Hypoglossal nerve

- XII cranial nerve
- Entirely motor, somatic efferent column
- Innervates all muscles of tongue except palatoglossus
- Represents fusion of four pre-cervical nerves (ventral roots) i.e. spinal in behaviour, but cranial in outlook
- In series with 3rd, 4th, 6th, ventral roots of spinal nerves
DEEP ORIGIN
elogated nucleus 2cm long

- Upper end situated in hypoglossal triangle (4th ventricle)

CENTRAL CONNECTIONS:
- motor & pre-motor cortex (cortico-nuclear)
- cerebellum via nu.intercalatus

S/F ORIGIN
10-15 rootlets emerge through anterolateral sulcus medulla oblongata
Hypoglossal nerve

- **Course & relations**

  **Intracranial** - rootlets pass behind 4th part of vertebral art

  assemble in two bundles

  Each pierces the duramater & unite in the lower part of hypoglossal canal - a single trunk
Hypoglossal nerve

**Extracranial**- at exit deeply placed than IJV, ICA, 9th, 10th, 11th nerve passes laterally around the inferior ganglion of vagus vertically placed between IJV & ICA infront of vagus

Deep to post. Belly of digastric & stylohyoid muscles, at level of angle of mandible appears in the carotid triangle
**Extracranial** - In carotid triangle, crosses s/f to ICA, ECA, loop of 1st part of lingual arteries (superficial part)

- Passes forward & upward above gr. Cornu of hyoid, appears in digastric triangle
HYPOGLOSSAL NERVE

- Rests on hyoglossus, deep to hyoglossus related 2\textsuperscript{nd} part of lingual art., on hyoglossus successively above deep part of s/m gland & its duct, s/m ganglion & lingual nerve.

- finally passes deep to mylohyoid, pierces genioglossus & reaches the substance of tongue.
Hypoglossal nerve

BRANCHES

Communications-
- sup. Cervical ganglion
- inf. Ganglion of vagus
- loop of C1 & C2
- pharyngeal plexus
- lingual nerve

Distribution-
- meningeal
- descending (superior ramus of ansa cervicalis)
- nerve to thyrohyoid
- muscular
HYPOGLOSSAL NERVE

Applied anatomy

Unilateral injury-tip tilts towards paralysed side

Atrophy

Larynx deviated to sound side

Attention

tip of forceps applied to the concave side
AND
• X cranial nerve
• Emerge from medulla oblongata
• Extensive distribution (vagus or wandering nerve)
• Cranial part of parasympathetic system
• Each nerve
  • **cervical**-two ganglia
    • superior or jugular (close to jugular foramen, gsa)
    • inferior or nodose (gva & sva) ganglion
  • **thoracic**
  • **abdominal**
• **NUCLEAR ORIGIN & THEIR FUNCTIONAL COMPONENTS**

  a) nucleus ambiguus-sve

  b) dorsal nucleus of vagus-gva & gve

  c) nucleus of trctus solitarius-sva

  d) nucleus of the spinal tract of trigeminal nerve-gsa
- A-H&D
- Emerge through postero-lateral sulcus of m. oblongata
- Pass laterally to intermediate compartment of jugular foramen, rootlets unit to form a trunk
- Runs vertically between IJV laterally & ICA, CCA medially
- At root of neck
  Rt.-between IJV & 1st part of subclavian art.
  Lt. between CCA & 1st part of
Thorax

- **Right vagus**-posteromedial to rt. Brachiocephalic v. & SVC, accompanies rt. Surface of trachea
- Above lung root & pleura by arch of azygos v.
- Below passes behind lung root & joins with the sympathetic fibres (T2-T5)-rt. Posterior pulmonary plexus
- Then surround the oesophagus-posterior part of oesophageal plexus
- Finally enter abdomen-posterior vagal trunk
• **Left vagus**
  • Passes between lt.cca & lt.subclavian art., under cover of lt. brachiocephalic v.
  • Above aortic arch crossed superficially by lt. phrenic n.
  • Descends crosses ant. & lt. Surface of arch of aorta (crossed by lt. superior intercostal v. )
  • Passes behind lung root to form lt. posterior pulmonary plexus
  • below form ant. Part of oesophageal plexus
  • Enters abdomen-anterior vagal trunk
**VAGUS NERVE course & relations**

- Ant. & post. Vagal trunk is formed by both vagus nerves
- Ant. vagal trunk hepatic > lessor omentum > porta hepatis > asc. & descen.
- gastric > stomach
- Post. vagal trunk (rt. Vagus)
- -gastric
- coeliac
- Branches (In neck)
  a) From superior cervical ganglion - meningeal
     - auricular (alderman’s nerve)
  b) From inferior ganglion - pharyngeal
     - superior laryngeal nerve - br. To carotid body
  c) From trunk
     - cardiac
     - rt. Recurrent laryngeal n.
• **Branches (In thorax)**
  - 1) lt. recurrent laryngeal n.
  - 2) pulmonary
  - 3) cardiac
  - 4) oesophageal

**Branches (in abdomen)**
1) Gastric
2) Hepatic
3) Coeliac
APPLIED ANATOMY

a) Auricular br. Of vagus
   irritated by –wax
   -cold water
   Leads to
   coughing/vomiting
   even ppt. the cardiac arrest by reflex action
   Low grade stimulation increased appetite
b) Recurrent laryngeal n.
   injured-thyroidectomy
   -tumour
   - aortic aneurysm
   Leads to laryngeal problem
c) Selective vagotomy
   -t/t of peptic ulcer(n. of latarjet of both ant. Post.
   Vagal trunks sectioned