The Jugular Foramen & Details of the Vagus Nerve

EXPLODED VIEW OF RIGHT JUGULAR FORAMEN

Posterior

XII

X

IX

Internal carotid a

External carotid a

Glossopharyngeal n with tympanic br just below the jugular foramen

Pharyngeal br of vagus

Hypoglossal n

C1 fibres carried on XII for geniohyoid & thyrohyoid

Superior laryngeal n (internal & external brs)

Brs of ansa cervicalis

Spinal root of accessory passing over transverse process of atlas

Internal jugular v joined by inferior petrosal sinus just below jugular foramen

* Vagus being joined by cranial root of accessory

Notes:
1. Hypoglossal nerve passes lateral to internal & external carotid arteries
2. Superior laryngeal nerve passes medial to both arteries
3. Glossopharyngeal & pharyngeal branch of vagus pass between them

VAGUS LEAVING THE RIGHT JUGULAR FORAMEN

Posterior

XI

Spinal root of accessory

Vagus arises from 8-10 rootlets on medulla. Associated nuclei are:
1. Dorsal nucleus of vagus.
   General visceral efferent (parasympathetic) to smooth muscle of bronchi, heart, oesophagus, intestine to transverse colon.
   General visceral afferent (sensory) from above organs.
2. Nucleus ambiguus. Branchiomotor supply to striated muscle of palate, pharynx, larynx & upper oesophagus (these fibres originate from the cranial root of accessory).
4. Spinal nucleus of trigeminal nerve. All somatic sensory fibres in vagus end here.
Cranial accessory n. “Dumps” all its branchiomotor fibres from nucleus ambiguus onto vagus for distribution to muscles of palate, pharynx & larynx

Superior vagal ganglion - cell bodies for:
1. Meningeal br. Sensory to posterior cranial fossa
2. Auricular br. Sensory to external auditory meatus & part of eardrum (communicates with VII)
Inferior vagal ganglion - cells bodies for:
1. Special visceral afferent (baroreceptors & taste)
2. General visceral afferent (detects stretch in heart, lungs, abdominal contents, pharynx & larynx)

Carotid body nerve. Makes a plexus with glosso pharyngeal

Pharyngeal br of vagus. Branchiomotor to pharyngeal plexus for muscles of pharynx & palate (excluding tensor palati).

Note that these fibres arise in the nucleus ambiguus and travel in the cranial root of the accessory to reach the vagus (see large arrow)
VAGUS LEAVING THE RIGHT JUGULAR FORAMEN

Superior laryngeal n
1. Internal br. Somatic sensory above cords. Small amount of taste in valleculae
2. External br. Branchiomotor to cricothyroid

PHARYNGEAL (BRANCHIAL) ARCH NERVES

ARCH 1
Mandibular div of V
(M of mastication)

ARCH 2
Facial N
(M of facial expression)

ARCH 3
Glossopharyngeal N
(Stylopharyngeus)

ARCHES 4 & 6
Vagus N
(M of palate, pharynx, larynx)
VAGUS LEAVING THE RIGHT JUGULAR FORAMEN

**Posterior**
- Spinal root of accessory

**Recurrent laryngeal n.**
1. Branchiomotor to muscles of larynx & upper oesophagus
2. Somatic sensory to larynx below cords
3. General visceral afferents from larynx & pharynx for stretch

VAGUS LEAVING THE RIGHT JUGULAR FORAMEN

**Posterior**
- Spinal root of accessory

**Superior cardiac br** to deep cardiac plexus (parasympathetic - mixes with sympathetics)

**Inferior cardiac br** to deep & superficial cardiac plexuses (parasympathetic)
Vagus leaving the right jugular foramen.

Vagus continuing.
Parasympathetic to pulmonary & oesophageal brs & to coeliac, hepatic & renal plexuses. Carries general visceral afferents from all these organs.