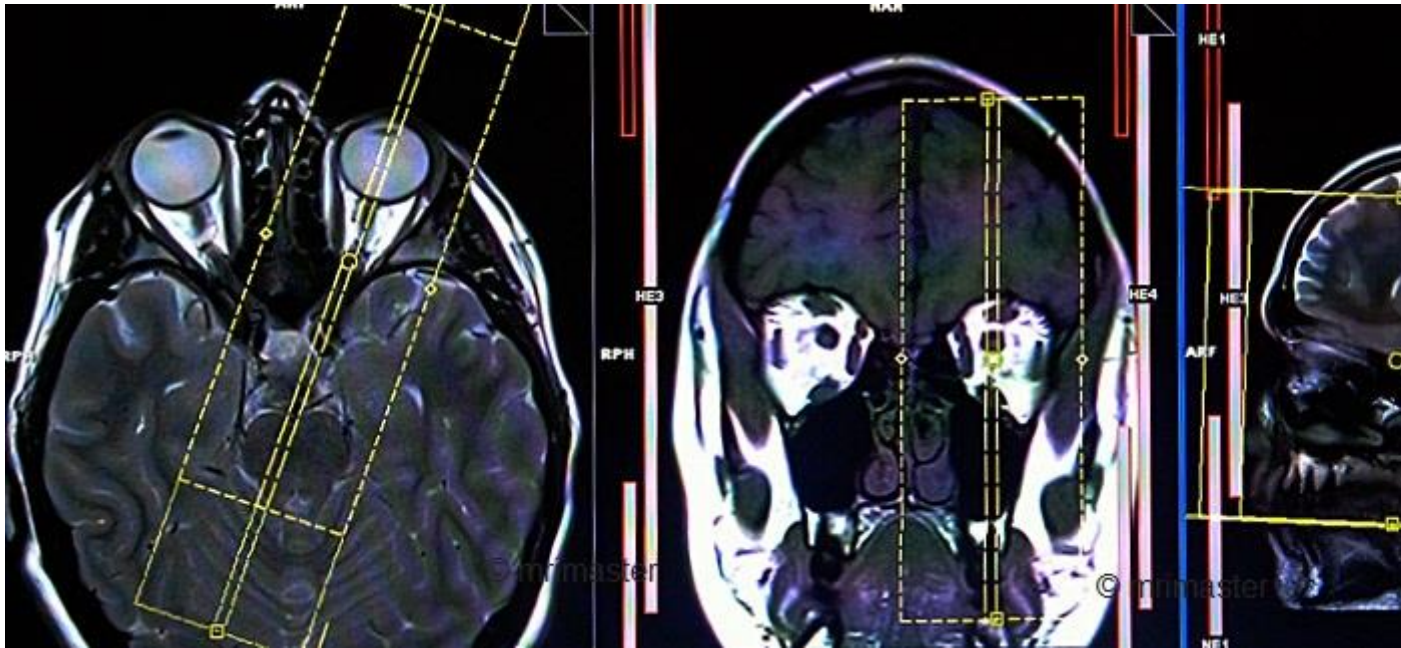


Parameters

TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP
3000-4000	100-120	3 MM	130-150	A>P	256X256	150-170	10%

T2 tse sagittal oblique LT

Plan the sagittal slices on the axial plane; angle the position block parallel to optic nerve. Check the positioning block in the other two planes. An appropriate angle must be given in the coronal plane on a tilted head (parallel to the line along LT superior and LT inferior rectus muscles). Slices must be sufficient to cover the LT orbit.

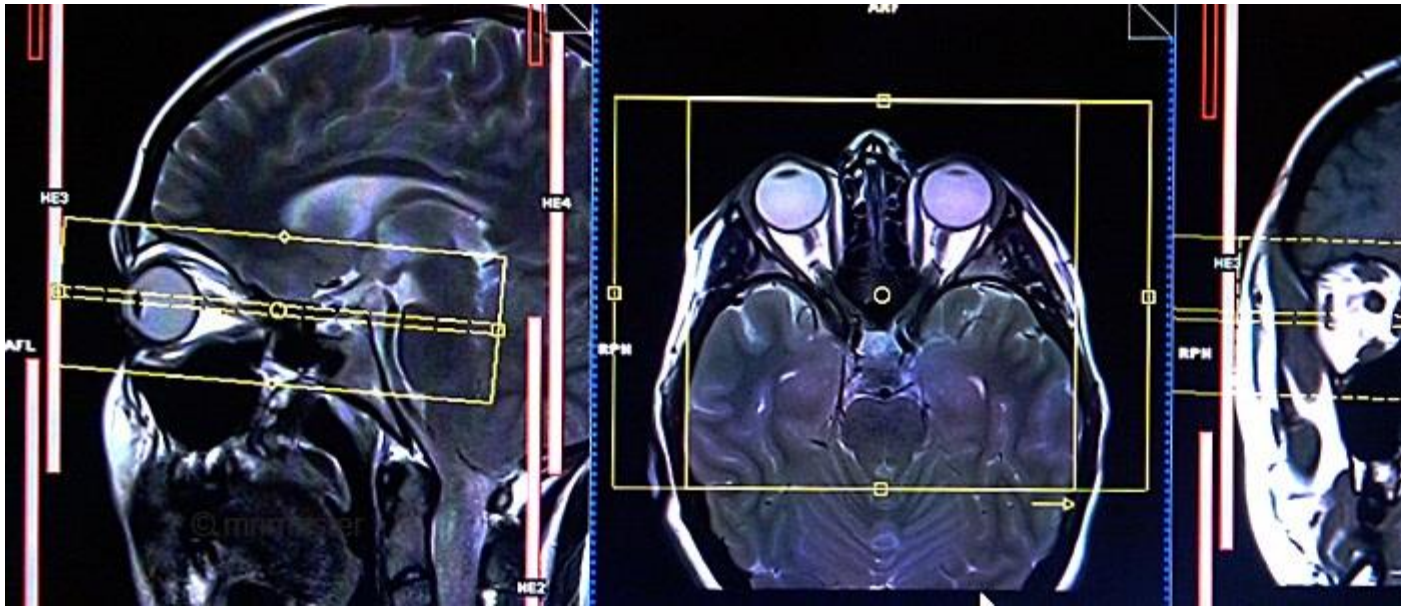


Parameters

TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP
3000-4000	100-120	3 MM	130-150	A>P	256X256	150-170	10%

T2 stir axial

Plan the axial slices on the coronal plane; angle the position block parallel to the line along RT and LT optic nerve. Check the positioning block in the other two planes. An appropriate angle must be given in the sagittal plane (parallel to the optic nerve). Slices must be sufficient to cover the whole orbits from superior border down to inferior border of orbits.



Parameters

TR	TE	SLICE	FLIP	PHASE	MATRIX	FOV	GAP
3000-4000	100-120	3 MM	130-150	R>L	256X256	150-160	10%

Indications for contrast enhancement brain scans

Post contrast scanning will only be used in the case of any pathology seen in the pre contrast scans.

Use T1 TSE fat sat axial and coronal scans after the administration of IV gadolinium *DTPA* injection(copy the planning outlined above). The recommended dose of gadolinium *DTPA* injection is 0.1 mmol/kg, i.e. 0.2 mL/kg in adults, child