

# Neuro-ophthalmology: Strokes and Tumors

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## Outline

- Abnormalities in visual fields
- Binocular diplopia
- Facial spasms

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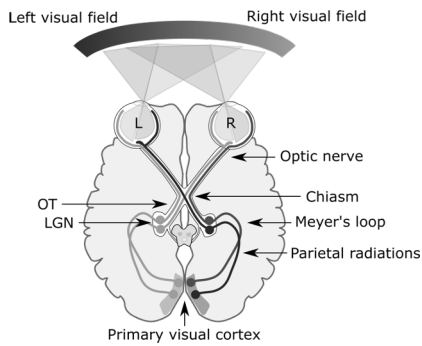
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## Visual pathway



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### Lesion of the optic nerve

- ON glioma
- ON sheath meningioma
- CRA occlusion

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### Lesion of the optic chiasm

- Pituitary adenoma
- Craniopharyngioma

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### Lesion of the parietal radiations

Right PCA stroke

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Lesion of the primary visual cortex



OS OD

Right PCA stroke

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Lesion of Meyer's loop



OS OD

Right MCA stroke

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Diplopia

- Monocular or binocular?



Image from: <https://www.allaboutvision.com/conditions/diplopia/>

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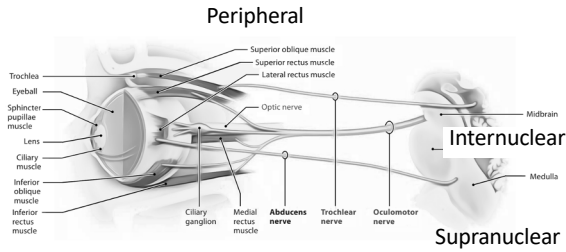
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### Causes of binocular diplopia




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### Supranuclear diplopia

- Prenuclear inputs, including vestibular input
- Usually cause bilateral palsies (no diplopia)

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### Supranuclear diplopia: Skew deviation

- From damage to otolith pathway
- Gaze palsy does not localize to any one cranial nerve




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Wallenberg Syndrome (lateral medullary syndrome)

- Stroke involving vestibular artery >> PICA

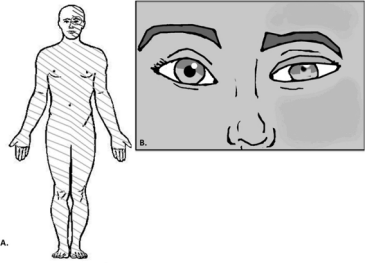


Image from: <http://www.ebrunjournalofneurology.com/archive/2016-archive/1000084342016-cuoc0fign45gf>

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Internuclear diplopia

- Damage to MLF → INO
- Slow/absent adduction IPSI + abducting nystagmus of CONTRA eye

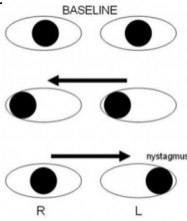


Image from: [https://eyewiki.aao.org/Internuclear\\_Ophthalmoplegia\\_of\\_Abduction\\_\(Istz\\_Posterior\\_INO\)](https://eyewiki.aao.org/Internuclear_Ophthalmoplegia_of_Abduction_(Istz_Posterior_INO))

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Cranial nerve palsies: CN III

- Pupil involving
- Posterior communicating artery aneurysm
- Pupil-sparing: Usually microvascular disease

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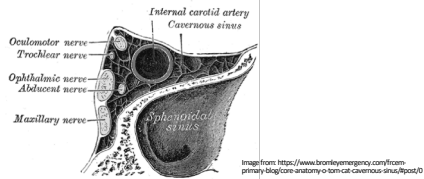
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### Cranial nerve palsies: CN IV & VI

- Usually microvascular disease
- But if combined CN III, IV, V, VI and sympathetics: lesion in cavernous sinus
  - Meningioma, hemangioma, thrombosis
  - Ophthalmoplegia, Horner's syndrome, facial numbness




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### CN VII overactivity: facial spasms

- Benign essential blepharospasm
  - Unknown etiology of dystonia
  - Goes away with sleep
  - Treat with botox




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### CN VII overactivity: facial spasms

- Hemifacial spasm
  - Usually 2/2 nerve root compression by blood vessel
  - Persists during sleep
  - Treat with botox or neurosurgical decompression




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### CN VII overactivity: facial spasms

- Facial myokymia
  - “Rippling” of facial muscles on one half of face
  - Brain stem glioma (kids), MS (adults)
  - Treat the underlying cause
- Eyelid myokymia
  - Benign
  - Reduce stress, decrease caffeine, sleep more

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### Questions?



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