

CN III

Pathway:

Nucleus in ventral periaqueductal grey matter @ superior colliculus

Nerve passes through interpeduncular cistern to PCA into cavernous sinus (lateral wall)

Passes into orbit, divides into superior + inferior branches

Dysfunction S&S

Eye is down and out with pupil dilation + ptosis

Patient cannot move eye up and in

Diplopia is greatest when patient moves eye towards weak side

Concomitant vs Paralytic Squint

Concomitant

Congenital

NO DIPLOPIA

Extraocular muscles + nerves intact

Full movement of eyes when tested separately

Paralytic

Affected eye shows limited movement

Angle of eye deviation + diplopia greatest when looking in the direction controlled by the weak muscle

Outer image always produced by the weak eye

DIPLOPIA IS ALWAYS PRESENT

Head tilt posture present in opposite direction to eye - minimises diplopia

CN IV

Pathway:

Nucleus @ midbrain- level of inferior colliculus near ventral periaqueductal grey matter

Decussates in dorsal aspect of BS

Emerges laterally around cerebral peduncle

Enters into the cavernous sinus (lateral wall)

Passes through superior orbital fissure

Dysfunction S&S

Eye up and in

Pt cannot move eye down and out

Diplopia is greatest when patient moves eye towards weak side

Disorders of Gaze

Seizures

During a seizure, the eyes deviate towards affected limbs in a jerking fashion

Themipareisis

Tonic deviation of eyes away from hemiparetic limb

Lesion in frontal lobe, ipsilateral to direction of eye

Damage to PPRF

Tonic deviation of eyes towards

Lesion in pons, contralateral to direction of eye

Vertical gaze palsy

Midbrain/pontine lesions



Disorders of Gaze (cont)

Perinaud syndrome	Impaired upwards eye movements, convergence, response to light + accommodation impaired	Dorsal midbrain lesion - IIIrd Ventricle tumour, pineal region tumours, hydrocephalus, wernicke's encephalopathy, encephalitis
**Internuclear ophthalmologia	Disconjugate gaze palsy, sawtooth nystagmus (back and forth)	Damage to ML bundle, MS
Webino	Bilateral IOP + exotropia + loss of convergence, conjugate gaze palsy to one side	Midbrain lesion, PPRF/abducens nucleus + adjacent ML bundle
Ocular apraxia	Does not move to command but has full range of random eye movements	Bilateral prefrontal motor cortex damage

CN VI

Pathway:

Floor of IV ventricle

Axons pass ventrally through pons, overlies basilar portion of occipital bone

Runs up petrous part of temporal bone

Enters lateral wall of cavernous sinus

Thin nerve, very vulnerable to increased ICP + superior pressure from tentorial cerebellar lesions

Dysfunction S&S

Can occur with CN III palsy

Eye position would be medial

Pt would not be able to move eye outwards

Diplopia is greatest when patient moves eye towards weak side

Eye movements

Middle gyrus of frontal lobe	Fast rapid eye movements
Occipital cortex	Slow movement of eyes to ipsilateral side
Frontal + Occipito-mesencephalic pathway	Project to III, IV, VI nucleus
Pursuit	Slow movement that fixed image on macular area
Saccadic	Rapid - aligns new target on macular area



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Page 2 of 2.

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