Nose & Paranasal Sinuses

- The Nasal Cavity
  - Lateral wall of the Nose
  - Turbinates & Meatuses
  - The Nasal Septum
- The Paranasal (Air) Sinuses
  - The Maxillary Sinus
  - The Frontal Sinus
  - The Ethmoid Sinus
  - The Sphenoid Sinus
- The Olfactory Nerve (CNI)
  - Central Connections
  - Lesion(s) and Testing of the Olfactory Nerve

Nose & Paranasal Sinuses

, Tongue, Pharynx & Palate

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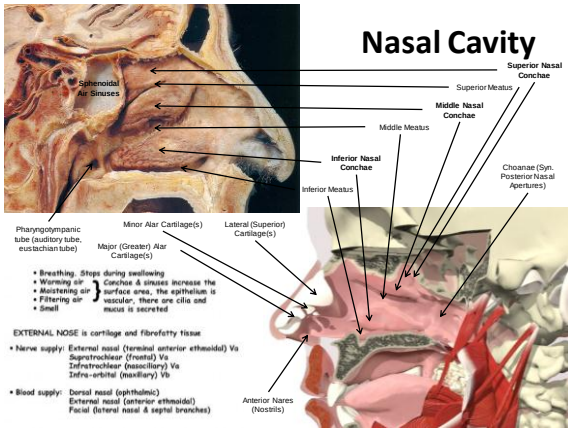
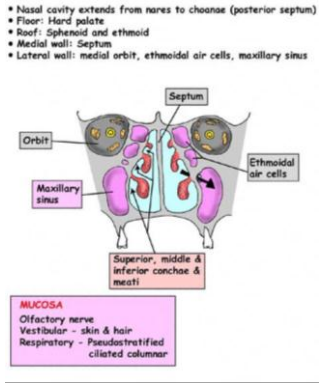
Nasal Cavity

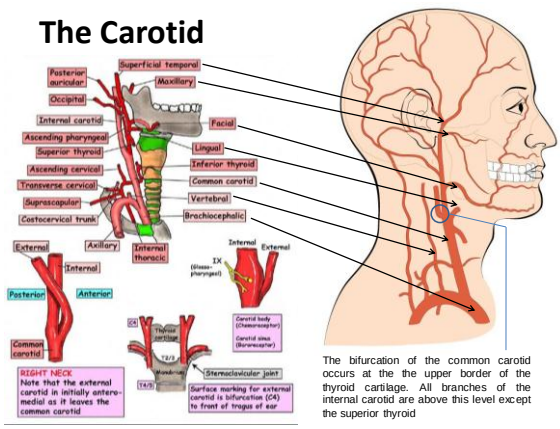


Nasal Cavity



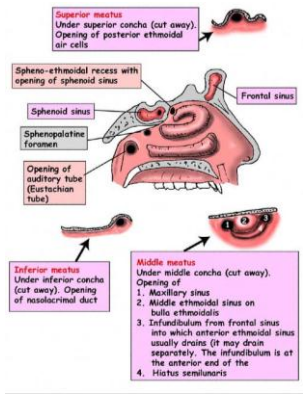
The nasal cavity is a large space located behind the nose. It is separated below from the oral cavity by the hard and soft palates. It is split into two by a septum, which is formed, by the vomer, and an inferior projection of the ethmoid bone.
The lateral walls of the nasal cavity have three scrolls of bone hanging from them: Superior nasal conchae - The space beneath the concha is known as the superior meatus . Middle nasal conchae - The space beneath the middle nasal concha is known as the middle meatus . Inferior nasal conchae - The space beneath the inferior concha is known as the inferior meatus.
The walls of the nasal cavity, along with the three conchae and adjoining paranasal sinuses are covered with a highly vascular respiratory mucous membrane. The conchae serve to increase the surface area of the mucous membrane. the orbital region

The Carotid



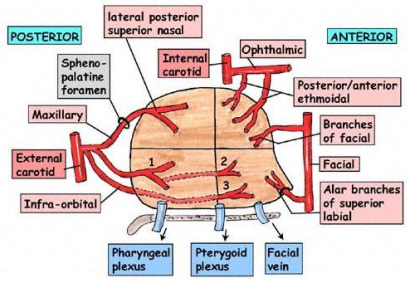
The bifurcation of the common carotid occurs at the the upper border of the thyroid cartilage. All branches of the internal carotid are above this level except the superior thyroid

Nasal Cavity



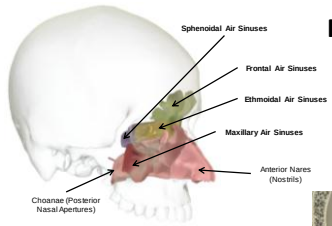
In the nasal cavity the respiratory mucosa lines the walls including the middle and inferior conchae and their meatuses as well as the adjoining paranasal sinuses, larynx, trachea and bronchial tree. It is made up of three layers, respiratory epithelium, embedded in a thick basement membrane that adheres to a layer of connective tissue (lamina propria). The mucous membrane of the nasal cavity has a rich blood supply containing many thin-walled venules and as the air passes over the mucous membrane, it is warmed and moistened and any remaining airborne particles get stuck to it. The respiratory epithelium consists of mainly PSEUDO-STRATIFIED CILIATED COLUMNAR EPITHELIUM dispersed with goblet cells and serous glands. The lamina propria contains blood vessels and sero-mucosal glands. In different areas the structure of the respiratory epithelium varies slightly to deal with the differing functions.
Olfactory mucosa (specialized area) covers the top of the nasal cavity and is thicker than the respiratory mucosa. It contains sensory cells that detect odor.

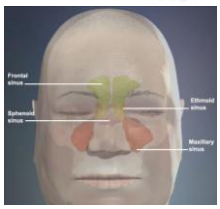
Blood Supply of Lateral Wall of

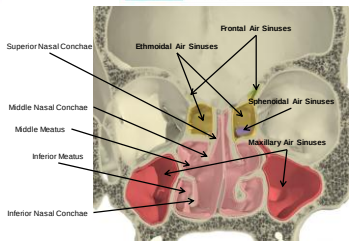


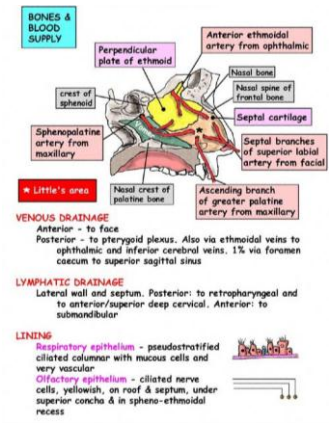
1. Branch of greater palatine
2. Perforating branches of greater palatine
3. Anterior superior alveolar from infra-orbital

Paranasal Sinuses

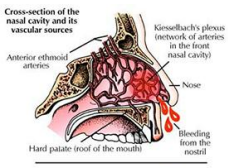


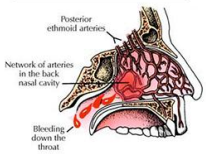


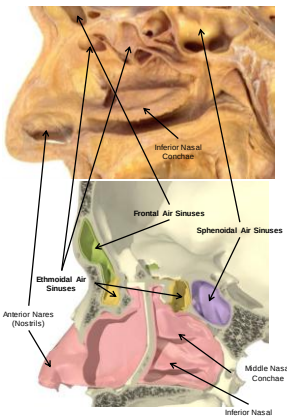




Nasal Septum

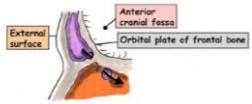






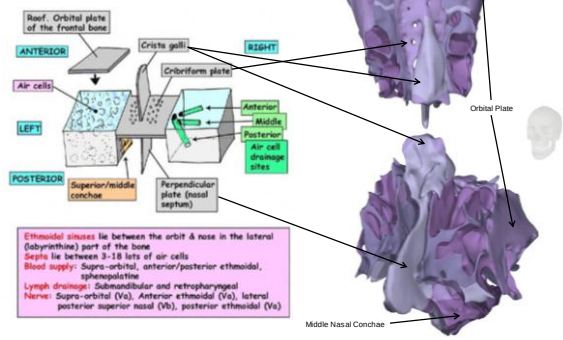
Frontal Sinus

- Appear at 2 years
- Unequal in size
- Bony septum
- Lie between orbit and anterior cranial fossa
- Nerves: Supra-orbital & supratrochlear nerves
- Blood supply: Supra-orbital & supratrochlear arteries
- Lymph drainage: Submandibular
- Veins: Diploic & superior ophthalmic



- Drainage (diagrammatic)
- Ostium: lower medial aspect
- To middle meatus via frontonasal canal (anterior end of hiatus semilunaris)
- May drain via infundibulum from anterior ethmoidal sinus

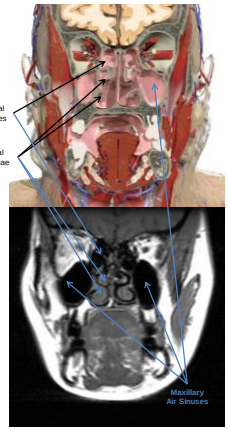
Ethmoid Sinus

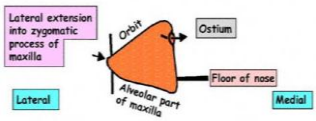


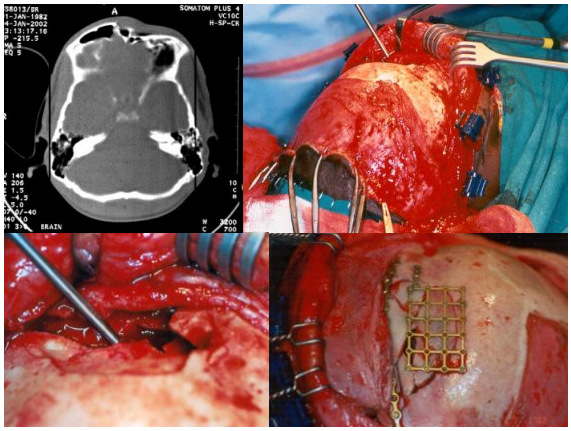
Ethmoidal sinuses lie between the orbit & nose in the lateral (labyrinthine) part of the bone
Septa lie between 3-18 lots of air cells
Blood supply: Supra-orbital, anterior/posterior ethmoidal, sphenopalatine
Lymph drainage: Submandibular and retropharyngeal
Nerves: Supra-orbital (Va), Anterior ethmoidal (Va), lateral posterior superior nasal (Vb), posterior ethmoidal (Va)

Maxillary Sinus

- Pyramidal shape
- Anterior & posterior walls are maxilla
- Drains into posterior hiatus semilunaris of middle meatus
- Ostium is 3-4mm high on posterior end of nasal wall
- May be a second ostium
- Blood supply: Small arteries from facial, maxillary, infra-orbital & greater palatine
- Lymph drainage: Submandibular glands
- Nerve supply: Anterior/middle/posterior superior alveolar with secretomator from pterygopalatine ganglion
- Feature: The infra-orbital nerve lies in its ridge (junction of roof and anterior wall)

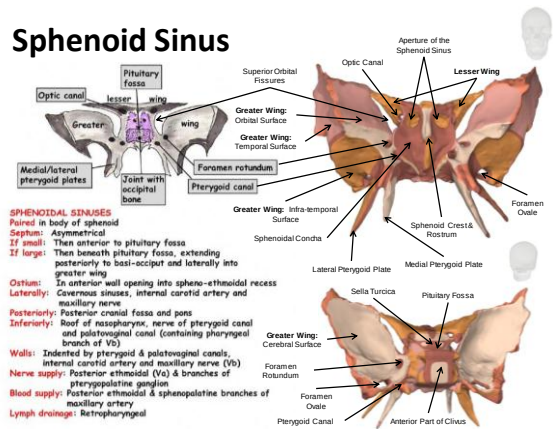






I	OLFACTORY	Special sense	Smell
II	OPTIC	Special sense	Sight
III	OCULOMOTOR	Somatic motor	Eye movements
IV	TROCHLEAR	Somatic motor	Eye movements
V	TRIGEMINAL	Somatic sensory	Sensory
		Branchiomotor	M of mastication
VI	ABDUCENT	Somatic motor	Eye movements
VII	FACIAL	Branchiomotor	M of facial expression
VIII	VESTIBULOCOCHLEAR	Special sense	Hearing/balance
IX	GLOSSOPHARYNGEAL	Somatic sensory	Oropharynx
		Branchiomotor	Single muscle
X	VAGUS	Parasympathetic	Heart to colon
		Branchiomotor	Palate, larynx
		(from XI)	
XI	ACCESSORY (spinal)	Somatic motor	SCM/trapezius
	ACCESSORY (cranial)	Branchiomotor	To vagus
XII	HYPOGLOSSAL	Somatic motor	Tongue

Sphenoid Sinus



SPHENOIDAL SINUSES
Paired in body of sphenoid
Septum: Asymmetrical
If small: Then anterior to pituitary fossa
If large: Then beneath pituitary fossa, extending posteriorly to basi-occiput and laterally into greater wing
Ostium: In anterior wall opening into spheno-ethmoidal recess
Laterally: Cavernous sinuses, internal carotid artery and maxillary nerve
Posteriorly: Posterior cranial fossa and pons
Inferiorly: Roof of nasopharynx, nerve of pterygoid canal and palatovaginal canal (containing pharyngeal branch of Vb)
Walls: Indented by pterygoid & palatovaginal canals, internal carotid artery and maxillary nerve (Vb)
Nerve supply: Posterior ethmoidal (Va) & branches of pterygopalatine ganglion
Blood supply: Posterior ethmoidal & sphenopalatine branches of maxillary artery
Lymph drainage: Retropharyngeal

CRANIAL NERVES: NUCLEI AND FIBRES

	Somatic motor (Skeletal muscle)	Branchiomotor (Special visceral)	Parasympathetic (general visceral)	General visceral sensory	Special visceral sensory	Somatic sensory (Skin & membranes)	Special senses
I							Smell Limbic system
II							Sight lat geniculate body
III	Nu: *Oculomotor* *rect (sup,med,inf)* *inf oblique, levator* *palpebrae superioris*		Nu: Edinger-Westphal Ganglion: Ciliary *ciliary body & muscle,* *sphincter pupillae*				
IV	Nu: Trochlear *superior oblique*						
V		Nu: Motor of trigeminal *muscles of mastication,* *mylohyoid, ant belly* *digastric, tensor palat* *& tympani*				Nu: sensory of V Mesencephalic for proprioception: *Main for touch:* *Spinal for pain & temp* *for face, orbit, tongue*	
VI	Nu: Abducent *lateral rectus*						
VII		Nu: facial *muscles of facial* *expression, buccinator,* *post belly of digastric,* *stylohyoid, stapedius*	Nu: Superior salivary Ganglion: Pterygopalatine & submandibular *lacrimal, submandibular,* *& palatine glands*		Nu: Solitarius *Chorda tympani* for taste: *anterior* *tongue*	Nu: Sensory of V *some skin of ext* *auditory meatus &* *tympanic membrane*	
VIII							2 nu: hearing 4 nu: equilibrium
IX		Nu: Ambiguus *stylopharyngeus*	Nu: Inferior salivary Ganglion: Otic *parotid, glands in post* *tongue & oropharynx*		Nu: Solitarius taste: *post tongue,* *vallate papillae,* *oropharynx,* *baro/ receptors*	Nu: Sensory of V *post tongue, palate,* *pharynx, tonsil,* *middle ear*	
X		Vagus carries & distributes fibres from cranial nucleus of XI	Nu: Dorsal motor of vagus *cardiac & visceral muscles* *of thorax & abdomen*	Nu: Solitarius *from heart, lungs* *& abdominal viscera*	Nu: Solitarius Taste: *vallecula* *& epiglottis; baro/* *chemoreceptors*	Nu: Sensory of V *skin of posterior auricle,* *ext auditory meatus;* *pharynx & larynx*	
XI	Spinal Nu: Lat roots C1-5 *Sternomastoid & trapezius*	Cranial Nu: Ambiguus *muscles of pharynx, larynx, palate, upper oesophagus via vagus*					
XII	Nu: Hypoglossal *muscles of tongue except palatoglossus*						

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	(ACCESSORY) (cranial)	(Branchiomotor)	(To vagus)
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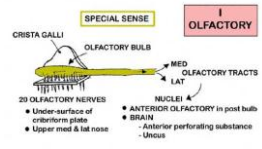
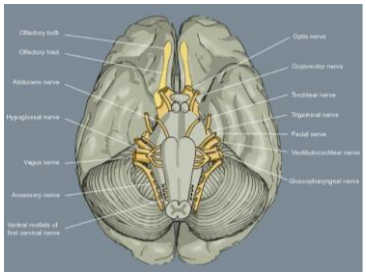
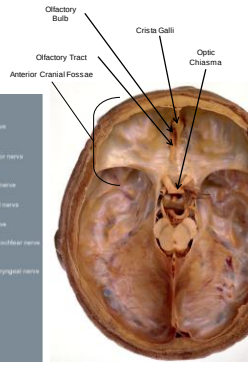


Olfactory Nerve (CNI)





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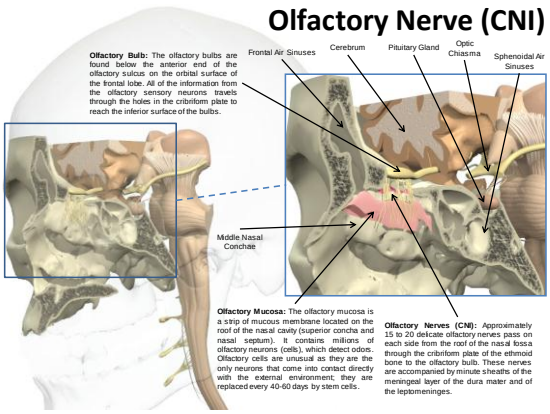
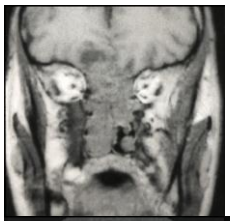
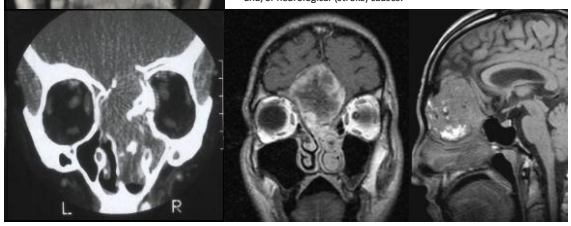


Mouth, Tongue, Pharynx & Palate

- The Oral cavity and Gingivae
- The Teeth and their development
- The Tongue:
  - Structure,
  - Blood Vessels &
  - Nerves
- The Pharynx: musculature and innervation
- The Palate and Tonsils
- Gag Reflex
- The Eustachian Tube

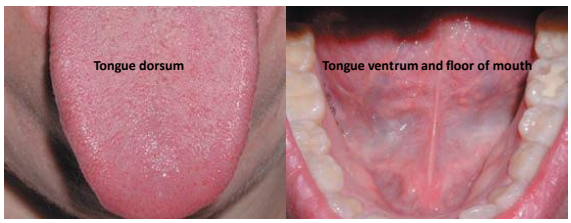


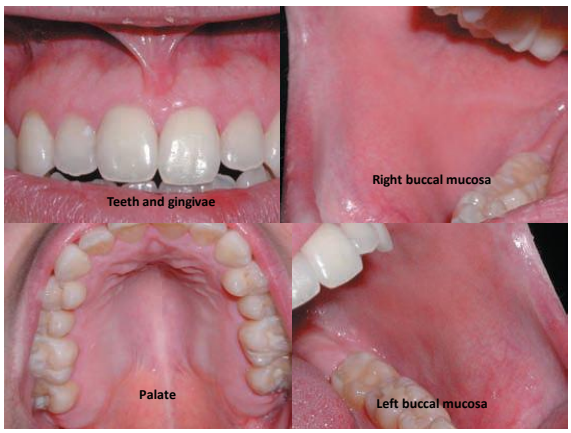


Olfactory Nerve (CNI)

Anosmia (Hyposmia) can occur in serious head injuries due to shearing of olfactory nerve filaments or fracture of the cribiform plate. Frontal lobe tumors, infections (abscess) can cause anosmia due to compression of the olfactory bulb or tract. Pathology in the nerve itself can also manifest as ansomia or pressure on adjacent structures e.g., Olfactory neuro-blastoma tumors arise from the olfactory bulbs/mucosa.

Anosmia following trauma or new onset unilateral anosmia is thus concerning for intracranial pathology. Dysosmia, Phantosmia and Agnosia are more commonly due to psychological (schizophrenia) and/or neurological (stroke) causes.





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Anatomical Variants and Developmental Anomalies

- Fordyce spots (Fordyce granules)
  - Sebaceous glands, 80% of population; After puberty; M > F
- Fissured tongue (scrotal or plicated tongue)
  - Hereditary (Down syndrome); 5% of population; In increasing age; F = M
- Torus palatinus
  - Developmental benign exostosis; 20% of population; in Asians and Inuits; After puberty; F > M (2 : 1)
- Torus mandibularis
  - 6% of population; After puberty; F = M

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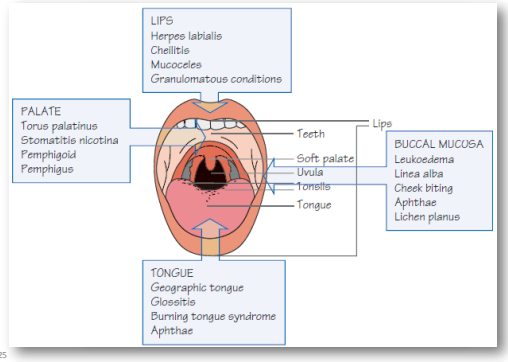

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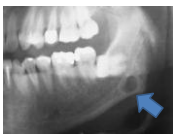
Anatomical Variants and Developmental Anomalies

- Stafne bone cavity
  - Congenital defect filled with fat/salivary tissue



- Unerupted teeth (3rd molars, 2nd premolars, and canines)
- Pterygoid hamulus; may give rise to concern about an unerupted tooth

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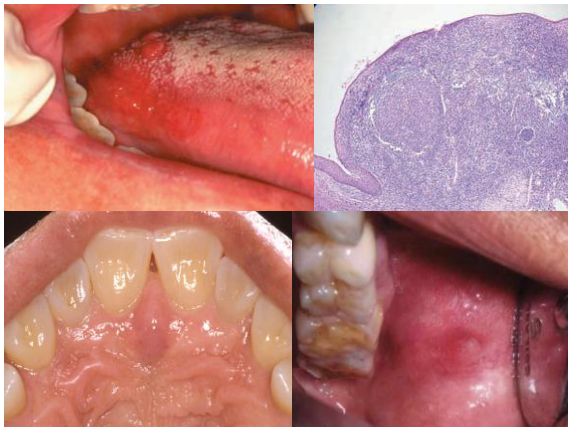

Anatomical Variants and Developmental Anomalies

- Papillae:
  - Incisive; may bother the patient if traumatized
  - Parotid (orifice of Stensen duct); may occasionally be traumatized by biting or an orthodontic or other appliance
  - Lingual foliate; occasionally become inflamed (papillitis) and clinically mimic carcinoma
  - Retrocuspid; found on the lingual gingiva in the mandibular canine region, it resembles the incisive papilla

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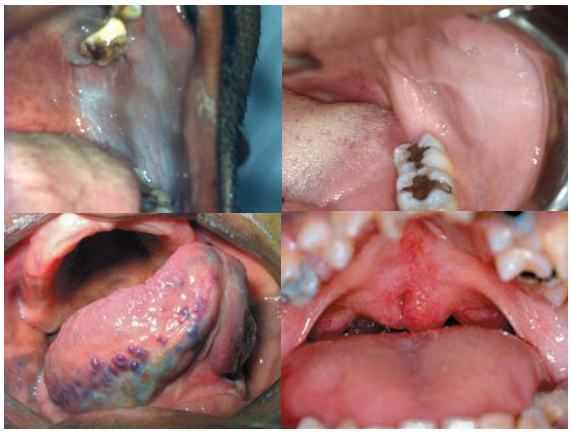

Anatomical Variants and Developmental Anomalies

- Lingual varicosities
- Leukoedema; a normal variation more prevalent in people who have dark skin, in which there is a white-bluish tinge of the buccal mucosa that disappears when the cheek is stretched
- Bifid uvula; symptomless, but may overlie a submucous cleft palate
- Foreign Bodies/Objects

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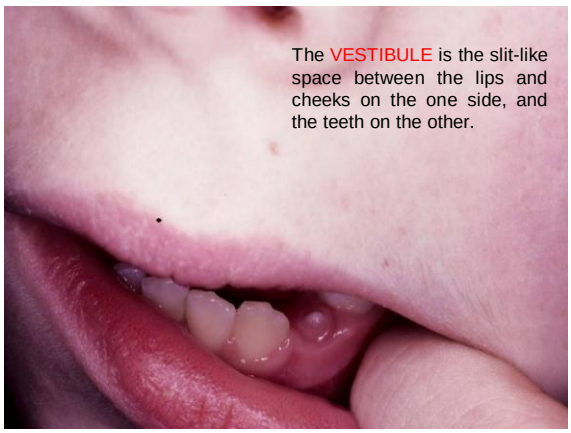
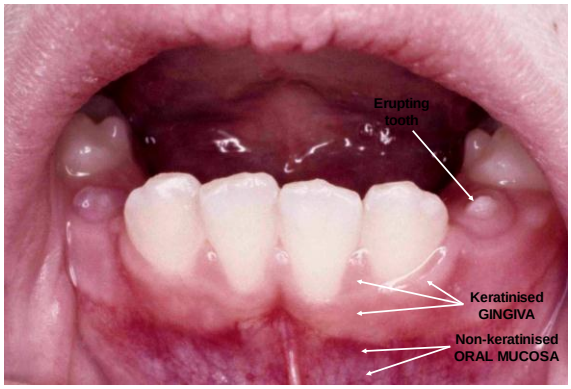
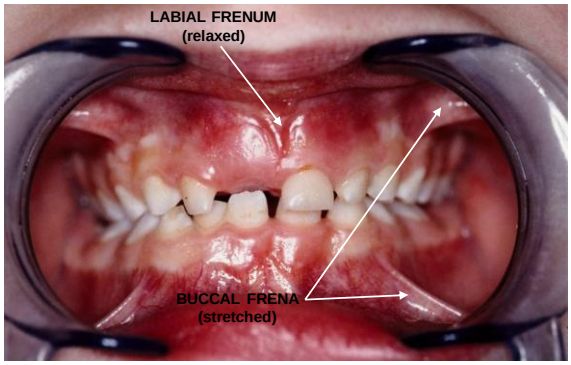


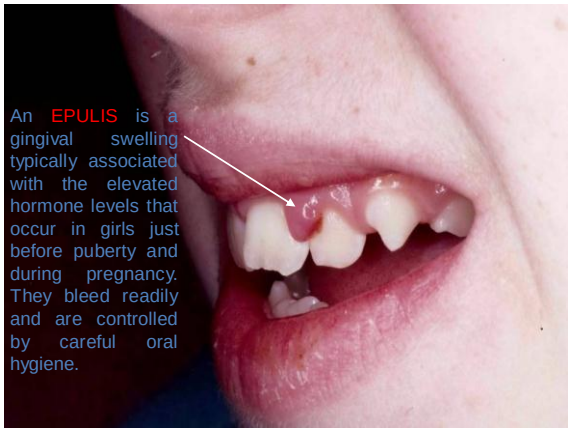
Al-Muharraqi MA. **Unusual Foreign Object in the Palate of an Infant**. *J Oral Maxillofac Surg*. 2010 Jul; 68(7):1701-2

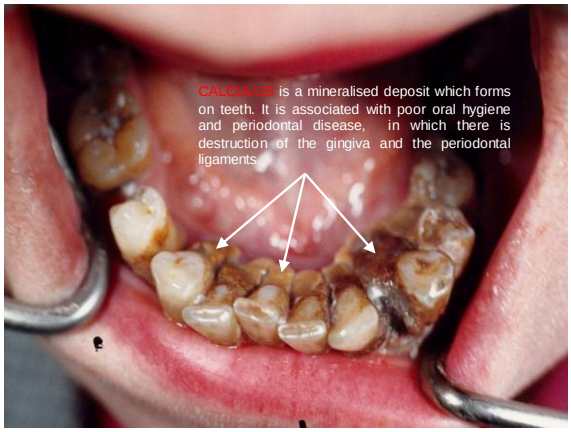


The GUMS or GINGIVA are covered by keratinised stratified squamous epithelium. They appear more pale in colour than the adjacent non-keratinised ORAL MUCOSA



The duct of the PAROTID SALIVARY GLAND opens into the vestibule, opposite the upper back teeth. Mucosal folds, the LABIAL & BUCCAL FRENA, are also seen in the vestibule; the finding of a torn frenum in a child is a sign of physical abuse.



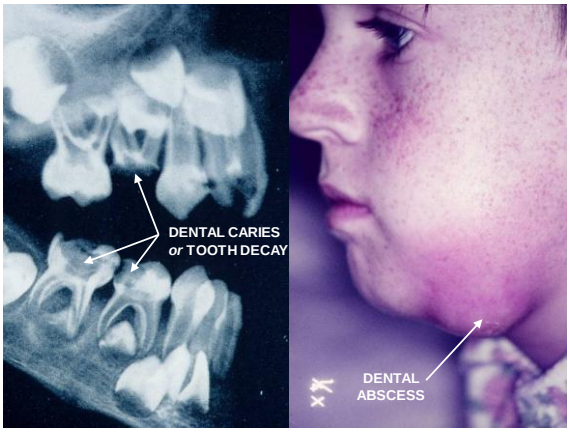


FORDYCE SPOTS can also be found on the lips, vulva (as seen here) and penis. In all cases they should be regarded as normal variations and are of no clinical significance.

Between the ages of 6 and 18 years the primary dentition is replaced by the teeth of the PERMANENT or SECONDARY DENTITION. They number 32 in total, or 8 in each quarter of the mouth: two INCISORS, one CANINE and two PREMOLARS and three MOLARS. One or more of the last molars is commonly missing, or they may erupt in the wrong direction and get stuck or IMPACTED.

Between the ages of 6 months and 2½ years, teeth erupt into the mouth. Collectively these are called the PRIMARY or DECIDUOUS DENTITION. Commonly they are known as the BABY TEETH or MILK TEETH (because they grow in babies who consume a lot of milk over that time). They number 20 in total, or 5 in each quarter of the mouth: two DECIDUOUS INCISORS, one DECIDUOUS CANINE and two DECIDUOUS MOLARS.

Discoloured teeth caused by the antibiotic TETRACYCLINE being prescribed in childhood, when the teeth were developing.



TREATING A POST-EXTRACTION HAEMORRHAGE

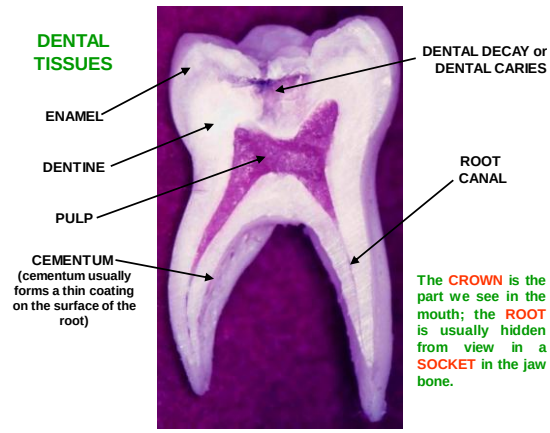
WHAT TO DO:

Wipe the mouth clean of clotted blood and place a piece of cotton wool over (not into!) the bleeding socket. Get the patient to clamp the cotton wool in place by closing their teeth on it for 10 minutes. Repeat if necessary.

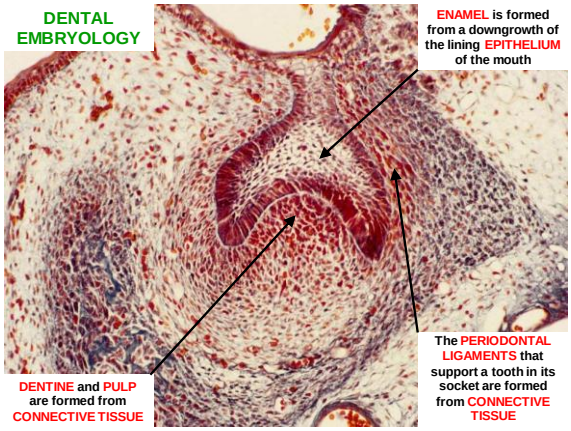
If the bleeding is persistent, a PURSE-STRING SUTURE through the gingiva near the socket will solve the problem in most cases. This is a suture that goes in and out of the tissue like the string in a purse… when you pull it tight, the purse closes. The idea is to pull the gingiva against the bone, occluding the gingival blood vessels which are spilling their blood into the socket.

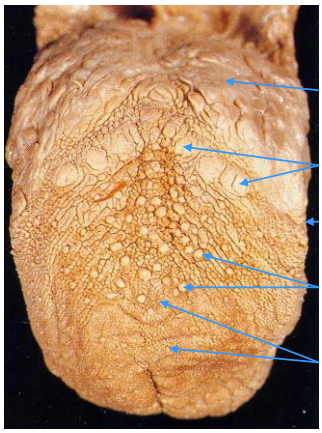
WHAT NOT TO DO:

Never push anything into the socket. It won't stop the bleeding and it will damage the bone, usually leading to a painful and prolonged OSTEITIS or 'DRY SOCKET'. Note however that Dentists have magical powers and it's OK for them to put things into sockets. This special gift is denied to Medical Doctors so don't do it!!!



DENTAL EMBRYOLOGY





PRESERVED TONGUE

The posterior one third contains a lot of lymphoid tissue which is called the LINGUAL TONSIL. The papillae are located on the anterior two-thirds.

A row of CIRCUMVALLATE PAPILLAE associated with TASTE BUDS.

FOLIATE PAPILLAE are a series of small ridges located far back on the side of the tongue. They have some taste buds.

FUNGIFORM PAPILLAE are the larger, red papillae seen on the dorsum. Occasionally associated with taste buds.

FILIFORM PAPILLAE are the most numerous. They do not have taste buds.

THE TONGUE

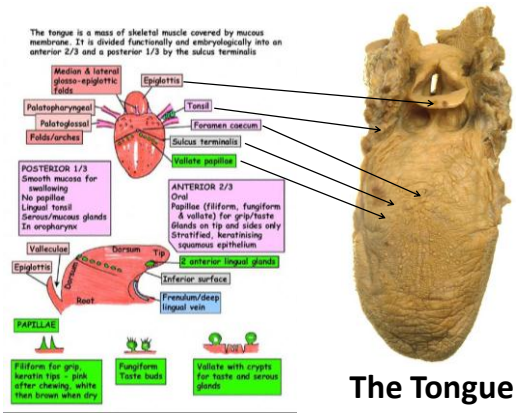
The photograph shows a benign transient condition which is called GEOGRAPHICAL TONGUE because it looks like a map of a group of islands.

The DORSUM of the tongue is covered by a special type keratinised mucosa containing four different types of PAPILLAE:

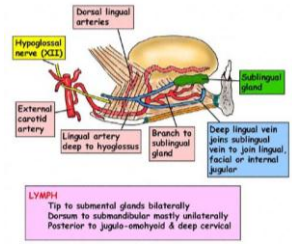
- FILIFORM
- FUNGIFORM
- CIRCUMVALLATE
- FOLIATE (on lateral margin)

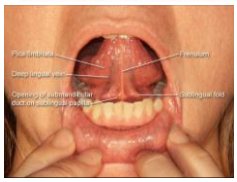
In Geographical Tongue the lesions are smooth and devoid of papillae. A similar form of atrophy is seen in severe cases of iron deficiency anaemia where the whole dorsum of the tongue shows this ATROPHIC GLOSSITIS.

This patient has a throat infection with pyrexia (high temperature). The increased blood flow through the tongue causes the non-keratinised fungiform papillae to appear bright red. The filiform papillae have become overgrown and coated with debris.



The Tongue





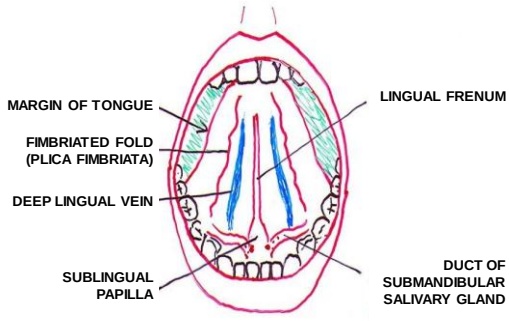
Lingual Artery

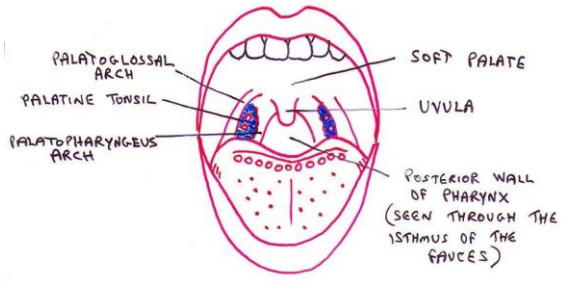
The lingual artery is the main blood supply of the tongue, arising from the external carotid artery and coursing deep to hyoglossus. It branches extensively within the tongue. When resecting the tongue haemorrhage is more marked in the posterior region. Hence laser surgery or diathermy techniques are preferred.

Venous drainage is by the lingual vein (superficial to hyoglossus), draining to the internal jugular vein. The lingual veins may be seen easily on the underside of the tongue, running just beneath the mucosa. These veins tend to become more prominent with age.

INFERIOR SURFACE OF THE TONGUE AND FLOOR OF MOUTH

LOOK AT YOUR OWN MOUTH IN A MIRROR AND IDENTIFY THESE FEATURES





THE INTERIOR OF THE MOUTH

BLOOD SUPPLY TO TONGUE

ARTERIES

LINGUAL ARTERY - this is the mail artery to the tongue. It is the second branch which emerges from the anterior surface of the external carotid artery, and it lies deep within the tongue.

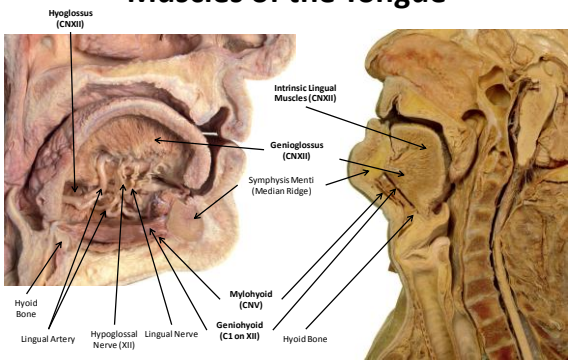
TONSILLAR BRANCH OF FACIAL ARTERY - this provided an additional supply to the back of the tongue, near the palatine tonsil.

ASCENDING PHARYNGEAL ARTERY - like the tonsillar branch of the facial artery, this provides an additional supply to the posterior third of the tongue.

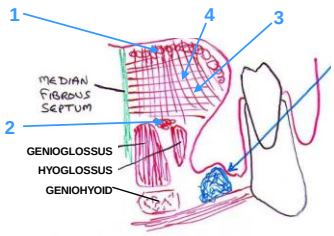
VEINS

The veins from the tongue, the DEEP LINGUAL VEINS and the DORSAL LINGUAL VEINS, drain to the INTERNAL JUGULAR VEIN.

Muscles of the Tongue



CORONAL SECTION SHOWING THE INTRINSIC MUSCLES OF THE TONGUE



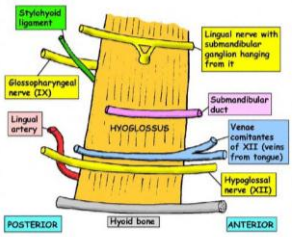
SALIVARY GLAND

The deep part of the submandibular salivary gland is shown here, but further forward in the mouth the sublingual occupies a similar situation

The intrinsic muscles of the tongue can be divided into four groups:

1. SUPERIOR LONGITUDINAL
2. INFERIOR LONGITUDINAL
3. VERTICAL
4. TRANSVERSE

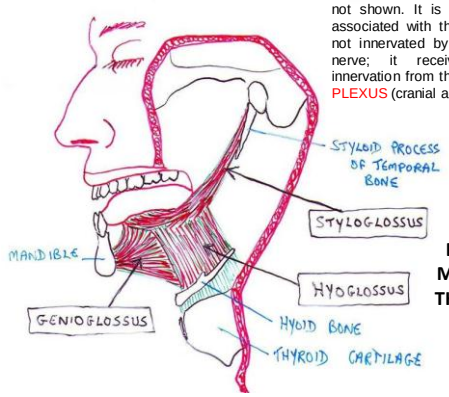
Hyoglossus



- The mylohyoid muscle (not shown) overlaps the anterior edge of hyoglossus
- Hyoglossus is supplied by the hypoglossal nerve as are all the muscles of the tongue except palatoglossus (pharyngeal plexus)
- Further anteriorly, under the mylohyoid, the lingual nerve passes lateral to the submandibular duct, then dips under it to appear on its medial side to enter the tongue
- The venae comitantes of the hypoglassal nerve pass posteriorly to join the facial vein

The hyoglossus is a thin, quadrilateral muscle, which provides an important landmark in the floor of the mouth. It originates from the superior border of the greater horn of the hyoid bone. A part of the muscle is attached to the base of the lesser horn of the hyoid bone and has been called 'chondroglossus'. At its origin, the hyoglossus muscle is separated from the attachment of the middle constrictor muscle of the pharynx by the lingual artery. It passes vertically upwards to insert into the side of the tongue. The hypoglossal nerve supplies the hyoglossus muscle. The sublingual branch of the lingual artery and the submental branch of the facial artery supply hyoglossus. Hyoglossus depresses the tongue.

The submandibular duct and lingual nerve crosses hyoglossus as it forms the floor of the submandibular fossa. It is a key landmark in submandibular gland surgery.



The PALATOGLOSSUS MUSCLE is not shown. It is the only muscle associated with the tongue that is not innervated by the hypoglossal nerve; it receives its motor innervation from the PHARYNGEAL PLEXUS (cranial accessory)

EXTRINSIC MUSCLES OF THE TONGUE

Nerve Supply to the Tongue

TONGUE - SENSATION & TASTE

SUMMARY OF NERVE SUPPLY TO TONGUE

	SOMATIC SENSATION	TASTE	SECRETOMOTOR
ANTERIOR 2/3	Lingual (Vc)	Chorda tympani (VII)	Chorda tympani (VII) (anterior lingual glands)
POSTERIOR 1/3 + vallate papillae	Glosso-pharyngeal (IX)	Glosso-pharyngeal (IX)	Glosso-pharyngeal (IX)
VALLECULAE	Glosso-pharyngeal (IX)	Internal branch of superior laryngeal nerve (X)	Glosso-pharyngeal (IX)

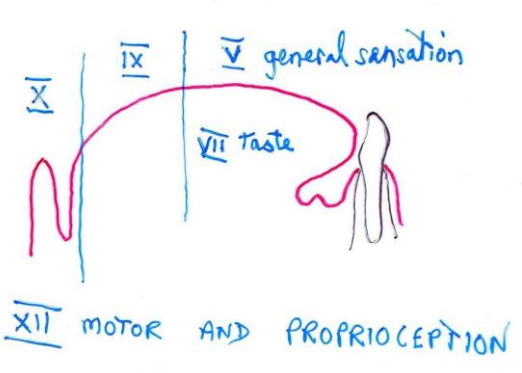
Note: Sympathetic supply to tongue is from superior cervical ganglion via lingual artery

TONGUE - MUSCLES

Hyoglossus
Hypoglossal nerve (XII)
Genioglossus
Hypoglossal nerve (XII)
Styloglossus
Hypoglossal nerve (XII)
Palatoglossus
Pharyngeal plexus (IX, X & sympathetic)
Intrinsic muscles
Superior/inferior longitudinal, transverse & vertical
Not attached to bone
Hypoglossal nerve (XII)

Note: All muscles are supplied by hypoglossal nerve except palatoglossus

INNERVATION OF THE TONGUE

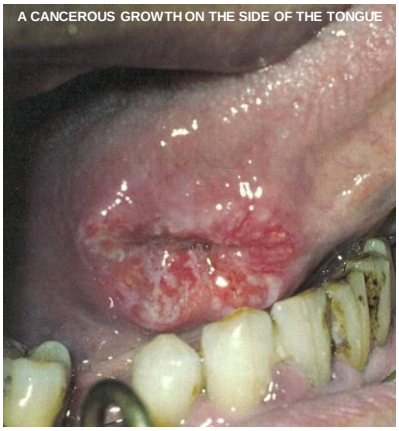


LYMPHATIC DRAINAGE OF THE TONGUE

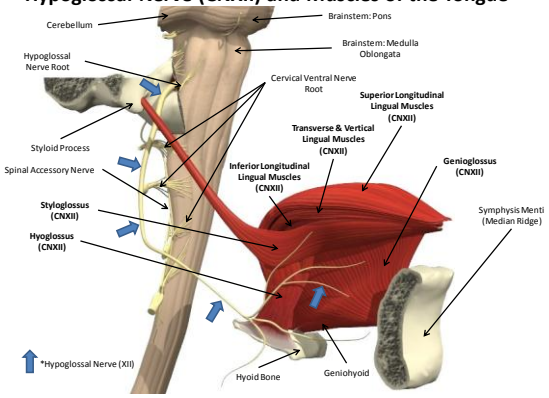
TIP: to the submental group of lymph nodes, and from there to the lowest group in the deep cervical chain, the jugulo-omohyoid group.

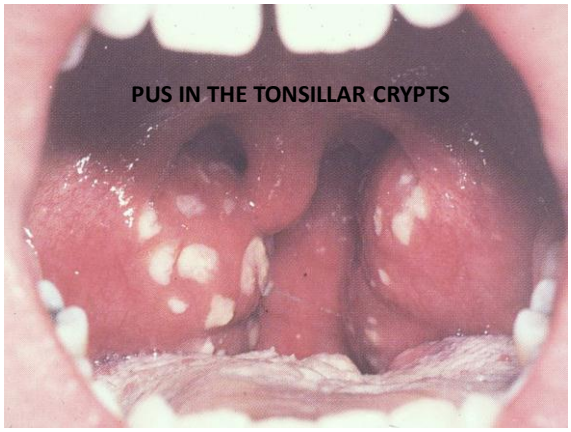
SIDES and DORSUM: to the submandibular lymph nodes and from there into the deep cervical chain. The dorsum drains bilaterally.

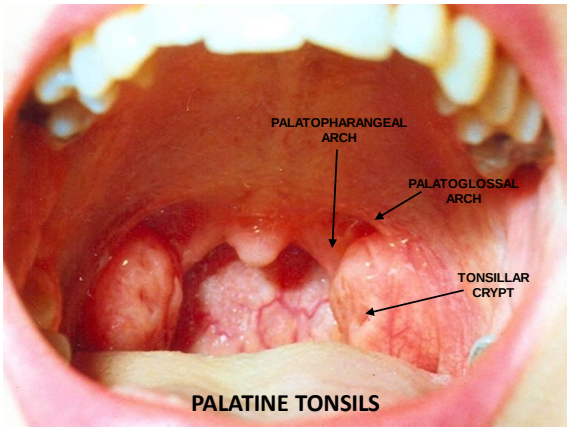
POSTERIOR THIRD: to the jugulo-digastric group and from there down the deep cervical chain.

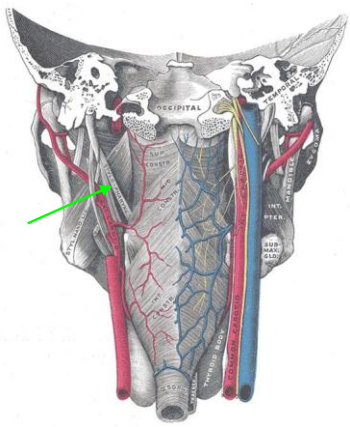


Hypoglossal Nerve (CNXII) and Muscles of the Tongue









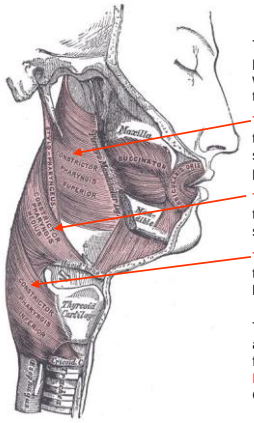
The constrictor muscles of the pharynx, viewed from behind.

In addition to the three constrictors, there are **three other muscles** that contribute to the wall of the pharynx.

Their fibres run vertically downwards, almost at right angles to the majority of the fibres in the constrictors, strengthening the pharyngeal wall.

The three muscles are the:

1. **Palatopharyngeus**,
2. **Stylopharyngeus** (shown here) and
3. **Salpingopharyngeus**.



PHARYNGEAL CONSTRICTOR MUSCLES

There are **three** constrictor muscles in the pharynx which overlap one another in the way that three paper cups might be stacked together, one into the other.

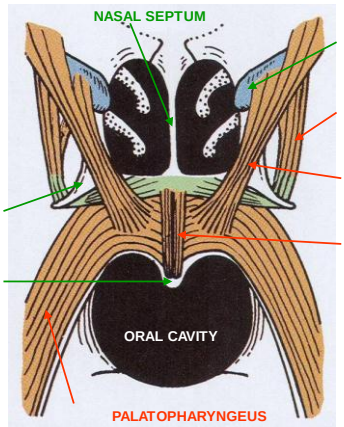
The SUPERIOR CONSTRICTOR is attached to the medial pterygoid plate and the inner surface of the mandible, and the pterygomandibular raphe between them.

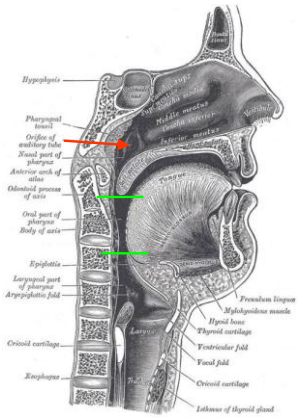
The MIDDLE CONSTRICTOR is attached to the hyoid bone and the lower part of the stylohyoid ligament.

The INFERIOR CONSTRICTOR is attached to the thyroid and cricoid cartilages of the larynx.

The fibres of all three constrictors sweep around the back of the pharynx in a circular fashion. They are innervated by the PHARYNGEAL PLEXUS (Vagus, plus the Cranial Accessory fibres which join it).

MUSCLES OF SOFT PALATE SEEN FROM BEHIND





The interior of the pharynx is divided into three regions.

The NASOPHARYNX lies behind the nasal cavities. The EUSTACHIAN TUBE opens here (arrowed), forming a direct communication between the nasopharynx and the middle ear.

The OROPHARYNX lies behind the mouth, between the soft palate and the tip of the epiglottis, a laryngeal cartilage that projects upwards behind the tongue.

The LARYNGOPHARYNX lies behind the larynx. It opens into the oesophagus.

TESTING FOR PALATAL ELEVATION AND THE GAG REFLEX

The lining of the soft palate, the posterior third of the tongue and the oropharynx (the part of the pharynx related to the mouth) receive sensory innervation from the GLOSSOPHARYNGEAL NERVE (CN IX).

The muscles that move those parts are supplied by the VAGUS NERVE (CNX).

Asking a patient to say "***Aaaah***" will produce a symmetrical elevation of the soft palate if the vagus nerves are functioning properly.

Touching the soft palate or any part of the pharynx (e.g. with a mouth mirror) triggers the GAG REFLEX. This reflex is protective and prevents things from entering the pharynx except during normal swallowing. It is unpleasant, causing nausea or even vomiting, and is best done only where definite pathology is suspected. If the patient fails to gag it may mean the glossopharyngeal and vagus nerves are not working properly, or the patient may have trained himself or herself to suppress it, e.g. for oral sex, or circus sword-swallowers.

FUNCTIONS OF THE MUSCLES OF THE SOFT PALATE

TENSOR PALATI tenses the soft palate. This occurs during swallowing, when the tongue forces the bolus of food against the tensed soft palate, directing it into the oropharynx.

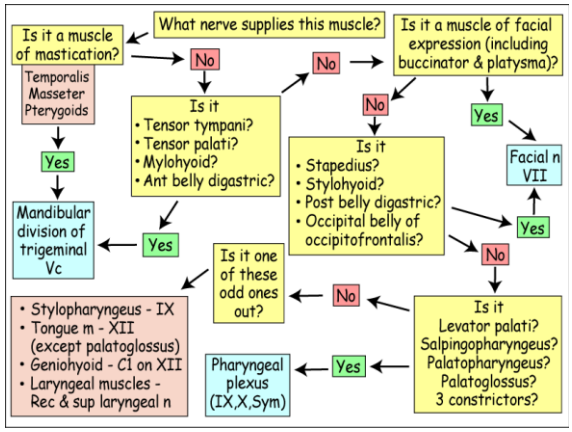
LEVATOR PALATI can elevate the soft palate against the back wall of the nasopharynx, shutting off the nasal cavity from the pharynx when we swallow or cough, and in speaking when we pronounce some letters (B, P). This closure is assisted by contraction of some of the fibres in the SUPERIOR CONSTRICTOR of the pharynx.

Contraction of the UVULAR MUSCLES thickens and shortens the uvula, helping to produce an airtight seal in closing off the nasopharynx.

PALATOGLOSSUS draws the tongue against the soft palate, sealing off the mouth from the oropharynx.

Tensor palati is innervated by the trigeminal nerve, and ***ALL*** the others are innervated by the pharyngeal plexus.

All Muscles of:	Are supplied by:	Except:	Which is/are supplied instead by:
Pharynx	Pharyngeal plexus (IX, X, symp)	Stylopharyngeus	Glossopharyngeal (IX)
		Cricopharyngeus	Recurrent laryngeal
Palate	Pharyngeal plexus	Tensor palati	Off n to med pterygoid (Vc)
Tongue	Hypoglossal (XII)	Palatoglossus	Pharyngeal plexus
Mastication	Mandibular (Vc)	Buccinator	Facial (VII)
Larynx	Recurrent laryngeal (X)	Cricothyroid	Ext br of superior laryngeal (X)
Facial expression & buccinator	Facial (VII)	Levator palpebrae superioris	Oculomotor (III) & sympathetic
Eye	Oculomotor (III)	Superior oblique	Trochlear (IV)
		Lateral rectus	Abducent (VI)
Strap group	Ansa cervicalis	Thyrohyoid	C1 fibres on hypoglossal



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