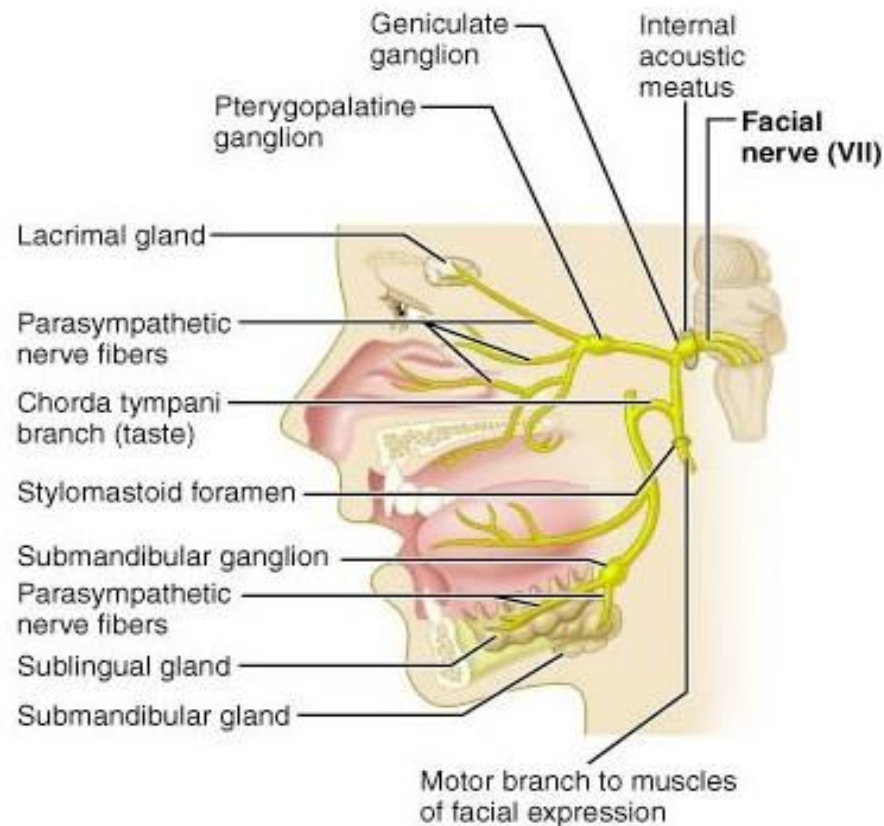
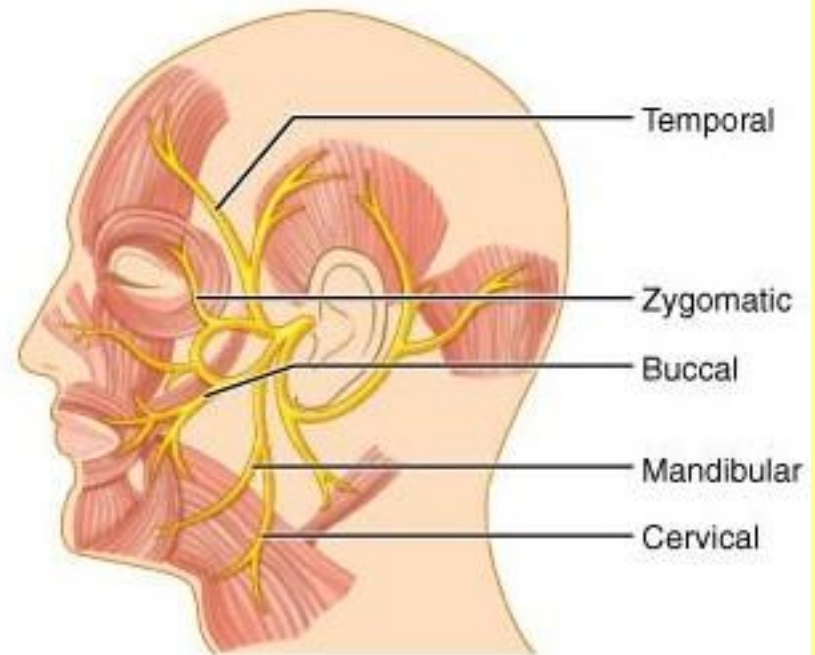

Examination of cranial nerves 7-12

Dr Ajaz Qadir, Sr Medicine

Cranial Nerve VII: Facial



(a) Parasympathetic efferents and sensory afferents



(b) Motor branches to muscles of facial expression and scalp muscles

Function

- Supplies the muscles of facial expression including platysma & stapedius muscle
- Secretomotor fibers to the lacrimal gland & the salivary gland
- Carries sensation of taste from anterior 2/3 of tongue & general sensation from external acoustic meatus

Purpose of the test

- To detect any unilateral or bilateral weakness of facial muscles (UMN or LMN)
- Detect impairment of taste

Method of testing

➤ Observation

- Symmetry and asymmetry of face
- Nasolabial fold & wrinkle on forehead

➤ Ask the Pt to close the eyes, raise the eyebrows, blow out the cheek, whistle etc



Examination of taste

- The four primary taste (sweet, salt, sour, bitter) can be carried out by using sugar, salt, vinegar & quinine
- The side of the tongue is moistened by the test substance
- Ask the Pt to indicate taste by pointing

Secretomotor function

- The flow of tears of two side can be compared by giving ammonia to inhale which will result in tearing of eye
- The flow of saliva can be tasted by keeping a spicy substance in the tongue & the tip is raised to observe the sub maxillary salivary flow

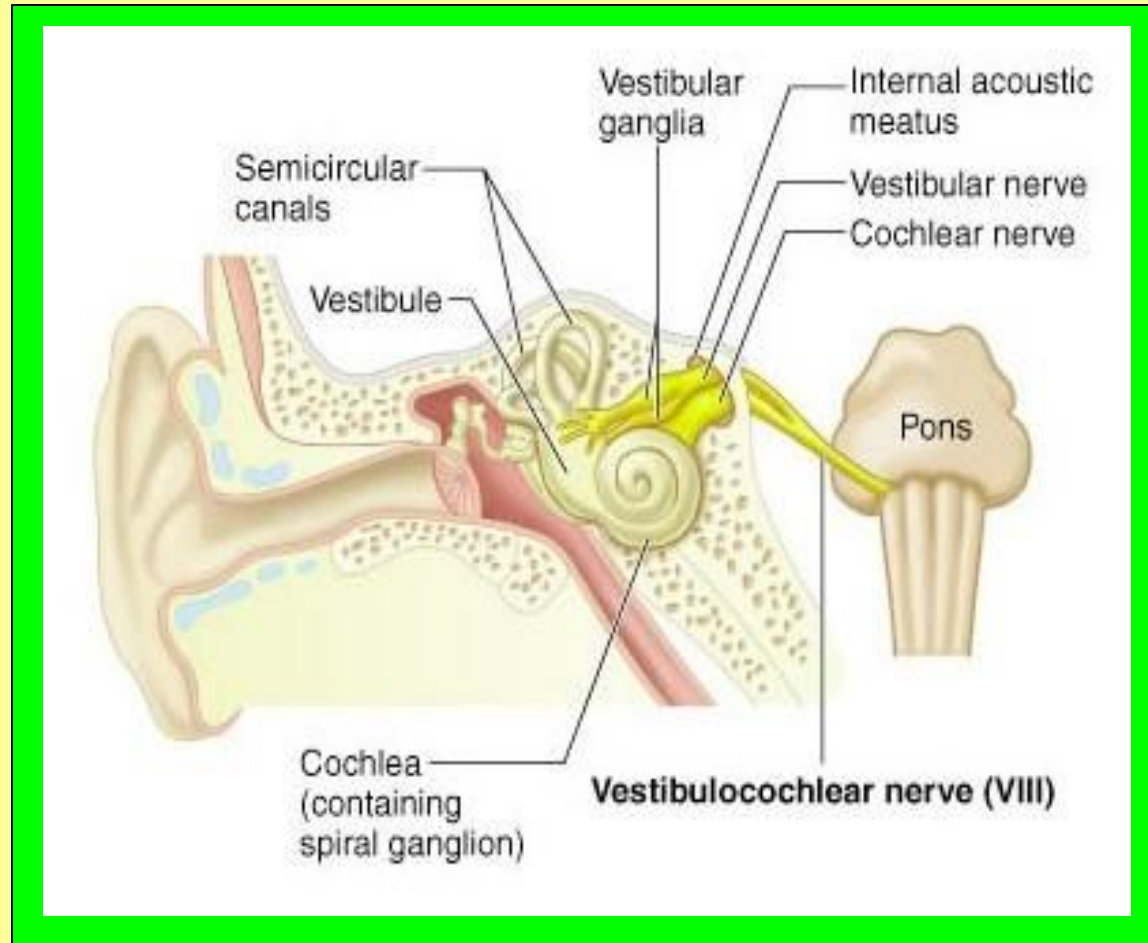
Reflexes

- Corneal reflex
- Nasopalpebral reflex: tap on the nasopalpebral ridge will produce closure of both eyes. In bells palsy there is failure to close on the affected side

Common causes of facial paralysis

- Neoplasm affecting thalamus:
unilateral emotional paralysis
- Parkinsonism : bilateral emotional paralysis
- CVA neoplasm, MND: bilateral UMN palsy
- Bell's palsy
- GBS

Cranial Nerve VIII: Vestibulocochlear



Function

- Carries the impulses of sound from the hair cell of organ of corti to cochlear nucleus in pons
- Control balance through vestibular nerve

Purpose of the test

- To determine any deafness is bilateral or unilateral
- Whether deafness is due disease of middle ear or cochlear nerve
- To determine the disturbance of vestibular functions

Test of hearing

- Observe if the patient turns one ear towards you
- Evaluate hearing using a ticking watch, rub fingers together, whisper.



Rinne's test

- Strike a tuning fork gently, hold it near one external meatus & ask the Pt if he can hear it
- Place it on the mastoid, ask if he can still hear it & instruct him to say “**NOW**” when sound ceases, & keep it on the external meatus again (normally the note is still audible)

Interpretation

- In middle ear deafness – the note is not heard
- In nerve deafness – air & bone conduction are reduced but air remains better

Weber's test

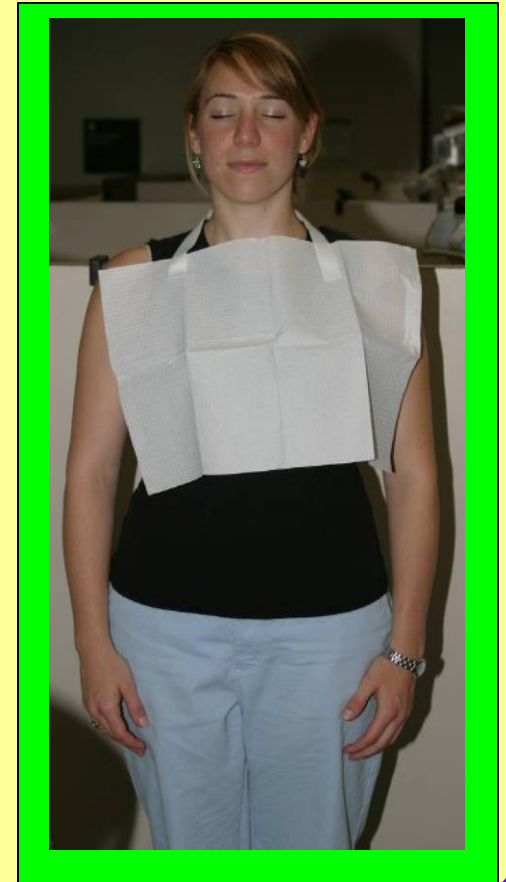
- The fork is place on the vertex
- Ask the Pt if he can hear the sound all over the head, in both ears or in one ear
- In nerve deafness the sound appear to be heard on the normal ear
- On chronic middle ear disease it is conducted to the abnormal ear

Common causes of deafness

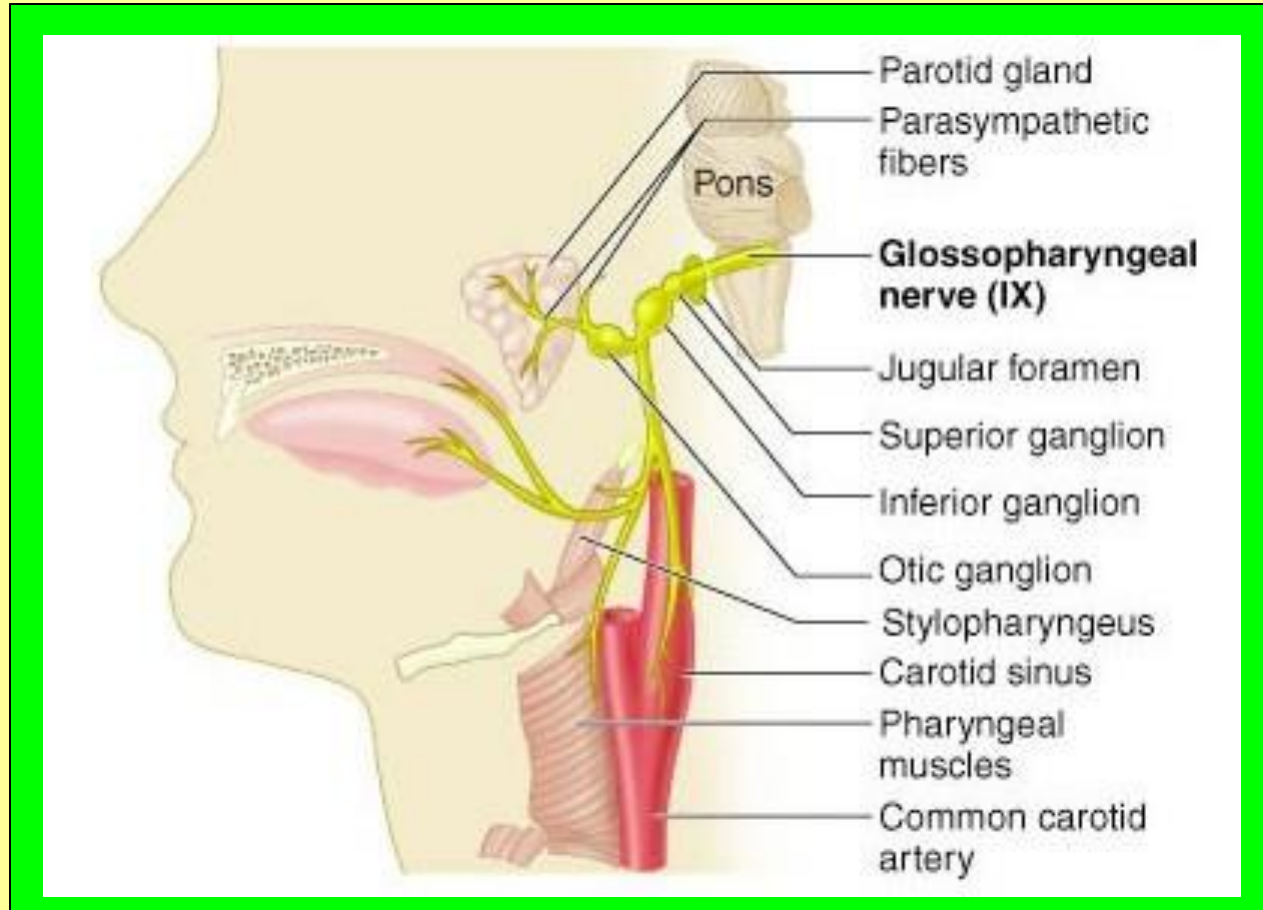
- Disease of external & middle ear & Eustachian tube
- Prolonged exposure to loud noise
- Old age
- Meningitis
- Demyelinating disease
- Deafness due to drugs

Test of vestibular function

- Observe equilibrium as patient walks or stands
- Observe abnormal eye movts
- Ask for -
 - Dizziness
 - Falling
 - Nausea and vomiting



Cranial Nerve IX: Glossopharyngeal



Function

General Sensory: posterior 1/3 of tongue, tonsil, skin of external ear, tympanic membrane & pharynx

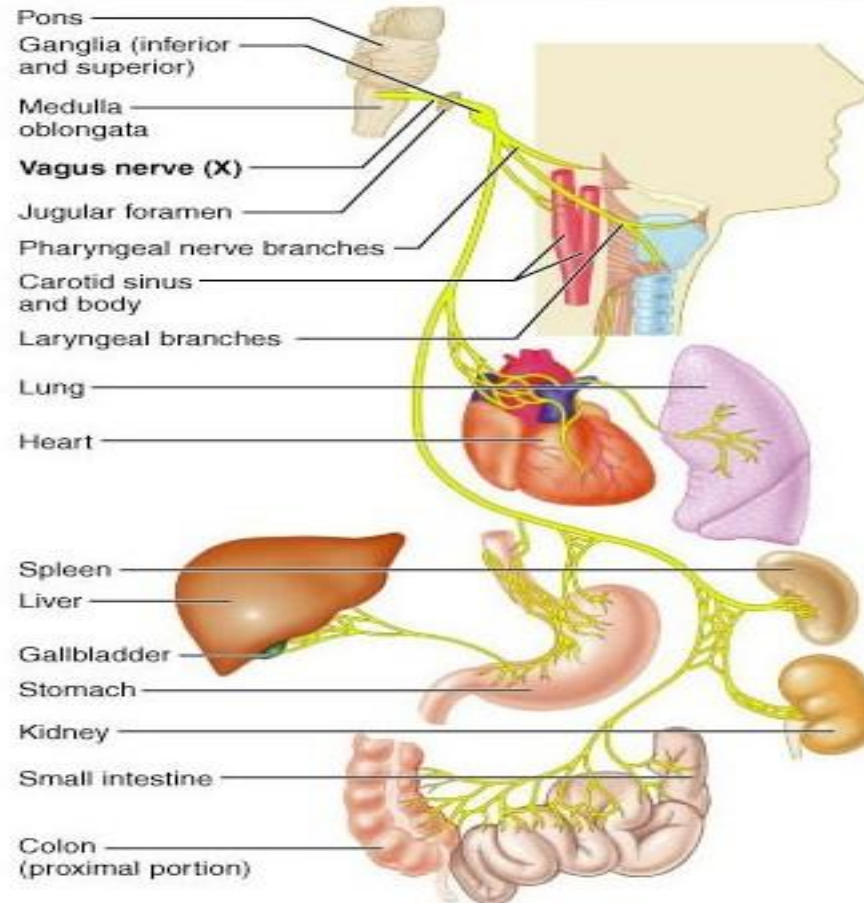
Visceral Sensory: subconscious sensation from carotid body & sinus

Visceral Motor: parasympathetic stimulation of parotid gland, & controls blood vessels in carotid body

Special Sensory: carries taste from posterior 1/3 of tongue

Branchial Motor: Supplies stylopharyngeus muscle

Cranial Nerve X: Vagus



Function

General Sensory: posterior meninges, concha, skin at back of ear, external tympanic membrane, pharynx & larynx

Visceral Motor: parasympathetic stimulation to smooth muscle & glands of pharynx, larynx; thoracic & abdominal viscera & cardiac muscle

Visceral Sensory: from larynx, trachea, esophagus, & thoracic & abdominal viscera, stretch receptors & chemoreceptors

Motor: superior, middle, inferior constrictors; levator palati, salpingopharyngeus, palatopharyngeus, palatoglossus

Purpose of the test

- To test the elevation of palate & contraction of pharynx
 - To examine the movts of vocal cords
- [note: the IX & X nerve are tested together]*



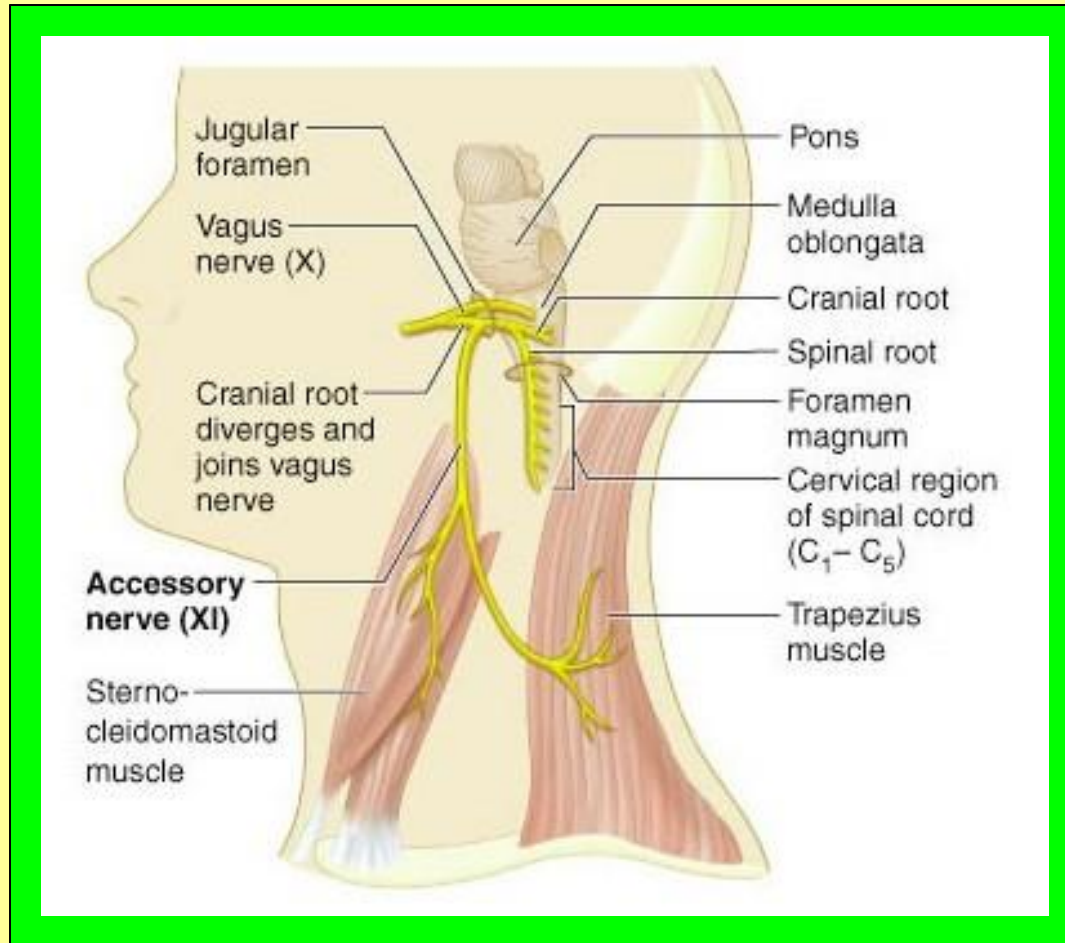
Method of testing

- Notice the pitch & quality of voice, cough & difficulty in swallowing saliva
- Ask the Pt to open his mouth wide after a few movts ask to say “AH” while breathing out & “UGH” while in
- The palate should move symmetrically upwards & backwards, the uvula in mid line & two sides of pharynx contract symmetrically

Common causes of lesion

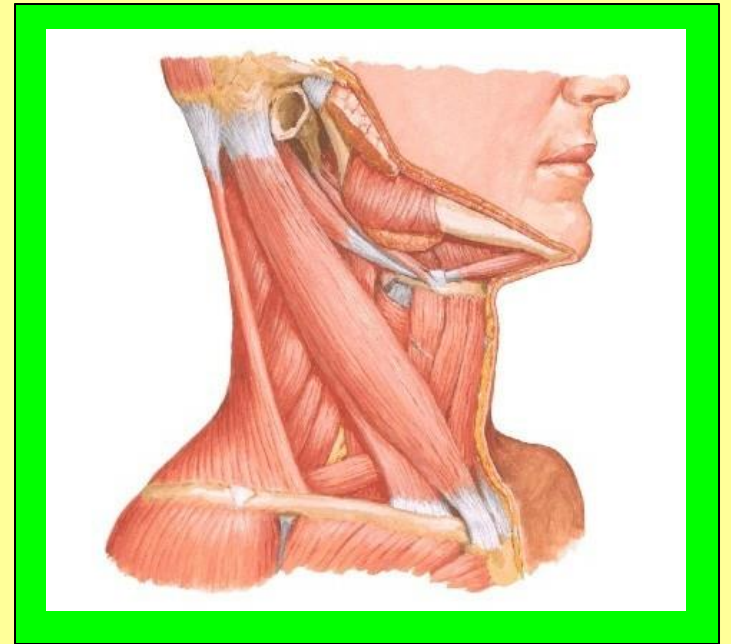
- Poliomyelitis
- Syringobulbia
- Posterior fossa tumor
- Advanced parkinsonism
- Myasthenia gravis
- Enlarged cervical glands
- Surgical operation of the neck

Cranial Nerve XI: Accessory



Function

Supplies
sternocleidomastoid
& trapezius muscles



Purpose of the test

- To detect wasting & weakness, unilateral or bilateral of the muscles

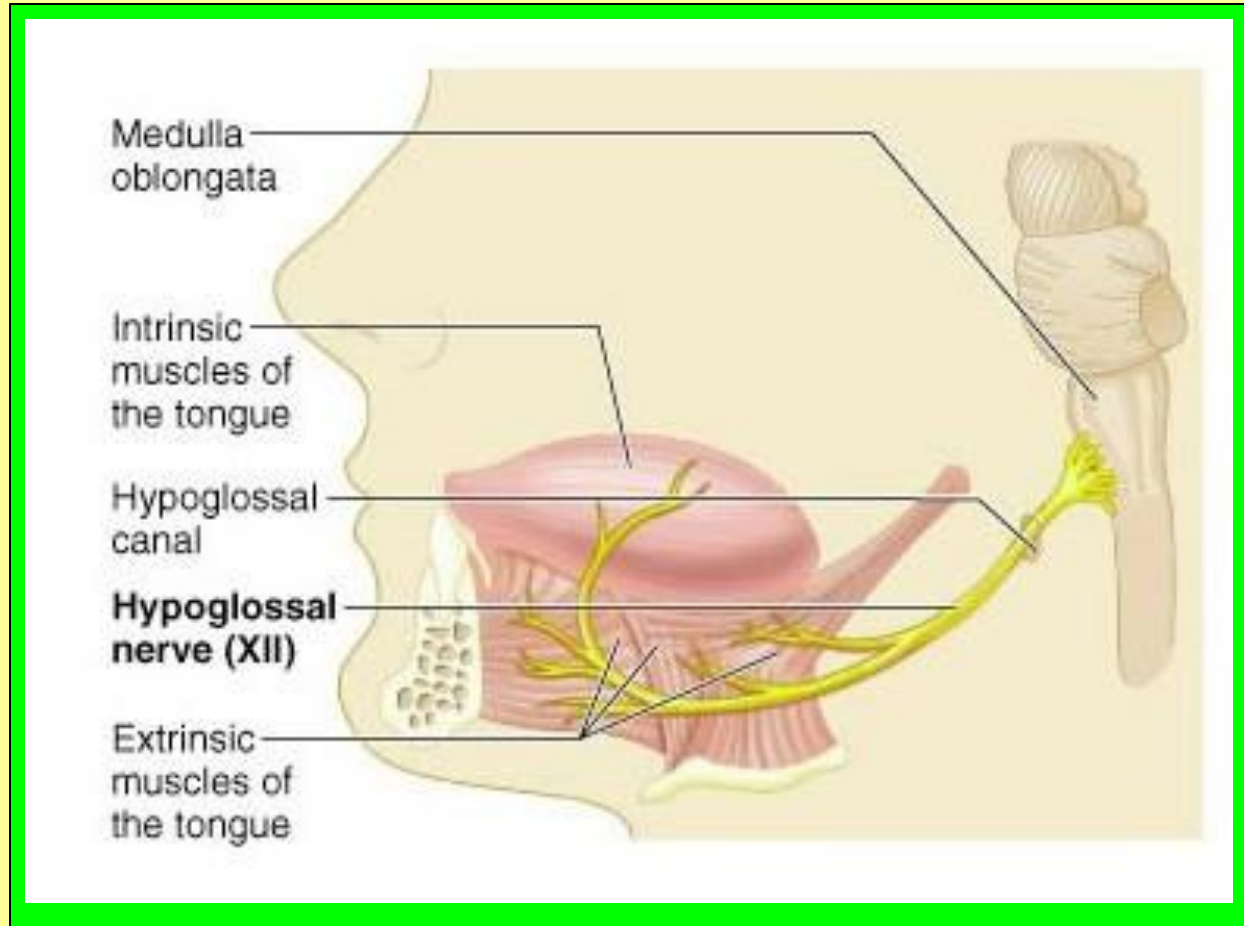
Method of testing



Common causes of paralysis

- MND
- Poliomyelitis
- Polyneuropathy
- Trauma in the neck or base of skull
- Tumour at jugular foramen
- Syringomyelia

Cranial Nerve XII: Hypoglossal



Function

- ? Control movts of the tongue, hyoid bone & larynx during & after deglutition

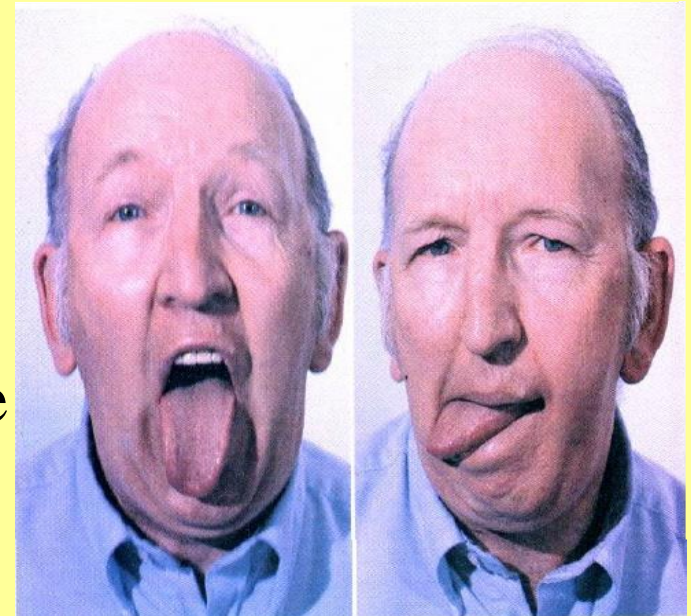
Supplies 3 of 4 extrinsic
muscles of tongue &
all intrinsic muscles of
tongue

Purpose of the test

- To inspect the surface of the tongue
- To detect wasting, weakness & involuntary movts
- To examine voluntary muscle control

Method of testing

- Ask the Pt to protrude the tongue & observe for
 - Reduction in size of affected side
 - Excessive ridging & wrinkling
 - Restricted protrusion
 - Deviation towards one side



Common lesions

- Syringomyelia
- Poliomyelitis
- MND
- Profound hemiplegia
- ALS

13th Cranial nerve

- Known as cranial nerve zero or Terminal Nerve
- It projects from nasal cavity, enters brain just a little bit ahead of other cranial nerves as a microscopic plexus of unmyelinated peripheral nerve fascicles

FunCtion

- The nerve is vestigial or related to sensing of pheromones
- Regulates sexual behavior in mammals