

CLINICAL ANATOMY OF HEAD AND NECK PART 2

Clinical	Anatomy	Cause	Sign/Symptom
Loss of function of IX and X	IX is major (visceral) sensory nerve to pharynx (oropharynx); X is motor to all muscles of pharynx except Stylopharyngeus; all muscles of palate (except Tensor palati)	Tumor at Jugular Foramen	Difficulty in swallowing; Absence of Gag Reflex; (Gag reflex - IX sensory, X motor) Damage X – Lower Motor Neuron Lesion - Uvula deviates <u>away</u> from side of lesion
Paralysis of muscles of tongue	XII is motor to all muscles of tongue (no sensory component)	XII hypoglossal nerve palsy	Atrophy of muscles of tongue on one side; protruded tongue deviates <u>toward</u> side of lesion due to Genioglossus) in Lower Motor Neuron Lesion; Upper Motor Neuron Lesion – Tongue deviates <u>away</u> <u>from</u> side of lesion (Tongue control is bilateral except Genioglossus).
Weakness of muscles mastication	Muscles mastication innervated by V3; Lateral Pterygoid opens mouth; all other muscles Mastication close mouth	ex. Tumor at foramen ovale	When open mouth, jaw deviates <u>toward</u> paralyzed side; if bilateral – absence of Jaw Jerk Reflex
Facial paralysis (with effect on VIII)	CN VII and VIII exit post. cranial fossa via Internal auditory meatus; VIII ends in temporal bone; VII enters facial canal and gives off branches in temporal bone; 1) parasymp. to Lacrimal gland, mucous glands of nose, palate; 2) Nerve to Stapedius muscle; 3) Chorda tympani - taste to ant. 2/3 of tongue; parasymp. to Submandibular, Sublingual salivary glands	Acoustic neuroma	Loss or reduction of hearing in one ear; Full Facial nerve palsy (Bell's palsy) symptoms: 1) Facial paralysis and loss of Corneal reflex (V1 sensory, VII motor) 2) Loss of taste to ant. 2/3 of tongue 3) Decreased secretion tears and saliva 4) Hyperacusia
Facial paralysis (no effect on VIII)	Facial nerve exits skull via Stylomastoid foramen; only has motor branches after leaving skull	Mumps (viral infection of Parotid salivary gland); Parotid tumor	Facial paralysis; Loss of corneal reflex but no loss of taste or decrease in tears or saliva; no hyperacusia

LOWER MOTOR NEURON LESION VAGUS (X) - UVULA DEVIATES AWAY FROM SIDE OF LESION



ACOUSTIC NEUROMA (NEURINOMA)



VII - Bell's Palsy - all FACIAL NERVE SYMPTOMS - facial paralysis, loss of taste, hyperacusia, decrease in secretion of lacrimal and salivary glands
+VIII - auditory/vestibular deficits

PAROTID TUMOR



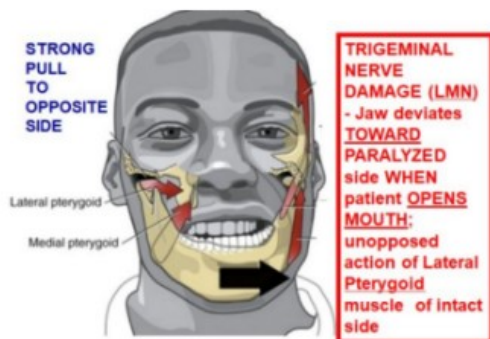
VII - ONLY facial paralysis; NO loss of taste, NO hyperacusia, NO decrease in secretion of lacrimal and salivary glands
NO auditory/vestibular deficits
VIII NOT AFFECTED

LOWER MOTOR NEURON LESION XII

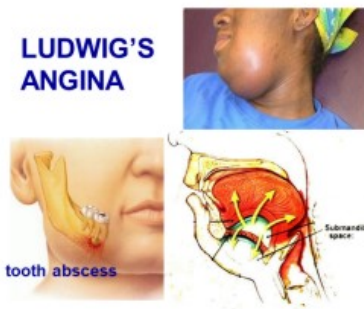


PROTRUDED TONGUE DEVIATES TOWARD SIDE OF LESION

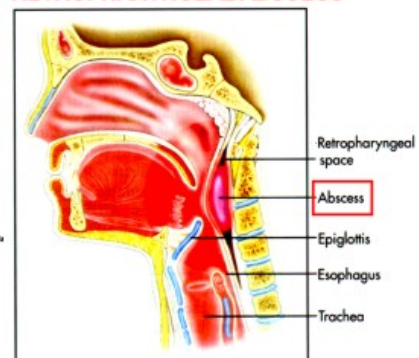
Clinical	Anatomy	Cause	Sign/Symptom
Retropharyngeal Abscess	Retropharyngeal space is potential space between pharynx (pretracheal layers = buccopharyngeal fascia) and bodies of vertebrae (prevertebral layer of fascia); extends continuously to thorax.	Infections (ex. tonsils, nasopharyngeal) spread to retropharyngeal space.	Difficulty swallowing; infection can obstruct airway (potential suffocation) and spread to thorax.
Ludwig's Angina	Submandibular space is region between mylohyoid muscle (above) and investing layer of fascia of neck (below)	Infections, particularly from mandibular molar teeth can spread to Submandibular space	Pain in floor of mouth, difficulty speaking, swallowing; can be life-threatening (obstruct airway) if untreated.
'Popcorn' questions	Valleculae – depressions in posterior tongue, anterior to epiglottis (landmarks in intubation); between Median and Lateral glossoepiglottic folds Piriform recesses – depressions in laryngopharynx lateral to opening of larynx.	Food (ex. Popcorn) can become caught in valleculae, piriform recesses.	Food/object in valleculae (Popcorn 1) or piriform recesses (Popcorn 2); readily removed.
Ear ache in mumps	Auriculotemporal nerve (V3) sensory innervation to skin of temple, external auditory meatus; courses on or within Parotid salivary gland	Mumps (viral infection of parotid) and Parotid tumors can compress Auriculotemporal nerve	Ear ache; pain referred to sensory branches of Auriculotemporal nerve that innervate external auditory meatus.
'Locked' jaw	Articular tubercle (eminence) is thickening of temporal bone anterior to Temporo-mandibular joint (TMJ)	In jaw opening (depress) articular disc of TMJ moves over articular tubercle.	'Locked' jaw – Disc can become stuck over surface of Articular tubercle.
Damage Lingual nerve (V3)	Lingual nerve (V3 sensory) provides general sensation (touch, pain) to anterior 2/3 of tongue; Chorda tympani (VII, parasympathetics, taste) fibers hitchhike with Lingual nerve,	Lingual nerve can be damaged during dental procedures (impacted mandibular molar 'wisdom' teeth); also lacerate floor of mouth	Damage to Lingual nerve in floor of mouth (deep to mucosa): lose touch (V3) and taste (hitchhiking from VII) to ant. 2/3 of tongue
Adenoids	Pharyngeal tonsil is lymphoid mass located in the roof of the nasopharynx	Infections can cause enlargement of pharyngeal tonsils	Symptoms – nasal voice (obstruction of airway); difficulty breathing through nose



LUDWIG'S ANGINA



RETROPHARYNGEAL ABSCESS



3) DIAGNOSIS OF UPPER AND LOWER MOTOR NEURON LESIONS

LOWER AND UPPER MOTOR NEURON LESIONS

Lesion	Structure Affected	Symptoms	Examples
Lower Motor Neuron Lesion (Flaccid Paralysis)	Lower Motor Neurons = Alpha Motor neurons with axons that innervate skeletal muscles	Muscle is effectively denervated: 1) Decrease Stretch (Deep Tendon) Reflexes 2) Decreased Muscle Tone 3) Muscle atrophy; Fasciculations (twitches) precede atrophy 4) No Babinski sign	1) Compression of spinal nerve 2) Poliomyelitis - viral infections affecting motor neurons
Upper Motor Neuron Lesion (Spastic Paralysis)	Upper Motor Neurons = All descending neurons that affect Lower Motor Neurons (ex. Corticospinal, Reticulospinal neurons)	Disrupt voluntary control and regulation of reflexes (remove inhibition): 1) Increase Stretch (Deep Tendon) Reflexes 2) Increased Muscle Tone 3) No Fasciculations 4) Babinski sign 5) Clasped Knife Reflex	1) Damage to Corticospinal (corticobulbar) tracts - can occur at all levels from cortex to spinal cord (including brainstem)

Note: Some diseases produce both Upper and Lower Motor Neuron Symptoms - (ex. ALS Amyotrophic Lateral Sclerosis)

REVIEW REFLEXES OF CRANIAL NERVES

REFLEX	STIMULUS	SENSORY	RESPONSE	CLINICAL
Pupillary Light Reflex (II to III)	Test: Shine light in eye	Light detected by Optic Nerve	Excite Constrictor of pupil of eye (III Short Ciliary nerves (Ciliary Ganglion, parasympathetic))	Extensively used to check CN II; Absence of Pupillary Light Reflex can indicate catastrophe (brain herniation)
Corneal Reflex (V to VII)	Touch cornea of eye with cotton	Touch detected by Long Ciliary nerves (V1), Somatic sensory	Close eye (VII to Orbicularis Oculi muscle) Branchiomotor	Absence of Corneal Reflex; Test for damage to V1 sensory, VII motor
Gag Reflex (IX to X)	Test: Touch posterior tongue, oropharynx;	Excites Visceral Sensory endings in Glossopharyngeal N. (IX)	Excite muscles of pharynx, palate; Vagus N. (X), Branchiomotor	Other symptoms of Vagus damage (X); Patient Say's Ahh: soft palate not elevated on ipsilateral side (paralyze Levator Palati); uvula deviated away from side of lesion
Jaw Jerk Reflex Stretch (Deep Tendon) Reflex (V to V)	Test: tap down on mandible; Stretch muscles of mastication (ex. Masseter)	Excites Muscle Spindle sensory neurons in Trigeminal nerve (V)	Contract muscles that elevate mandible Motor - V3	<u>Hyporeflexia</u> - indicates Trigeminal nerve damage