Neck pins

General: bones, cartilages and superficial neck 35

Mandible (neck boundary) B **Angle of the mandible** inf V **External jugular vein** lat superf. ★ N **Cervical plexus** lat deep B **Mylohyoid line** med B **Digastric fossa** med B **Superior mental spine** med B **Inferior mental spine** med B **Mental foramen** lat ★ *Mylohyoid line: sublingual fossa superior to it, submandibular fossa inferior to it; mental foramen at the second premolar*

↳ **Posterior auricular vein** post superf. **Retromandibular vein** ant
↳ **Lesser occipital nerve** post superf. **Great auricular nerve** sup superf. **Transverse cervical nerve** ant superf. **Supraclavicular nerves** inf superf.

Mastoid and styloid processes B **Mastoid process** inf M **Sternocleidomastoid** lat superf. ★ B **Jugular foramen** inf B **Styloid process** inf B **Stylohyoid ligament** inf *Three styloid muscles, three nerves: stylohyoid (VII), styloglossus (XII), stylopharyngeus (IX); jugular foramen transmits IX, X, XI and the internal jugular vein*

Hyoid bone (stylohyoid ligament to lesser horn) **Hyoid bone** ★ **Body of the hyoid bone** ant **Greater horn of the hyoid bone** lat **Lesser horn of the hyoid bone** sup *Vertebral levels: hyoid C3, thyroid cartilage C4 to C5, cricoid C6*

Cervical transverse processes, first rib and manubrium (superior to inferior) B **Anterior tubercle of the transverse process** ant B **Carotid tubercle (C6)** ant B **Scalene tubercle** sup B **Sternoclavicular joint** inf M **Sternal head of the sternocleidomastoid** med B **Jugular notch** sup V **Anterior jugular vein** ant superf. *Carotid tubercle (Chassaignac) on C6: the common carotid can be compressed against it*

↳ **Jugular venous arch** inf superf.

Platysma, its nerve and the anterior jugular veins M **Platysma** ant superf. ★ Or **Investing layer of the deep cervical fascia** superf. *Platysma is a facial-expression muscle: cervical branch of the facial nerve (VII). Deep cervical fascia: investing, pretracheal, prevertebral, carotid sheath*

Sternocleidomastoid and the external jugular vein on it **Superficial cervical lymph nodes** lat superf. *External jugular vein = posterior auricular + posterior division of the retromandibular vein at the angle of the mandible, crossing SCM superficially; SCM divides the neck into anterior and posterior triangles*

Nerve point of the neck: cutaneous nerves (superior to inferior) **Nerve point of the neck** post *Erb's point (midpoint of the posterior border of SCM), superior to inferior: lesser occipital (C2), great auricular (C2, C3), transverse cervical (C2, C3), supraclavicular (C3, C4)*

Superior: submental triangle 6

Submental triangle Or **Submental triangle** med M **Anterior belly of the digastric** lat superf. ★ M **Mylohyoid** inf ★ V **Submental lymph nodes** med superf. A **Submental artery** inf *Submental triangle: both anterior bellies of the digastric and the body of the hyoid; floor = mylohyoid*

Mylohyoid floor: nerve to mylohyoid and submental artery **Geniohyoid** sup deep ★ *Suprahyoid nerves 2-2-1: mylohyoid and anterior digastric (V3, nerve to mylohyoid); posterior digastric and stylohyoid (VII); geniohyoid (C1 via XII)*

Superior: submandibular triangle 23

Submandibular triangle: posterior belly of the digastric and stylohyoid Or **Submandibular triangle** lat A **Facial artery** med deep V **Facial vein** lat superf. V **Submandibular lymph nodes** sup superf. N **Hypoglossal nerve** lat superf. ★ N **Nerve to mylohyoid** inf M **Posterior belly of the digastric** post ★ M **Stylohyoid** sup ★ M **Intermediate tendon of the digastric** inf Or **Tail of the parotid gland** inf N **Cervical branch of the facial nerve** inf deep *Two bellies, two nerves: anterior digastric V3, posterior digastric VII (with stylohyoid)*

Submandibular gland: facial vein superficial, facial artery deep Or **Submandibular gland** ★ Or **Superficial part of the submandibular gland** lat superf. N **Marginal mandibular branch of the facial nerve** sup superf. *Facial artery grooves the gland deeply, facial vein passes superficial to it; marginal mandibular branch of VII superficial to both*

Lateral surface of the hyoglossus (superior to inferior) M **Styloglossus** sup Or **Deep part of the submandibular gland** med deep M **Hyoglossus** med deep N **Lingual nerve** sup superf. Or **Submandibular duct** med M **Genioglossus** med deep V **Lingual vein** inf *Superior to inferior on hyoglossus: lingual nerve, submandibular duct, hypoglossal nerve; the lingual nerve double-crosses the duct (lateral, then inferior, then medial); the lingual artery runs deep to hyoglossus*

↳ **Submandibular ganglion** sup

Sublingual gland on the genioglossus **Sublingual gland** sup *Parotid is serous, submandibular mixed (mainly serous), sublingual mixed (mainly mucous); the sublingual gland opens by many small ducts on the sublingual fold*

Anterior: carotid triangle 22

Carotid sheath: common carotid artery, vagus nerve, internal jugular vein Or **Carotid triangle** sup ★ A **Common carotid artery** med ★ V **Internal jugular vein** lat deep ★ N **Vagus nerve** post ★ A **Superior thyroid artery** sup ★ Or **Carotid sheath** lat deep ★ N **Ansa cervicalis** ant superf. ★ V **Deep cervical lymph nodes** lat deep *I See 10 CCs in the IV (internal jugular vein lateral, vagus (X) posterior between, common and internal carotid medial)*

↳ **Carotid bifurcation** sup ★
↳ Carotid bifurcation: **Carotid body** post
↳ **Internal carotid artery** lat ★
↳ Internal carotid: **Carotid sinus** sup
↳ **Common facial vein** ant
↳ **Cervical cardiac branches of the vagus nerve** inf
↳ **Superior root of the ansa cervicalis** med **Inferior root of the ansa cervicalis** lat
↳ **Jugulodigastric lymph node** sup deep **Jugulo-omohyoid lymph node** inf deep

Carotid bifurcation **Carotid sinus branch** sup *Bifurcation at the superior border of the thyroid cartilage (C3/C4); carotid sinus senses pressure, carotid body senses chemistry (both IX); the internal carotid has no branches in the neck*

Nerves crossing the internal carotid artery (superior to inferior) **Inferior ganglion of the vagus nerve** sup *Between internal and external carotids: styloglossus, stylopharyngeus, glossopharyngeal nerve, pharyngeal branch of the vagus; the superior laryngeal nerve passes deep (medial) to both carotids*

↳ **Pharyngeal branch of the vagus nerve** med **Superior laryngeal nerve** med deep ★

Anterior: muscular triangle 9

Muscular triangle: sternohyoid and superior belly of the omohyoid Or **Anterior triangle of the neck** ant ★ Or **Muscular triangle** med M **Sternohyoid** med superf. ★ M **Superior belly of the omohyoid** lat superf. ★ M **Sternothyroid** inf deep M **Thyrohyoid** sup deep M **Intermediate tendon of the omohyoid** inf deep *Anterior triangle splits into 4: submental, submandibular, carotid, muscular. Strap muscles: superficial sternohyoid and omohyoid, deep sternothyroid and thyrohyoid*

Sternothyroid, thyrohyoid and the pretracheal fascia N **Nerve to thyrohyoid** sup Or **Pretracheal layer of the deep cervical fascia** ant *Ansa cervicalis (C1 to C3) supplies sternohyoid, sternothyroid, omohyoid; thyrohyoid (and geniohyoid) get C1 via the hypoglossal nerve*

Medial: larynx 47

Thyroid cartilage Or **Thyroid cartilage** ★ M **Cricothyroid** ant superf. M **Inferior pharyngeal constrictor** inf superf. Or **Laryngeal prominence** ant ★ Or **Superior thyroid notch** sup Or **Lamina of the thyroid cartilage** lat M **Thyropharyngeal part of the inferior constrictor** sup Or **Oblique line of the thyroid cartilage** lat Or **Superior horn of the thyroid cartilage** sup N **Internal laryngeal nerve** sup ★ Or **Inferior horn of the thyroid cartilage** inf N **Recurrent laryngeal nerve** med ★ *Thyroid cartilage at C4 to C5; carotid bifurcation at its superior border (C3/C4)*

↳ **Right recurrent laryngeal nerve** med ★ **Left recurrent laryngeal nerve** med

Cricoid cartilage and the arytenoids on its lamina Or **Cricoid cartilage** ★ M **Cricopharyngeus** inf ★ M **Posterior cricoarytenoid** post ★ M **Lateral cricoarytenoid** lat deep Or **Arch of the cricoid cartilage** ant Or **Lamina of the cricoid cartilage** post Or **Arytenoid cartilage** post M **Transverse arytenoid** post deep M **Oblique arytenoid** post superf. M **Thyroarytenoid** lat deep Or **Muscular process** lat Or **Vocal process** ant M **Vocalis** med deep Or **Corniculate cartilage** sup Or **Cuneiform cartilage** ant *C6 rule at the cricoid: larynx becomes trachea, pharynx becomes oesophagus. Laryngeal cartilages: 3 unpaired (thyroid, cricoid, epiglottis), 3 paired (arytenoid, corniculate, cuneiform)*

Epiglottis **Epiglottis** ★ **Stalk of the epiglottis** inf *Elastic cartilages: epiglottis, corniculate, cuneiform and the apex of the arytenoid; thyroid, cricoid and most of the arytenoid are hyaline and calcify with age*

Thyrohyoid membrane: internal laryngeal nerve and superior laryngeal artery Or **Thyrohyoid membrane** sup ★ A **Superior laryngeal artery** inf Or **Median thyrohyoid ligament** med *Internal laryngeal nerve and superior laryngeal artery pierce the thyrohyoid membrane; sensation superior to the vocal folds = internal laryngeal, inferior = recurrent laryngeal*

Laryngeal vestibule and ventricle **Laryngeal vestibule** **Quadrangular membrane** lat **Vestibular fold** sup **Laryngeal ventricle** lat *Superior to inferior: vestibular folds (false cords), laryngeal ventricle, vocal folds*

Vocal fold and rima glottidis **Vocal fold** inf ★ **Vocal ligament** med **Rima glottidis** med ★ *Vocal ligament = free superior edge of the conus elasticus; rima glottidis lies between the vocal folds*

Conus elasticus and infraglottic cavity **Conus elasticus** lat **Median cricothyroid ligament** ant ★ **Infraglottic cavity** inf **Cricotracheal ligament** inf *Median cricothyroid ligament is the emergency airway (cricothyrotomy)*

Cricothyroid and the external laryngeal nerve **Cricothyroid joint** lat *Cricothyroid is the only intrinsic laryngeal muscle supplied by the external laryngeal nerve (all others: recurrent laryngeal); the nerve runs with the superior thyroid artery*

Cricoarytenoid joint and its muscles **Cricoarytenoid joint** post *Posterior cricoarytenoid is the only abductor of the vocal folds*

Medial: pharynx 59

Nasal cavity: lateral wall (superior to inferior) **Superior nasal concha** lat **Middle nasal concha** lat **Ethmoidal bulla** lat ★ **Semilunar hiatus** lat **Inferior nasal concha** lat *Drainage: sphenoethmoidal recess = sphenoid; superior meatus = posterior ethmoidal; middle meatus (semilunar hiatus) = frontal, maxillary, anterior ethmoidal; inferior meatus = nasolacrimal duct*

Nasopharynx: opening of the auditory tube Or **Nasopharynx** Or **Choanae** ant Or **Pharyngeal opening of the auditory tube** lat ★ M **Levator veli palatini** med Or **Torus tubarius** lat ★ M **Salpingopharyngeus** lat Or **Salpingopharyngeal fold** lat Or **Pharyngeal recess** post Or **Pharyngeal tonsil** sup *Pharyngeal tonsil (adenoids) on the roof and posterior wall; salpingopharyngeus runs from the torus tubarius inside the salpingopharyngeal fold*

Oropharynx and soft palate Or **Oropharynx** Or **Oropharyngeal isthmus** ant M **Palatoglossus** ant Or **Soft palate** sup M **Tensor veli palatini** lat M **Palatopharyngeus** post A **Ascending palatine artery** sup Or **Uvula** sup *All palate muscles are vagus (pharyngeal plexus) except tensor veli palatini (V3)*

Tonsillar bed between the palatine arches Or **Palatoglossal arch** ant Or **Palatine tonsil** lat ★ A **Tonsillar branch** lat M **Superior pharyngeal constrictor** sup deep N **Glossopharyngeal nerve** ant ★ Or **Palatopharyngeal arch** post *Palatoglossal arch anterior, palatopharyngeal arch posterior; palatoglossus is the only tongue muscle supplied by the vagus*

↳ **Branch to stylopharyngeus** post

Base of the tongue and valleculae Or **Root of the tongue** inf A **External carotid artery** med ★ Or **Terminal sulcus** sup Or **Foramen caecum of the tongue** sup Or **Lingual tonsil** ant Or **Median glossoepiglottic fold** med ★ Or **Epiglottic vallecula** ant Or **Lateral glossoepiglottic fold** lat ★ *Terminal sulcus divides anterior two-thirds from posterior third; posterior third: IX for taste and touch; foramen caecum = origin of the thyroid*

↳ **Ascending pharyngeal artery** med deep **Lingual artery** ant deep **Occipital artery** post **Posterior auricular artery** post **Maxillary artery** med deep **Superficial temporal artery** sup superf.

Laryngeal inlet and laryngopharynx **Laryngeal inlet** sup **Aryepiglottic fold** lat ★ **Laryngopharynx** post **Piriform recess** lat ★ **Fold of the superior laryngeal nerve** lat *Internal laryngeal nerve runs in the mucosa of the piriform recess (fish bones lodge there)*

Superior and middle constrictors Or **Pharyngobasilar fascia** sup M **Pterygomandibular raphe** ant M **Stylopharyngeus** lat Or **Pharyngeal raphe** post M **Middle pharyngeal constrictor** inf N **Pharyngeal plexus** lat Or **Retropharyngeal space** post M **Longus colli** med deep M **Longus capitis** lat deep *All pharyngeal muscles are vagus (pharyngeal plexus) except stylopharyngeus (IX); stylopharyngeus and IX enter between the superior and middle constrictors*

Inferior constrictor and the Killian dehiscence **Inferior pharyngeal dehiscence (Killian)** post **Pharyngo-oesophageal junction** inf *Killian's dehiscence between thyropharyngeus and cricopharyngeus: site of the Zenker diverticulum*

Medial: thyroid and parathyroid glands 15

Thyroid gland: lobes and isthmus Or **Thyroid gland** ★ A **Inferior thyroid artery** post deep ★ Or **Lobes of the thyroid gland** lat V **Middle thyroid vein** lat Or **Isthmus of the thyroid gland** ant V **Inferior thyroid veins** ant A **Thyroid ima artery** inf Or **Pyramidal lobe of the thyroid gland** sup ★ Or **Suspensory ligament of the thyroid gland** med deep *Isthmus lies on tracheal rings 2 to 4; pyramidal lobe = thyroglossal duct remnant*

Superior pole: superior thyroid vessels Or **Superior pole of the thyroid gland** sup V **Superior thyroid vein** sup N **External laryngeal nerve** med deep ★ *Superior thyroid artery: first branch of the external carotid, with the external laryngeal nerve; ligate it close to the gland*

Posterior border of the lobe: parathyroid glands and middle thyroid vein **Superior parathyroid gland** post ★ **Inferior parathyroid gland** post ★ *Inferior parathyroids come from the 3rd pouch (with the thymus) and migrate further; superior from the 4th.*

Superior and middle thyroid veins to the internal jugular, inferior to the brachiocephalic

Inferior pole: inferior thyroid vessels **Inferior pole of the thyroid gland** inf *Inferior thyroid artery from the thyrocervical trunk, close to the recurrent laryngeal nerve: ligate it away from the gland; thyroid ima artery (about 10%) from the brachiocephalic trunk or arch*

Medial: cervical trachea and oesophagus 14

Tracheo-oesophageal groove and the recurrent laryngeal nerves Or **Cervical part of the trachea** ant A **Brachiocephalic trunk** med ★ Or **Tracheal cartilages** ant Or **Tracheo-oesophageal groove** lat Or **Cervical part of the oesophagus** post V **Venous angle** post *Right recurrent laryngeal hooks the right subclavian, left hooks the aortic arch (posterior to the ligamentum arteriosum); both ascend in the tracheo-oesophageal groove*

↳ **Subclavian artery** lat ★
↳ Subclavian: **First part of the subclavian artery** med
↳ First part of the subclavian: **Vertebral artery** sup ★ **Internal thoracic artery** inf ★
↳ **Jugular lymphatic trunk** sup **Subclavian lymphatic trunk** lat
Thoracic duct (cervical part) post **Right lymphatic duct** med

Lateral: posterior triangle 26

Occipital triangle: accessory nerve on the levator scapulae Or **Posterior triangle of the neck** lat ★ M **Descending part of trapezius** post superf. N **Accessory nerve** sup superf. ★ M **Inferior belly of the omohyoid** inf ★ N **Roots of the brachial plexus** med A **Transverse cervical artery** sup Or **Occipital triangle** sup M **Levator scapulae** post deep M **Scalenus medius** post deep *Accessory nerve lies superficially on levator scapulae: enters at the junction of the superior and middle thirds of the posterior border of SCM, reaches trapezius at the junction of its middle and inferior thirds*

↳ **Superior trunk** sup
↳ Superior trunk: **Suprascapular nerve** lat
↳ **Middle trunk** lat **Inferior trunk** inf **Divisions of the brachial plexus** inf

Scalenus medius: dorsal scapular and long thoracic nerves N **Dorsal scapular nerve** post A **Dorsal scapular artery** post N **Long thoracic nerve** post ★ M **Scalenus posterior** post deep *C5, 6, 7 - wings of heaven (long thoracic nerve, winged scapula); dorsal scapular (C5) and long thoracic pierce scalenus medius*

Omoclavicular triangle Or **Omoclavicular triangle** inf A **Third part of the subclavian artery** lat V **Subclavian vein** ant ★ A **Thyrocervical trunk** med ★ V **Supraclavicular lymph nodes** inf V **Transverse cervical vein** sup V **Suprascapular vein** inf *Inferior belly of the omohyoid divides the posterior triangle into occipital (superior) and omoclavicular (inferior) triangles*

↳ **Suprascapular artery** ant

Inferior and posterior: root of the neck, prevertebral region, sympathetic trunk 16

First part of the subclavian artery: vertebral and internal thoracic branches **Vertebral vein** ant *VIT C and D (vertebral, internal thoracic, thyrocervical trunk, costocervical trunk, dorsal scapular); first part medial to scalenus anterior gives the first three*

Thyrocervical trunk at the medial border of scalenus anterior **Ascending cervical artery** med *Thyrocervical trunk: inferior thyroid (gives ascending cervical), transverse cervical, suprascapular; SIT on the thyrocervical trunk (suprascapular, inferior thyroid, transverse cervical)*

Scalenus anterior: phrenic nerve and the scalene interval Or **Scalene interval** post M **Scalenus anterior** ant ★ A **Second part of the subclavian artery** post *C3, 4, 5 keeps the diaphragm alive: phrenic descends on the anterior surface of scalenus anterior. Subclavian vein anterior to scalenus anterior, subclavian artery and plexus posterior to it (scalene interval); artery parts 1, 2, 3 = medial, posterior, lateral to the muscle*

↳ **Costocervical trunk** post

Venous angle: veins and lymphatic ducts Or **Lesser supraclavicular fossa** ant superf. M **Clavicular head of the sternocleidomastoid** lat *Thoracic duct ends at the left venous angle (internal jugular + subclavian); right lymphatic duct drains only the right upper quadrant*

Prevertebral fascia and muscles Or **Prevertebral layer of the deep cervical fascia** post deep N **Phrenic nerve** ant deep ★ N **Cervical sympathetic trunk** ant *Deep cervical fascia: investing, pretracheal, prevertebral, carotid sheath; the danger space (anterior to the prevertebral layer) runs from skull base to diaphragm*

↳ **Superior cervical ganglion** sup ★ **Middle cervical ganglion** ant **Ansa subclavia** ant **Cervicothoracic ganglion** inf ★
Cervical cardiac nerves (sympathetic) inf